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Will Smart Mirror Fashion Technology revolutionize fashion retail?

A study of customer-perceived drivers and barriers to adoption

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During the preparation of this master's thesis, the author utilized Grammarly, DeepL, Scribbr, GoodTape, and ChatGPT for the following purposes:

1. Grammarly: spell and grammar check – DeepL: Translation – Scribbr: references generation – GoodTape: interview recording transcriptions – ChatGPT: language improvement, ideas generation for interview guide.

2. After using Grammarly, DeepL, Scribbr, GoodTape, and ChatGPT, the author diligently reviewed and edited the content produced by the tool. The author takes full responsibility for the final content presented in this thesis.

By signing this declaration, the author affirms that the content of this master's thesis reflects their original work, augmented by the responsible use of AI.

Marie Palumbo

25/05/2024

Abstract

Artificial intelligence (AI) has been booming for some years now and is being integrated into a wide range of fields. It has reached the retail sphere in particular, where in an increasingly competitive environment due to the emergence of e-commerce, retailers are introducing new technologies into their in-store environment to improve the customer experience. Smart Mirror Fashion Technology (SMFT) in particular is gaining popularity among these new innovative retail formats, but although this technology is developing, related research is still limited since it is still a relatively new concept. Prior research is mainly based on classic behavioral models which mainly analyzed generic reasons *for* SMFT adoption without considering reasons *against*. For this reason, this research focuses on identifying consumer drivers and barriers to SMFT adoption from a behavioral reasoning perspective.

Through exploratory in-depth qualitative interviews (n = 31), this study highlights three reasons for (i.e., convenience, pleasant shopping experience, and decision efficacy) and five reasons against (i.e., technology concerns, process inconvenience, ESG concerns, unpleasant shopping experience, and marketing practices frustration) adopting SMFT. This research also suggests that certain contextual variables influence the impact of related factors such as parents with children, time pressure, shopping with friends, season, mirror's level of intelligence, and public space location. Therefore, this study contributes to the existing literature on smart retail technologies (SRT) by identifying new drivers as well as barriers to SMFT adoption and by introducing contextual variables that reinforce related reasons' effect. These findings therefore provide retailers with useful insights on how to foster SMFT acceptance in their in-store environment.

First and foremost, I would like to express my gratitude to my supervisor, Professor Simon Hazée, who has accompanied me throughout this project by providing me with insightful comments and advice. His support and guidance through constant availability as well as the time he dedicated to answering my questions was invaluable and helped me navigate every stage of this project.

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1. Introduction

With the development of new technologies, the world has undergone a radical transformation, leading to a complete revolutionization of our way of life (Grewal et al., 2019). The retail environment has been particularly affected, especially with the rise of e-commerce, which now plays a major role in consumers' lives (Ogunjimi et al., 2021). In 2023, e-commerce accounted for 19% of global retail sales and in 2024, estimated retail e-commerce sales exceeded 6.3 trillion US dollars worldwide (Statista, 2024). Moreover, there will be 2.71 billion online shoppers in 2024 (O'Sullivan, 2024). As a result, retailers now find themselves in a highly competitive environment and must find ways to stand out from their competitors. It is in this context of booming technology and an ultra-competitive retail industry that smart retailing has emerged with the incorporation of smart retail technologies (SRT) in physical stores to stand out from online retailers (Adapa et al., 2020; Chang and Chen, 2021). In 2019, it was estimated that the potential economic impact of smart retail technologies could rise from $410 billion to $1.2 trillion annually by 2025 (Ng et al., 2021).

As smart retailing evolves, various forms of technology are emerging, such as self-checkout technologies or cashierless stores, but one technology has recently gained ground in the literature: Smart Mirror Fashion Technology (SMFT) (Ogunjimi et al., 2021; Wang et al., 2023; Alanazi and Alenazi, 2023). Additionally, the smart mirrors global market expects an increase of 10% each year to reach 4.4 billion dollars in 2023 (Alanazi and Alenazi, 2023). This technology allows customers to virtually try on clothes using artificial intelligence (AI), cameras, and sensors. Despite the growing body of literature on this subject, it remains relatively limited, as does its implementation in stores. While some studies have explored the adoption factors of innovations in the context of SRT (Roy et al., 2018; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Ng et al., 2021; Peruma et al., 2022), these reasons are often generic (i.e., perceived usefulness, perceived ease of use, perceived enjoyment). Moreover, while prior research in the field usually ignored barriers to adoption and focused instead on drivers, Behavioral Reasoning Theory (Westaby, 2005) argues that both are important and should be considered since they are not mere opposites. Therefore, this thesis aims to extend the existing literature on SRT by addressing the question: ‘’**What are the customer-perceived reasons *for* and *against* the adoption of Smart Mirror Fashion Technology?**‘’.

To provide an answer, this research begins by reviewing the existing literature on SMFT by, first, defining the concept of smart retailing, followed by a taxonomy of existing technologies in the field and an exploration of the benefits and challenges SRT could introduce. The literature review then delves deeper into previous research in this area, highlighting some of its limitations and proposing an alternative perspective using the theory of Behavioral Reasoning (Westaby, 2005) before introducing the concept of SMFT. Based on existing findings and a qualitative study of in-depth interviews with thirty-one respondents, three reasons *for* and five reasons *against* adopting SMFT emerged: *convenience*, *pleasant shopping experience, decision efficacy*, *technology concerns*, *process inconvenience*, *ESG concerns*, *unpleasant shopping experience*, and *marketing practices frustration*. The study also identifies and suggests that specific contextual variables, such as parents with children, time pressure, shopping with friends, season, mirror's level of intelligence, and public space location reinforce the effects of these reasons. These results therefore highlight the importance for retailers to understand consumers' decisions to adopt or reject SMFT. Finally, the paper concludes with a discussion of the results, the development of managerial recommendations, and a reflection on the limitations and potential avenues for future research.

2. Literature Review

2.1. Smart Retailing

2.1.1. Origin and Definition of concepts

The concept of smart retailing has its origins in the wider concept of smart cities that emerged in the late 1980s. The main idea behind this concept is the ‘’smart‘’ use of technology to improve citizen’s quality of life (Pantano and Timmermans, 2014). As the concept of smart retailing is based on the ‘’smart‘’ use of technology in the retail environment to improve consumer quality of life, it is therefore commonly considered as a subset of the smart city concept (Pantano and Timmermans, 2014). The introduction of a host of technologies into traditional point of sale has radically transformed the retail sector, leading to a redefinition of traditional practices and improving the quality of consumers' shopping experiences at the same time (Pantano and Timmermans, 2014).

This concept of smart retailing is more than a simple application of new technologies in retailing as it is a ‘’smart‘’ use of these technologies implying accordingly other dimensions. This idea of smart retailing adopted by more and more companies can be seen as a smart service which is simply a service made possible by the use of smart products (Henkens et al., 2021). Those are objects with both physical and digital components and the wider system encompassing both the smart products and the providers of these smart services, can be termed a smart service system (Henkens et al., 2021). This recurring tendency in the literature to describe services and products as ‘’smart‘’ tends to make the concept more abstract and makes it difficult to find a precise definition of smart retailing.

Table 1 provides therefore an overview of past definitions for those concepts and highlights certain key characteristics of smart retail technology. One key concept standing out across the various definitions is the improvement of customer experience, notably through the personalization of this experience, made possible by the use of intelligent devices. These devices feature connectivity and interactivity as main characteristics. While the literature on smart products and services is increasingly abundant, there remains a lack of consensus on a precise definition of the notion of ‘’smartness‘’. To address this, Henkens et al. (2021) conceptualize this idea of ‘’smartness‘’ by identifying 4 essential characteristics of intelligent service systems: awareness, connectivity, actuation, and dynamism. Therefore, for a service system to qualify as smart, each of these dimensions must be present.

Table 1: Overview of past definitions of the ‘’smart‘’ concept

Study	**Definition**	**Characteristic(s)**
Adapa et al. (2020)	‘’The concept of “smartness” is linked to enhanced processes and efficiency from the retailers' side, and increased satisfaction and utility from the consumers’ end.‘’	Enhance processes & *efficiency*, Increased *customer satisfaction*
Bezes (2019: 96)	‘’The adjective “smart” describes some “special capabilities, intelligence and/or connectivity” that enable a smart device to adapt more or less autonomously through detection, inference, learning, anticipation, and self-organization.‘’	Special capabilities, *Connectivity*, *Intelligent device*
Roy et al. (2017: 259)	Smart retailing is ‘’an interactive and connected retail system which supports the seamless management of different customer touchpoints to personalize the customer experience across different touchpoints and optimize performance over these touchpoints.‘’	*Interactive & connected*, Seamless, *Personalized customer experience*, Optimize performance
Perumal et al. (2022: 596)	‘’Smart retail technology (SRT) is the central connection system between smart and intelligent devices that can produce high interactive retail services to deliver personalized and effective in-store shopping experiences to customers‘’	*Intelligent/smart devices*, *Interactive*, *Personalized* & effective *customer experience*
Roy et al. (2020)	‘’Smart retail technology refers to a ubiquitous and autonomous system for planning, developing, and offering retail services to customers.‘’	Ubiquitous & autonomous system
Roy et al. (2020)	‘’In-store smart technologies imply smart or intelligent systems that are installed in brick-and-mortar stores to improve the customers’ in-store shopping experience.‘’	*Intelligent/smart systems, improve customer experience,*
Bezes (2019: 96)	‘’In-store smart retailing (or connected retailing) describes an experiential context that inextricably interweaves physical and virtual, proximity and distance, individual freedom and invasion of privacy to deliver an omnichannel experience.‘’	Omnichannel experience, Physical & virtual
(Wolpert & Roth, 2020)	Technology-based retail services (TBRS) are services facilitated by interactive technology and carried out directly in-store	*Interactive* technology
(Wolpert & Roth, 2020)	Technology-based retail services are defined as referring to ‘’interactive technologies that contribute to the creation of retailer value by fulfilling a human purpose, enhancing the customer shopping experience, or facilitating retailer capabilities.‘’	*Interactive*, *Enhance customer experience,* Facilitating retailer capabilities
Henkens et al. (2021)	‘’Smart service systems are configurations of smart products and service providers that deliver smart services.‘’ ‘’smart services are services enabled by smart products, which refer to objects that display both physical components and digital components ‘’	Physical components and digital components
Henkens et al. (2021)	‘’Across all definitions and descriptions, we identified four smartness characteristics: awareness, connectivity, actuation, and dynamism‘’	*Awareness* *Connectivity* *Actuation* *Dynamism*

The first characteristic of smartness introduced by Henkens et al. (2021) is defined as awareness and refers to ‘’the ability to sense information related to the smart service system and/or its surroundings‘’ Henkens et al. (2021: 427). The information in question can be perceived by sensors integrated directly into the device (Henkens et al., 2021). For example, among the existing smart retail technologies, Radio Frequency Identification Systems (RFID) can sense the presence or movement of tagged items providing their location, or smart shelves can identify the presence of a product on its shelves. This enables them to automatically keep track and inform about the inventory levels.

The second defining characteristic of smartness is connectivity, which implies the system's ability to connect its various stakeholders (smart products, smart service providers, and customers), through the Internet of Things (IoT) (Henkens et al., 2021). As an example, Self-Service Technologies (SSTs) or interactive touch screens and informative displays can connect to the central systems of the shop to process transactions or access information regarding a specific product. Another example of this characteristic is smart carts that can synchronize with mobile phones to retrieve customer shopping lists.

Actuation is the third characteristic identified to conceptualize smartness and refers to the system's ability to decide and act without customer intervention, based on computational processes analyzing and processing data collected through sensors (Henkens et al., 2021). Smart price tags can be taken as an example since they provide automated price updates based on diverse factors such as demand or inventory levels. Unmanned shops also present this characteristic by having the possibility to adjust inventory levels based on real-time data.

Finally, the last characteristic of smartness identified is dynamism, which, according to Henkens et al. (2021: 428), refers to ‘’the ability to learn and adapt based upon the relational and cyclical nature of smart service systems‘’. Thanks to the constant interactions between the various stakeholders in smart service systems, it is possible to determine consumer preferences and adapt services accordingly (Henkens et al., 2021). For example, smart mirrors and smart fitting rooms can provide personalized recommendations to customers based on their preferences learned through previous multiple interactions.

As there are many ‘’smart‘’ technologies available to retailers to improve customer experience and/or shop management, it is easy to get lost in this sea of possibilities when determining the right solution to implement. The choice can sometimes be even more complex as the same technology can be used for different purposes, and the same purpose can be

achieved by different technologies. Besides, technology-based retail services can take different forms and sometimes even be combined. For example, a smart fitting room contains another technology as it is itself equipped with a smart mirror. For this reason, a study was carried out by Wolpert and Roth (2020) to provide a classification framework listing existing technologies, their usefulness, and the impact they could have. The objective behind the development of this framework is to be able to classify each TBRS according to one of these dimensions and therefore facilitate the decision-making process of retailers concerning existing technologies (Wolpert and Roth, 2020).

According to this study (Wolpert and Roth, 2020), 35 different types of technology-based retail services were identified (Appendix 1) and a particular classification was derived in prior research (Pantano and Viassone, 2014) based on the specific technological characteristics of the TBRS implemented. Three main categories can be highlighted in physical retail environments according to the type of technologies employed: in-store totems, mobile applications, and hybrid systems (Appendix 2). The first category, known as in-store totems, covers immobile technologies, generally self-service technologies comprising interactive content that can be developed at points of sale. The second category includes all the mobile applications that customers can use on their devices. Finally, the third category includes so-called hybrid systems, as they are based on retailer's technologies but can be carried by the customer during the shopping experience (e.g. intelligent shopping trolleys) (Wolpert and Roth, 2020).

2.1.2. Advantages and Challenges of Smart Retail Technologies

With the constant evolution of technologies and the important place they currently occupy in our environment, smart retailing and the use of these innovative retail formats have become vital innovative strategic approaches for retailers' success (Priporas et al., 2017). With the redefinition of retailing following the development of online commerce, retailers need to react by offering an ever more effective customer experience. One way to do this is by introducing these so-called smart technologies since, according to Priporas et al. (2017), ''a smart retail setting can be a beneficial way for a firm to generate greater customer value as well as business value''. The introduction of these technologies in the shops can bring numerous advantages to retailers. As smart retail technology enables the fusion of physical and digital dimensions, they form an ecosystem (Gretzel et al., 2015) seen by Pantano et al. (2018) as based on unprecedented technological integration and data sharing (Bezes, 2019). As a result,

retailers have access to better real-time data collection and exchange and are consequently able to obtain, more accurately, valuable information on consumer characteristics, needs, and preferences. Thanks to this real-time data collection, retailers can also directly capture information on consumers' in-store transactions and are thus ultimately able to determine their overall behavior (Adapa et al., 2020). Thanks to these real-time environmental sensing capabilities, retailers have access to better resource management and greater flexibility compared to traditional methods. This ultimately enables retailers to reduce both labor and transaction costs.

On the other hand, the introduction of these smart technologies is advantageous not only for retailers but also for consumers by offering them various benefits. The merging of physical and digital dimensions made possible by smart retail technologies provides consumers with an extraordinary shopping experience (Kim et al., 2017). The integration of smart technology enables retailers to offer customers a more personalized in-store shopping experience and seamless customer services (Roy et al., 2017). It also makes shopping more convenient and accessible for shoppers. As Bezes (2019) mentions, ‘’the technologies on which smart retailing relies are no longer just dynamic, but interactive‘’ therefore enabling consumers to actively interact with products leading to easier access to information about the products on offer (Adapa et al., 2020). This ultimately leads to improved customer service, which in turn makes the consumer shopping experience in stores more efficient, particularly in terms of time (Wünderlich et al., 2015; Roy et al., 2017; Roy et al., 2018; Adapa et al., 2020). All this will enable consumers to take full advantage of their shopping experience and, ultimately, make it more enjoyable (Roy et al., 2018).

While smart retail technologies can change consumer behavior throughout the stages of the decision-making process by improving it (Priporas et al., 2017), they also present some challenges for retailers. One of them is the fact that due in part to rapid and constant technological advances, consumer behavior is also constantly evolving, bringing with it a change in consumer shopping habits (Priporas et al., 2017). Retailers are therefore obliged to constantly adapt to these changes. However, Pantano and Viassone (2014) argue smart retail technologies remain beneficial for retailers since the benefits outweigh the challenges.

2.1.3. Smart Retailing Landscape

Table 2 provides an overview of past research on smart retailing and shows that prior research has mainly focused on in-store totems and mobile applications with very few studies focusing on SMFT. In addition, two more major limitations of the literature can be highlighted in this table. The first one is the lack of studies on the reasons against adopting smart retail technologies. These reasons against adoption are not simply the opposite of the reasons for (Claudy et al., 2015), and are therefore important to consider to gain a comprehensive understanding of the consumer's thinking and decision-making process. It is important to also consider the barriers leading to technology rejection to account for the different influences that favorable and unfavorable types of factors can have on an individual's adoption decisions. As mentioned by Claudy et al. (2015), focusing solely on favorable reasons for adoption can represent a myopic view of the situation and would lead to missing important explanations for understanding consumer adoption behavior.

The second additional limitation of prior research is that, in the existing literature, the same variables are generally used regardless of the context. Whether we are studying smart retail technologies, mobile applications, or in-store totems, the variables taken into consideration are always the same: perceived usefulness, perceived ease of use, or perceived enjoyment. Prior research has mainly focused on classic behavioral models such as the theory of reasoned action (TRA) (Fishbein and Ajzen 1975), the technology acceptance model (TAM) (Davis 1989), or the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al. 2003) to determine technology adoption without any distinction as to the technology under consideration. Although these models are widespread and used in the literature, they mainly consider generic antecedents as adoption factors by only considering the perceived characteristics of the technology. These characteristics are termed ‘’perceived‘’ as they correspond to consumers' beliefs about the attributes of an innovation but do not, however, represent determining factors in decisions to adopt or reject a technology. As Claudy et al. (2015) point out, beliefs are merely a reflection of consumers' opinions on innovation characteristics in general. In contrast, reasons for or against adoption constitute specific factors that directly influence the decision to adopt (Claudy et al., 2015).

Table 2: Overview of selected prior research on smart retailing

Study	Base model/ theory	Antecedents		Outcome variable(s)	Method	''Smart" retail technology	Key finding(s)
		Reason for	Reason against				
Roy et al. (2018)	Technology acceptance model (TAM)	Technology readiness, perceived ease of use, perceived usefulness, superior functionality, perceived adaptiveness, store reputation		Attitude, behavioral intention	Quantitative (survey)	N.A. Smart Retail Technologies	Perceived usefulness, perceived ease of use, store reputation, and adaptiveness positively impact attitude which in turn, positively impacts behavioral intention. Perceived usefulness positively impacts behavioral intention.
Adapa et al. (2020)	Innovation diffusion theory (IDT)	Perceived advantages, perceived novelty	Perceived complexity, perceived risk	Perceived shopping value, loyalty, intentions to use	Quantitative (survey)	N.A. Smart Retail Technologies	Perceived novelty and perceived advantages positively impact perceived shopping value while perceived complexity and perceived risk negatively impact perceived shopping value. Perceived shopping value has a positive influence on loyalty and intention to use and loyalty also has a positive influence on intention to use.
Roy et al. (2020)	Motivation-opportunity-ability theory (MOA)	Relative advantage, flow experience, enjoyment, retailer support, perceived attractiveness, technology readiness, self-efficacity	Perceived complexity	Perceived shopping effectiveness, adoption intentions	Quantitative (survey)	N.A. Smart Retail Technologies	Relative advantage, flow experience, retailer support, and self-efficacy positively impact perceived shopping experience while perceived complexity negatively impacts perceived shopping experience. Perceived shopping experience positively impacts behavioral intentions (adoption).
Fazal-e-Hasan et al. (2021)	N.A.	Perceived novelty, perceived efficacy, perceived compatibility	Perceived risk	Intention to use, perceived shopping value	Quantitative (survey)	N.A. Smart Retail Technologies	Perceived novelty and perceived compatibility positively impact the intention to use, while perceived risk negatively impacts the intention to use. Intention to use positively impacts perceived shopping value.
Ng et al. (2021)	Stimulus-organism-response model (SOR)	Perceived usefulness, perceived enjoyment, perceived value		Attitude, word-of-mouth (WOM)	Quantitative (survey)	N.A. Smart Retail Technologies	Perceived usefulness, perceived value, and perceived enjoyment positively impact attitude which, in turn, positively impacts word-of-mouth. Perceived value and perceived enjoyment positively impact word-of-mouth.
Perumal et al. (2022)	Technology acceptance model (TAM)	Perceived usefulness, perceived ease of use, perceived enjoyment	Perceived risk	Attitudes, behavioral intentions	Quantitative (survey)	N.A. Smart Retail Technologies	Perceived ease of use and perceived enjoyment positively impact acceptance. Attitudes positively impact behavioral intentions.
Ponte and Bonazzi (2021)	Unified theory of acceptance and use of technology (UTAUT)	Performance expectancy, Effort Expectancy, Facilitating Conditions	Perceived risk	Behavioral intention	Quantitative (survey)	Hybrid system Smart cart	Performance expectancy, effort expectancy, and facilitating conditions positively impact behavioral intention while perceived risk negatively impacts behavioral intention.
Kaushik and Rahman (2015)	Technology acceptance model (TAM)	Perceived usefulness, perceived ease of use		Attitude, intention to adopt	Quantitative (survey)	In-store totem Self-Service Technologies	Perceived usefulness and perceived ease of use positively impact attitude which in turn, positively impact intention to adopt self-service technologies.

Kazancoglu and Yarimoglu (2018)	Technology acceptance model (TAM)	Perceived usefulness, perceived ease of use, situational factors	Technology anxiety, perceived risk, need for interaction	Intention to use	Quantitative (survey)	In-store totem Self-Service Technologies	Perceived usefulness and perceived ease of use positively impact intention to use while technology anxiety negatively impacts intention to use.
Ponte and Bonazzi (2021)	Unified theory of acceptance and use of technology (UTAUT)	Performance expectancy, Effort Expectancy, Facilitating Conditions	Perceived risk	Behavioral intention	Quantitative (survey)	In-store totem Self-Service Technologies	Performance expectancy, effort expectancy, and facilitating conditions positively impact behavioral intention while perceived risk negatively impacts behavioral intention.
Chuawatcharin and Gerdsri (2019)	Technology acceptance model (TAM)	Perceived ease of use, perceived usefulness, social norm, perceived entertainment value, trust	Technology anxiety	Attitude, intention to use	Quantitative (survey)	In-store totem Unmanned shop	Perceived usefulness and perceived ease of use positively impact attitude which in turn, positively impacts intention to use. Social norm positively impacts the intention to use.
Pillai et al. (2020)	Technology readiness and acceptance model (TRAM)	Perceived usefulness, perceived ease of use, perceived enjoyment, customization, interactivity		Intention to shop	Quantitative (survey)	In-store totem Unmanned shop	Perceived ease of use, perceived usefulness, perceived enjoyment, customization, and interactivity positively impact the intention to shop in AI-powered automated stores.
Chang and Chen (2021)	Hedonic information systems acceptance model (HISAM)	Perceived ease of use, perceived usefulness, perceived enjoyment		Shopping intention	Quantitative (survey)	In-store totem Unmanned shop	Perceived ease of use, perceived usefulness, and perceived enjoyment positively impact shopping intention.
Ponte and Bonazzi (2021)	Unified theory of acceptance and use of technology (UTAUT)	Performance expectancy, Effort Expectancy, Facilitating Conditions	Perceived risk	Behavioral intention	Quantitative (survey)	In-store totem Unmanned shop	Performance expectancy positively impacts behavioral intention towards cashier-less stores, while perceived risk negatively impacts behavioral intention.
Lin (2022)	Unified theory of acceptance and use of technology (UTAUT)	Performance expectancy, effort expectancy, social influence, perceived convenience value, perceived novelty value	Perceived risk	Attitudes, patronage intentions	Quantitative (survey)	In-store totem Unmanned shop	Performance expectancy, effort expectancy, social influence, perceived convenience value, and perceived novelty value positively impact attitudes, which in turn impacts consumer patronage intentions. Perceived risk negatively impacts patronage intentions.
Chang et al. (2023)	Hedonic information systems acceptance model (HISAM)	Utilitarian motivation, hedonic motivation, perceived ease of use		Customer motivation, purchase intention	Quantitative (survey)	In-store totem Unmanned shop	Perceived ease of use, directly and indirectly, influences purchase intentions through utilitarian and hedonic motivations.
Kaushik et al. (2020)	Technology acceptance model (TAM)	Previous experience, propensity to adopt, perceived ease of use, perceived usefulness, perceived quality, firm's reputation, offline presence	Perceived risk	Trust, attitude, intention to adopt	Quantitative (survey)	Mobile application Mobile Retail Apps	Previous experience, perceived ease of use, perceived usefulness, perceived quality, firm's reputation, and offline presence positively impact trust which in turn, positively impacts attitude and intention to adopt. Attitude positively impacts the intention to adopt. Trust negatively impacts perceived risk which in turn negatively impacts attitude and intention to adopt.

Dacko (2017)	Experiential value	intrinsic and extrinsic value		Satisfaction, Intention to adopt	Quantitative (survey)	Mobile application Mobile Augmented Reality App	MAR shopping app use increasingly supports greater user valuations of retailers. User satisfaction with the MAR shopping app is relatively high, and the use provides systematic experiential benefits.
Rese et al. (2017)	Technology acceptance model (TAM)	Perceived informativeness, perceived enjoyment, perceived usefulness, perceived ease of use		Attitude, intention to use	Quantitative (survey)	Mobile application Mobile Augmented Reality App	Perceived informativeness and perceived enjoyment of AR apps have a direct positive effect on perceived usefulness which in turn, positively impacts attitude and intention to use. Perceived ease of use positively impacts attitude which in turn, positively impacts intention to use.
McLean and Wilson (2019)	Technology acceptance model (TAM)	Interactivity, vividness, novelty, perceived ease of use, perceived usefulness, enjoyment, subjective norms		Brand engagement, satisfaction, intention to use	Quantitative (survey)	Mobile application Mobile Augmented Reality App	AR app attributes (interactivity, vividness, and novelty) have a positive impact on perceived ease of use, perceived usefulness and enjoyment which in turn, have a positive impact on brand engagement which in turn, has a positive impact on satisfaction and intention to use. Interactivity and vividness have a positive impact on subjective norms which in turn, has a positive impact on brand engagement which in turn, has a positive impact on satisfaction and intention to use.
Nikhashemi et al. (2021)	Stimulus-organism-response model (SOR)	App interactivity, quality of augmented reality, app vividness, app novelty		App engagement, psychological inspiration, intention to use, intention to pay a price premium	Quantitative (survey)	Mobile application Mobile Augmented Reality App	Shopping AR app attributes (quality, vividness, and novelty) significantly impact customers' hedonic and utilitarian benefits. Utilitarian benefits positively impact AR engagement and hedonic benefits positively impact AR engagement and psychological intentions which, in turn, positively impact the intention to use and pay a premium price.
Oyman et al. (2022)	Technology acceptance model (TAM)	Novelty seeking, perceived augmented reality, perceived enjoyment, perceived usefulness, perceived informativeness, perceived ease of use	Technology anxiety	Intention to use	Quantitative (survey)	Mobile application Mobile Augmented Reality App	Novelty seeking has a positive impact on perceived augmented reality which in turn, has a positive impact on perceived enjoyment, perceived usefulness, perceived informativeness and perceived ease of use which in turn, have positively impact intention to use.
Alanazi and Alenazi (2023)	Technology acceptance model (TAM)	Retailer's perceived usefulness, retailer's perceived ease of use		Retailer's intention to use, customer satisfaction	Quantitative (survey)	In-store totem Smart Mirror Fashion Technology	Perceived usefulness and perceived ease of use positively impact intention to use which in turn, positively impact customer satisfaction.

One way of overcoming two of the identified limitations in the existing literature is to focus on context-specific reasons rather than more general beliefs, since depending on the type of innovation and/or the adoption context, the reasons for and against are likely to differ (Claudy et al., 2015). This is why this study takes a different approach by adopting the Theory of Behavioral Reasoning (BRT) (Westaby, 2005). Although this theory is similar in some respects to classic behavioral theories, it offers many advantages over them, particularly in the importance it attributes to reasons (Westaby, 2005; Sahu et al., 2020). This theory includes both favorable and unfavorable factors by including and differentiating between reasons for and against adoption fundamentally different from one another (Claudy et al., 2015). These reasons for (influencing individuals to adopt an innovation) and reasons against (influencing individuals to resist an innovation) vary in nature and are therefore not the simple opposite of each other. As these concepts are qualitatively different, they influence adoption decisions in different ways. Consumers, for example, tend to give more weight to elements that work against adoption compared to potential benefits (Claudy et al., 2015). They represent two very distinct perspectives, both of which directly influence people's intentions and along with it, their behavior (Sahu et al., 2020). Therefore, the introduction of this concept of reasons against in addition to that of reasons for, makes it possible, compared to classical behavioral theories, to explain more variance in the response made by consumers in their decision-making process (Westaby, 2005; Sahu et al., 2020).

On the other hand, BRT also specifies that these reasons for and against are likely to differ according to the type of innovation and/or adoption context considered, making them specific to the context studied (Claudy et al., 2015). These reasons represent specific factors that have an important influence on an individual's adoption decision (Claudy et al., 2015). As a result, thanks to the inclusion of reason concepts in a specific context, BRT makes it possible, compared with traditional theories, to build a more representative picture contributing to a more complete understanding of the decision-making process when adopting an innovation. This theory therefore represents the theoretical framework needed to understand and predict the consumer's decision-making process regarding the adoption of a specific innovation (Sahu et al., 2020). As such, it represents therefore a way of overcoming the third limitation which resides in the fact that prior research has focused mainly on smart retailing technologies in general. Moreover, while recent attention has been given to unmanned shop (Chuawatcharin and Gerdsri, 2019; Pillai et al., 2020; Chang and Chen, 2021; Ponte and Bonazzi, 2021; Lin, 2022; Chang et al., 2023), which represents only one technology among the array of in-store

totems, mobile applications have received particular attention (Kaushik et al., 2020; Dacko, 2017; Rese et al., 2017; McLean and Wilson, 2019; Nikhashemi et al., 2021; Oyman et al., 2022). Therefore, to address this, this research will focus on Smart Mirror Fashion Technology, which has been relatively little studied so far (Alanazi and Alenazi, 2023).

2.2. Smart Mirror Fashion Technology (SMFT)

Augmented reality (AR) has rapidly gained attention worldwide (Rese et al., 2017) and its use is increasingly recognized in the literature as a ‘’smart‘’ technology with significant potential to create value for consumers and retailers (Nikashemi et al., 2021; Wang et al., 2023). Mobile AR app in particular seems to be relatively regularly studied to understand consumer adoption of smart retail technologies (Dacko, 2017; Rese et al., 2017; McLean and Wilson, 2019; Nikhashemi et al., 2021; Oyman et al., 2022). However, SMFT is currently gaining ground in retail and is the subject of new and recent attention in the literature. As mentioned by Alanazi and Alenazi (2023), the smart mirrors global market expects an increase of 10% each year to reach 4.4 billion dollars in 2023.

Smart Mirror Fashion Technology was developed to improve the consumer shopping experience and is based on augmented reality. AR enables virtual content to be realistically superimposed on the real world (Wang et al., 2023). It features therefore unique characteristics such as a combination of real and virtual images, real-time interactivity, registration of virtual images in the real world, and 3D (Dacko, 2017). This augmented reality technology can differ according to the type of entities being augmented (people, environments, or products) or to its mode of integration: wearable (e.g. Microsoft HoloLens), mobile (e.g. applications), and finally, stationary (e.g. virtual mirror) (Kumar, H., 2022). However, SMFT goes further than simple augmented reality by integrating AR into a physical display. Thanks to this, this technology enables customers the interactive experience of being able to virtually try on the store's products, allowing observation in three dimensions from all angles without having to remove their clothes (Ogunjimi et al., 2021). Clothes (virtual objects) are superimposed on customers' bodies (real environment) to simulate a realistic fitting experience in the physical retail environment. This innovative retail format is therefore considered an in-store totem since it is an immobile self-service technology incorporated directly into the physical environment, with interactive content developed directly at the point of sale.

SMFT allows fast and convenient browsing of various garments and easy exploration of different options via an interactive experience facilitated by a screen integrated into a two-

way mirror, along with augmented gesture recognition, cameras, and sensors (Appendix 3). This mirror-screen combination has been referred to in various existing studies as a magic mirror, interactive mirror, digital mirror, or SMFT (Ogunjimi et al., 2021; Wang et al., 2023). This combination of an electronic screen in a mirror can be directly integrated into fitting rooms to constitute the so-called smart fitting rooms (Wang et al., 2023). In these cubicles, the light can be adapted to offer an observation of what different outfits might look like at different times of the day (Ogunjimi et al., 2021). Unlike mobile AR apps used mainly in online retailing for product research or virtual viewing before purchase, offering portability and accessibility at any time, SMFT is a hardware device embedded in physical stores that offers an interactive shopping experience. As this technology is significantly different from AR mobile apps in the way they are integrated into the retail environment, we can expect different results in terms of consumer adoption.

Moreover, SMFT also differs from AR mobile apps by offering additional services such as tailored recommendations through consumers' data capture. This therefore enables easier product selection and reduces returns (Wang et al., 2023). The technology also enables customers to benefit from the ability to know real-time product inventory as well as request different sizes and colors without having to constantly leave the fitting room or ask staff for assistance and pay directly through the machine instead of queuing at the point of payment (Ogunjimi et al., 2021; Wang et al., 2023). Thanks to the combination of these services, SMFT seems to offer a more personalized, efficient, and attractive shopping experience for consumers compared to AR mobile apps (Wang et al., 2023).

Finally, Wang et al. (2023) highlighted the technology's ability to strengthen customer commitment through personalized recommendations, thereby improving the purchase efficiency and their average value. In addition, it facilitates retailer's better optimization by capturing data on consumer preferences, leading to a reduction in stock-outs and lost sales (Wang et al., 2023). As a result, retailers can expect higher productivity and significant cost reductions, which can be passed on to consumers through lower prices and better service quality (Ogunjimi et al., 2021). It is estimated that this technology could save retailers between £2,000 billion and £3,000 billion a year and lead to a 20% increase in customer satisfaction as well as an 11% increase in sales (Ogunjimi et al., 2021).

2.3. Conclusion

With the number of technologies available and their constant evolution, there are many opportunities for retailers to improve the consumer shopping experience using various innovative smart technologies (Adapa et al., 2020). Therefore, over the past few years, many retailers have seen themselves equipped with this type of technology in their shops to help improve their day-to-day practices. Thanks to this introduction of smart retail technologies, touchpoints have been radically transformed, offering a variety of different products and services to enhance the customer experience (Priporas et al., 2017). The use of augmented reality is particularly increasingly recognized in the literature as a ‘’smart‘’ technology with significant potential to create value for consumers and retailers (Nikashemi et al., 2021; Wang et al., 2023). AR via mobile application particularly seems to be relatively regularly studied in the literature (Dacko, 2017; Rese et al., 2017; McLean and Wilson, 2019; Nikhashemi et al., 2021; Oyman et al., 2022). As for in-store totems, most recent studies focus mainly on the phenomenon of unmanned shops (Chuawatcharin and Gerdsri, 2019; Pillai et al., 2020; Chang and Chen, 2021; Ponte and Bonazzi, 2021; Lin, 2022; Chang et al., 2023), whereas smart mirrors are also a growing phenomenon. Although this technology is still new, it is beginning to be implemented in the retail sector, especially in Asia and the United States (Ogunjimi et al., 2021), but very little research has focused on it to date (Alanazi and Alenazi, 2023). Like AR mobile apps, this technology is based on augmented reality technology, but unlike them, it offers additional services such as personalized recommendations. It also differs from these mobile applications in that it is integrated directly into the shop. We can therefore expect to see different results in terms of consumer adoption of this technology. For this reason, this study will focus on this technology in particular, to better understand the underlying adoption factors and, ultimately, enable retailers to make informed decisions about whether or not to adopt this technology.

Classical behavioral theories have been widely studied in the literature, particularly to explain the adoption of an innovation. However, these reasons are often generic and not specific to individual technologies. Additionally, there is a lack, in the existing literature, of consideration for reasons against the adoption of an innovation. Therefore, this thesis aims to extend prior research by addressing the following question: ‘’**What are the customer-perceived reasons for and against the adoption of Smart Mirror Fashion Technology?**‘’. Behavioral Reasoning Theory will be favored in this research to address the shortcomings identified.

3. Qualitative research: consumer's reasons for and against SMFT adoption

To overcome the limitations highlighted in the existing literature, a qualitative approach was adopted to identify the specific reasons *for* and *against* SMFT adoption. This qualitative study was conducted through semi-directed interviews (n = 31) to determine the main reasons leveraged by consumers to justify their choice to adopt or reject SMFT. Two main reasons justify an exploratory qualitative approach as an appropriate choice. Firstly, given that SMFT is a new and still relatively underdeveloped technology in the retail sector, research into the factors driving its adoption is still limited (Alanazi and Alenazi, 2023). Secondly, the reasons to be determined here are specific to a particular context (SMFT) and can therefore only be obtained through exploratory qualitative research.

3.1. Research Design

3.1.1. Data collection method and Sample characteristics

Given the context of this research, no specific restrictions were necessary concerning the choice of respondents taking part in the study, except for the method of shopping. As the aim of the study is to identify all possible situations, any person frequenting physical shops would be a potential respondent. Therefore, the interviewees were selected based on their shopping habits, to ensure having respondents who frequent physical stores and not those who shop online.

Respondents were mainly found among acquaintances or people in the entourage by asking selected respondents to provide other potential participants. During this search for potential respondents, the emphasis was placed on maximizing diversity in terms of age, gender, and different backgrounds to ensure a heterogeneity of profiles and responses obtained. The aim was to obtain an understanding of the situation as completely as possible. The principle of theoretical saturation was used to determine the sample size resulting in a sample of 31 respondents aged between 22 and 90 (Appendix 5).

3.2. Research Execution

3.2.1. Procedures and Analysis

Semi-directed interviews were conducted both online and offline whenever feasible, using an interview guide available in Appendix 4. The interviews started with broad questions regarding participants' shopping habits and progressed to more specific queries concerning SMFT. Respondents were therefore first able to elaborate on their typical shopping behavior as

well as experience and the underlying reasons. Following that, by focusing on specific questions about technology, respondents were asked to reflect on the overarching concept of SMFT. This part of the interview focused mainly on understanding the decision to adopt or reject this technology by inviting respondents to explain the specific reasons behind this decision. Finally, in the last part of the interview, participants were encouraged to elaborate on their feelings, preferences, and experiences concerning the adoption of this new technology alongside potential avenues for improvement. This last section, facilitated by specific questions, aimed to explore the potential benefits that might positively influence adoption decisions, as well as any concerns or reservations that could hinder adoption.

Afterward, interviews were transcribed verbatim (Appendix 8 to Appendix 36) as they were recorded with the respondents' consent. As a next step, they were manually coded and analyzed to highlight the reasons *for* and *against* the adoption of SMFT. By using a thematic approach, the results were investigated to underline recurrent themes within the responses. Although no rigid protocols govern this process, specific steps were followed based on Braun and Clarke (2006) to ensure a comprehensive analysis. Therefore, an iterative procedure was pursued, starting with data familiarization by repeatedly reading through the interviews to look for recurring patterns. Following that, initial codes were generated using highlighters, and potential themes were identified, determined, and ultimately defined to organize the data into meaningful and insightful information.

3.3. Results

Based on the thematic analysis conducted, three sub-themes emerged as significant context-specific reasons *for* adopting SMFT: *convenience*, *pleasant shopping experience,* and *decision efficacy*. At the same time, five sub-themes were highlighted as primary barriers to SMFT adoption: *technology concerns*, *process inconvenience*, *ESG concerns*, *unpleasant shopping experience*, and *marketing practices frustration*. The provided table (Appendix 6) offers a comprehensive overview of these reasons *for* and *against* SMFT adoption, along with definitions and key statements mentioned by the respondents to elucidate their decision-making rationale as well as underlying reasons. While figure in Appendix 7 offers a conceptual model providing an overview of drivers and barriers to smart mirror adoption as well as contextual variables that can influence them.

3.3.1. Reasons for SMFT adoption

When consumers come to consider the use of smart mirrors in their in-store shopping experience, several factors come to mind and influence this decision. Prior research on technology and innovation acceptance has, based on classic models, derived some of these reasons for deciding to adopt a technology. The TAM (Davis 1989) in particular used in research on smart retail technologies has identified two main drivers of SRT acceptance which are perceived ease of use and perceived usefulness (Kaushik and Rahman, 2015; Kazancoglu and Yarimoglu, 2018; Roy et al., 2018; Kaushik et al., 2020; Chuawatcharin and Gerdsri, 2019; Perumal et al., 2022). In the context of smart retailing, these concepts refer respectively to ‘’the ease with which customers can use SRT in completing their shopping tasks‘’ and ‘’the ability of the SRT to help customers perform and complete their shopping tasks more efficiently and effectively‘’ (Roy et al., 2018). This research confirmed the speed and ease of execution made possible by the use of technology as emphasized by respondents but were grouped in this conceptual model into one main reason *for* SMFT adoption: **convenience**. This concept refers to consumers' time and effort saving in purchasing (Seiders et al., 2007). Moreover, as elucidated by respondents during interviews, this driver of technology acceptance can be derived from two distinct dimensions: *process convenience* and *search convenience*, both of which play an important role in the decision-making process. Indeed, both dimensions relate to the time and energy saved that can occur during various aspects and elements of the process followed by consumers during their in-store shopping experience.

By doing away with the need to undress, participants believe that the fitting process can be carried out more quickly and productively. Users therefore do not need to waste time, for example, untying shoelaces or removing several layers of clothing, especially in winter:

> *‘’You don't have to strip off completely to put on the little summer dress when it's winter and it's snowing outside, and you've got your big shoes on. Because you don't have to undress completely. From the moment you try on a skirt, trousers or dress, you have to take off almost all your clothes, the shoes, its laces, ...‘’ (ID2)*

This ease and speed of the garment fitting process is also achieved by being able to see directly what a different color of garment would look like, as well as no need to return clothes once tried on virtually to their place on the shelves and waste time finding the exact location of each piece: *‘’If you bring in a lot of garments, you obviously save a lot of time. You don't have to go round and put things back, so it's a huge time saver.‘’ (ID9).*

Furthermore, respondents see this technology as a way to make an initial selection of garments to be tried on later, resulting in fewer try-ons to execute in the fitting rooms and at the same time, ultimately resulting in fewer people and queues:

> *''I think it could improve the experience in terms of efficiency, and also in terms of the number of people in the shops. I think that, as a result, there would definitely be fewer people. […] And that, as a result, it would be more pleasant because, for me, what's really bothering me is the number of people and the fact that people are stepping on each other to look at an article.'' (ID5)*

Participants also perceive that the process could be enhanced in convenience if smart mirrors could provide direct information, such as the location of a garment in case it's unavailable in-store, thereby indicating to the customer other shops still selling the item. The prospect of previewing an out-of-stock garment on the screen and ordering it directly without the need for assistance from a salesperson, as well as potentially bypassing a designated checkout for payment, is also perceived by respondents as a time and energy-saving that would incentivize them to adopt the technology.

As for search convenience, respondents mentioned that this technology makes it easier to find clothes by not having to go around the whole shop, and look at every shelf making as a result the total consumer experience more fluid:

> *''[…] sometimes I don't really like going through the store looking for some nice pieces so it could also be nice to just like stand in front of the mirror and just like choose like virtually and then go try it on you know. […] I don't have to go around the store to look for clothes, I can just see like their offer on the mirror that I can just click […] this way it could save time.'' (ID27)*

All these elements put together would represent an easier and faster fitting process making the overall shopping experience more convenient for consumers and therefore encouraging them to use this technology. Moreover, it also emerges from the data provided by respondents that the convenience factor should be considered under specific contextual factors. In some specific contexts such as time pressure, convenience is reinforced as important in the decision to adopt technology by making consumers more inclined to use technology to make their fitting process faster and more productive. The virtual try-on thanks to the superimposition of clothes on the consumer's body enables people in a hurry to try on clothes and make their

choice more quickly: *‘’[…] if I don't have time I really want to try it on quickly so I just stand in front of the mirror and just say okay I think it will fit me.‘’ (ID27).*

In the specific context of parents with children, respondents emphasized that this factor is made more important as the use of technology would make the purchasing process, when carried out with children, more convenient in many ways. On the one hand, it would make it easier to convince children that a particular item of clothing would suit them by giving them a quick and simple first look at what it might look like as stated: *‘’[...] it can also allow you to say to her 'look at this little dress that you absolutely didn't want to see, look at what it looks like, it might not be bad'.‘’ (ID28).* On the other hand, it would also allow parents to avoid scandals in the shops or having to chase them around the different departments of the shop by keeping them focused and amused while carrying out the initial task:

> *‘’Because it's easier for children. You see, if the mirror is in the middle of the children's section, you just pass it over, you look quickly, OK, it saves time, it saves energy too because you don't have to run after them, there's a screen, they'll stand in front of it and say "Oh, that's nice", that'll interest them too and then, finally […] in the end you'll make your selection straight away before going into the fitting rooms. If you know that changing children in the changing rooms is just the end of the world.‘’ (ID28)*

As a result, this qualitative study extends the concepts of perceived usefulness and ease of use discussed in previous research (Kaushik and Rahman, 2015; Rese et al., 2017; Kazancoglu and Yarimoglu, 2018; Roy et al., 2018; Chuawatcharin and Gerdsri, 2019; Kaushik et al., 2020; Perumal et al., 2022; Oyman et al., 2022) by grouping these two dimensions under the term convenience and by emphasizing the time and effort savings. Additionally, it highlights the influence of contextual variables, such as time pressure and parents shopping with children, on the convenience factor. Therefore, we propose:

Proposition 1: The more convenient the shopping experience is perceived to be (reflected in process and search convenience), the more likely consumers are to adopt SMFT, particularly in the specific context of time pressure and parents with children.

Secondly, among the reasons developed in the existing literature for deciding to adopt a technology, perceived enjoyment has been added to the existing ones (perceived usefulness and perceived ease of use) through utilization of extended models of TAM (Davis 1989) such as TRAM (Lin et al., 2007), SOR (Mehrabian and Russell, 1974), MOA (MacInnis et al., 1991),

or even HISAM (Van Der Heijden, 2004). Those models have therefore been used in different prior research on SRT (Chuawatcharin and Gerdsri, 2019; Pillai et al., 2020; Roy et al., 2020; Chang and Chen, 2021; Ng et al., 2021; Chang et al., 2023) to demonstrate that perceived enjoyment, which refers to ‘’the extent to which the activity of using a technology system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use‘’ (Roy et al., 2020), also influences its acceptance. Although this notion of perceived enjoyment is reflected in the answers given by the respondents, the interviews reveal that several factors contribute to this feeling within the context of SMFT. Therefore, perceived enjoyment is considered, in this research, in a broader driver to adoption: **pleasant shopping experience**. Participants mentioned that the overall experience would be more pleasant thanks to the reduced number of people in the dressing rooms, but also by making up for some of the inconveniences currently experienced in store:

‘’I don't like carrying clothes on my arm for example in winter when I'm like wearing my coat and it's super warm there so I have to carry my coat. Then I have to like take a lot of stuff on my arm so my arm hurts. […] I could choose the clothes on the mirror then I wouldn't have to do this. It would be a plus.‘’ (ID27)

During the interviews, three dimensions that collectively contribute to making the in-store shopping experience more pleasant were highlighted: *shopping enjoyment*, *limited social contact*, and *better hygiene*. The first one refers to the feeling of greater enjoyment that consumers can derive from using the smart mirror in their in-store shopping process, as they perceive the virtual fitting experience as original and fun: *"Yes, I think I would actually enjoy it. It would make shopping more fun" (ID11).*

This factor can be reinforced in the specific context of shopping with friends as some respondents mentioned that they would find it even more fun if the mirror could be used by multiple people at once. This would allow friends to give each other direct advice without needing to leave the fitting room each time: *‘’I'm not so sure about boys, but I'm sure about girls because they'll go together to try out different things and it's like... like you're a star and you're trying out different things and it's going fast and you're laughing.‘’ (ID4)*

Next, limited social contact, which represents for respondents the avoidance of engaging with a sales assistant, fosters a serene and less pressured shopping experience, which holds significant value for consumers. Additionally, respondents also view this aspect positively as they feel it is easier and less embarrassing to decline a product offered by a machine:

‘’ […] it's less embarrassing to say to an intelligent mirror "Well, no, I'm not so sure, never mind" rather than to a person in front of you who takes the time to help you, you have eye contact with, where you're more encouraged to say to yourself "Well, the person is helping me, so I've got to do something in return". And that's an aspect that would appeal to me a lot with this intelligent mirror, in any case.‘’ (ID1)

This can be explained by the Theory of Mind (TOM) (Premack & Woodruff, 1978) which refers to ‘’the mental ability to infer mental states to oneself and others, and to understand them‘’ (Duval et al., 2011). TOM is not a specific psychological theory, but rather a cognitive ability that enables mental representations to other individuals, such as desires, beliefs, or intentions that are normally unobservable. These inferences are made based on emotional expressions that appear in facial expressions or based on certain behaviors and attitudes, and thus make it possible to predict or interpret certain actions or reactions of other individuals (Duval et al., 2011). When interacting with non-human entities, such as smart mirrors, this process and these inferences can be considered as less present or even non-existent. In a study conducted by Pitardi et al. (2022), it was demonstrated that the introduction of service robots attenuates customer's anticipated embarrassment through interaction with a machine rather than a human. Among the factors identified as leading to a reduction in the feeling of embarrassment, the main reason is the perception that service robots are not capable of making moral or social judgments (referred to as perceived agency) as well as their inability to feel emotions (Pitardi et al., 2022). In the context mentioned here, the customer feels less guilty and embarrassed when interacting with a machine because he anticipates that the machine has no emotions and cannot make any judgments. The customer thus feels free to refuse a suggestion made by the technology without the latter being offended or making a moral judgment. The customer is more serene and does not feel the social pressure they might experience when interacting with an employee. Therefore, as highlighted in the study, ‘’service robots can mitigate customer's anticipated embarrassment because they are perceived as having low agency and are therefore not able to form thoughts opinions, and judgments‘’ (Pitardi et al., 2022).

The third dimension is better hygiene which refers to users’ perceptions that in-store shopping with SMFT enhances hygiene by preventing clothes from being tried on by many people. Virtual try-on address current hygiene concerns such as make-up stains on collars and unclean fitting rooms:

''Moreover, in terms of cleanliness, hygiene and all that, I think it has a lot of advantages too. Because people don't try. They see themselves, so they don't touch it, it doesn't drag, there's no foundation on your blouses.'' (ID21)

In line with the findings of previous study (Chuawatcharin and Gerdsri, 2019; Pillai et al., 2020; Roy et al., 2020; Chang and Chen, 2021; Ng et al., 2021; Chang et al., 2023), perceived enjoyment appears to be a reason *for* adoption of SMFT but as part of a broader category: pleasant shopping experience, which includes shopping enjoyment, limited social contact and better hygiene. As a result, we can propose:

Proposition 2: The more pleasant shopping is perceived to be (reflected in shopping enjoyment, limited social contact, and better hygiene), the more likely consumers are to adopt SMFT, particularly in the context of shopping with friends.

Finally, the interviews conducted have revealed a third reason for SMFT adoption that has not yet appeared in prior research on SRT acceptance (Adapa et al., 2020; Fazal-e-Hasan et al., 2021; Nikhashemi et al., 2021). According to respondents, reasons for adopting SMFT are not limited to convenience and pleasant shopping experience since **decision efficacy** also represents an important factor in better in-store shopping experience. Although in the literature the concept of decision convenience is used - referring to ''customers perceive the costs of time and effort associated with decisions to purchase or use services''(Seiders et al., 2007) - the term decision efficacy is used here to refer to consumer's perceptions that in-store shopping with SMFT enables better choices thanks to two dimensions: *opportunity enhancement* and *improved viewing* and *evaluation*. The perspective put forward here is the final quality of the decision enabled by the technology and not specifically the time or effort that can be saved. Opportunity enhancement expresses the possibility of accessing a wider choice than what is available in-store and the opportunity to see clothes consumers might otherwise have missed on the shelves. In addition, the opportunity to try on and preview clothes that would never normally have been tried on is also highlighted as having a positive influence on the adoption decision:

''Even if it's ugly, you might even try on something you'd never have tried on. You'll say: "Well, I'll see what it looks like". Otherwise, you won't even try it on. You see, it can also open up things, looks that you wouldn't have thought of because you I've got to get undressed again, it's getting on my nerves. So already you've got a first impression, you put it on like this.'' (ID4)

Being able to try on more pieces is also seen as positively contributing to the use of the technology, in particular as it would provide a solution to the current ban in some shops of trying on more than six pieces at a time: *‘’I suppose that with this tool, we'll be able to try on a lot more clothes. […] I'm already annoyed sometimes that I can only bring six pieces when I'd like to try on ten. So I wouldn't be limited. And that's an important factor.‘’ (ID9)*

In the second case, participants estimate that improved vision and evaluation made possible by smart mirrors constitute another reason to adopt the technology as it enables better choices by giving a better idea of how an outfit would look. SMFT allows people to see their back, but also to see the whole garment in different lights representing different times of the day, which has a positive influence on technology’s acceptance. It has been demonstrated, as highlighted by Barta et al. (2023), that AR improves consumers’ shopping decisions and experiences. This can be attributed, in part, to AR’s ability to alleviate cognitive dissonance through its impact on perceived similarity and the confusion stemming from over-choice (Barta et al., 2023). Cognitive dissonance, as defined by Festinger (1957), refers to ‘’a psychological phenomenon that occurs when there exists a discrepancy between what a person believes and information that calls this into question‘’ (George & Edward, 2009). In the pre-purchase decision stage, cognitive dissonance can influence consumers’ intentions to buy products as it brings anxiety, due to information overload, prompting them to delay purchase decisions. Conversely, the absence of dissonance fosters a sense of calm and relaxed state, reinforcing purchase decisions (Barta et al., 2023).

AR mitigates pre-purchase cognitive dissonance in the pre-purchase stage by reducing cognitive load and the confusion induced by overchoice. Virtual testing provided by AR directly addresses this confusion by enabling consumers to narrow down their choices by limiting their options. Moreover, AR diminishes confusion arising from over-choice by minimizing perceived similarities between options. This dissonance reduction, facilitated by AR, contributes to consumers’ overall well-being during the decision-making process by reducing confusion and therefore enhances the shopping experience (Barta et al., 2023). However, it is worth noting that while AR can reduce dissonance by facilitating product viewing through virtual try-on, it may also exacerbate cognitive dissonance since it encourages consumers to try more products. This convenience and ease of use enabling more try-ons might result in some dilemmas for consumers (Barta et al., 2023).

Therefore, in the context of smart mirrors, all these elements represent an important factor mentioned by consumers since they generally give a direct idea of the suitability of the garment, and at the same time confirm any initial intuition that may emerge, especially when the desired garment is unavailable in the desired size. Besides, obtaining an unbiased opinion on what they are trying on is considered an important factor for respondents. For this reason, leveraging technology to bypass the influence of salespeople striving to make a sale is one motivation for consumers: *''I have the impression that the smart mirror will be more objective in the sense that it will show the garment in all its contexts. It may suggest other garments, but it will just show those and inform the consumer of what it could look like.'' (ID1).*

Therefore, we propose:

Proposition 3: The more the decision is perceived to be efficacy (reflected in opportunity enhancement and improved viewing and evaluation), the more likely consumers are to adopt SMFT.

3.3.2. Reasons against SMFT adoption

Alongside the reasons *for* the decision to use and adopt SMFT, there is also a range of reasons that would hinder consumers from accepting the technology. Among prior research, the study of reasons *against* SRT adoption is rather limited, which is a limitation addressed by this research. Past studies (Kazancoglu and Yarimoglu, 2018; Chuawatcharin and Gerdsri, 2019; Adapa et al., 2020; Oyman et al., 2022) have identified three main factors hindering technology acceptance: technology anxiety, perceived complexity and perceived risk. The first one, technology anxiety, refers to ''what people fear when thinking about using unfamiliar technology-related devices'' (Chuawatcharin and Gerdsri, 2019) while perceived complexity refers to ''the degree to which consumers perceive the SRT to be more complicated, difficult to use and needing more effort to integrate it into day-to-day shopping activities'' (Adapa et al., 2020). Perceived risk, on the other hand, refers to ''consumers' exhibited uncertainty about using a specific product/service due to the potential negative consequences that are expected to emerge from its adoption or use'' and can be derived according to 5 types of risk: time risk, psychological risk, financial risk, performance risk, and social risk (Adapa et al., 2020).

While some of these aspects were mentioned in the interviews, it is possible to establish certain nuances and in-depth explanations of these concepts. First of all, according to the interviews, these notions fall, in this research, into a broader concept of **technology concerns**

since they trigger concerns for consumers when adopting the technology. Based on the findings, this barrier to SMFT adoption can be derived into 4 dimensions: *privacy concerns*, *technology issues*, *technology mistrust*, and *technology complexity*.

The first dimension highlighted is privacy concerns. As smart mirrors are equipped with cameras, consumers are therefore concerned about images or videos recording during virtual or real fittings as well as personal data collection, use, and storage. Ignorance of these issues leaves consumers feeling less confident:

> *''Well, obviously, one major aspect of this technology is that, like everything else, what is going to be done with the data? They're going to have images of us, our bodies, our heads, all that. Where is this data going to be stored? What will be done with it? For how long will it be stored? Will it be used to work, perhaps, as a database, to work with another artificial intelligence when we may not be aware of it or agree with it. So that, I'd say, is an aspect that obviously comes into play.'' (ID1)*

These privacy concerns are a very important factor opposing consumers' decision to adopt and use SMFT and are not specifically mentioned in the prior research regarding perceived risk (Kazancoglu and Yarimoglu, 2018; Kaushik et al., 2020; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Ponte and Bonazzi, 2021; Lin, 2022; Perumal et al., 2022). Along with it, technology issues, which refer to consumers' apprehension regarding malfunctioning or breakdown in the technology, are also mentioned by respondents as a concern: *''If it breaks down, what happens?'' (ID21).*

While technology complexity has been mentioned as such through consumers' perceived difficulty in understanding and using the technology: *''Personally, I think that if it's difficult to get to grips with at first [...] if you have to spend a little time understanding it the first time, some people will get annoyed and say no need.'' (ID15).* Participants mentioned that this factor might hinder acceptance, particularly for a certain section of the population who are not used to using technology or who do not fully understand all the issues it raises as stated:

> *''I'd like someone to explain all the ins and outs to me before I use it, so that I'm not caught out by something I hadn't thought of. [...] Some people are scared of technology. I don't want to say that I'm really one of them, but I'm still wary when I don't know because I can't measure the consequences.'' (ID13)*

Regarding technology anxiety, respondents did not talk about it specifically but rather mentioned a certain mistrust in technology, particularly concerning its performance: *''Maybe a general mistrust. I'd like to make sure that it's the right one so that I don't come back afterward and have to make an exchange and, um ...complain about this technology because, in the end, it didn't reflect what I really felt when I tried it out.'' (ID22).*

Therefore, we can propose:

Proposition 4: The more consumers perceive technology concerns (reflected in privacy concerns, technology issues, technology complexity, and technology mistrust), the more likely they are to reject SMFT.

The second reason against smart mirror acceptance that has been raised during the interviews and that does not appear in prior research (Kazancoglu and Yarimoglu, 2018; Adapa et al., 2020; Roy et al., 2020; Peruma et al., 2022, Oyman et al., 2022) is **process inconvenience** which refers to consumers' perceptions of less productive and useful shopping experience. This factor can be derived in three dimensions according to the elements mentioned by the respondents. The first one is *time loss*, which can be defined as consumers' perception of wasted time that could result from using SMFT, particularly by having to look for mirrors in shops or the creation of queues that could result from its implementation. With the ability to try on more items, users might be tempted to try an endless number of outfits, potentially monopolizing the mirrors for an extended period. As a consequence, respondents consider that this technology is not going to help people buy faster or more easily which results in a rising concern regarding the availability and number of mirrors in-store:

> *''I mean, it would not really reduce the time that you would wait to try on clothes because obviously then you would need a lot of those mirrors, but there's going to be a queue to be able to use it and then if you've got like people trying on 50 clothes, it's going to be the same waiting time.'' (ID14)*

The effect of the time loss factor in hindering technology acceptance can be even more important in the specific context of parents with children. Respondents pointed out that due to the fun and game-like nature of the technology, children might want to try out everything. This could lead to a considerable waste of time for parents aiming for efficient shopping or could end in scandal if children are forced to stop:

''What might not help me with Skye is when she goes "no, no, again, again". She might spend too much time. It's like a game. It's a useful thing, but it's interactive and so I think it might not always be very productive because I'd know what color I wanted to wear, but a child will try out every possible and unimaginable scenario, so 4 hours later, you're still there and you haven't bought anything.'' (ID7)

As this factor and the specific contextual variable related to it represent a new element compared to what is in the existing literature, we can propose:

Proposition 5: The more consumers perceive time as wasted when using SMFT, the more likely they are to reject SMFT, particularly in the context of parents with children.

The second and third dimensions of process inconvenience go hand in hand. The first one is *sensory experience loss* while the second one is *fitting and accuracy concerns*. Sensory experience loss refers to consumers' apprehension and concerns regarding the feeling of the garment on oneself both in terms of material and fit which is an essential factor lacking in this technology. Therefore, respondents mention that SMFT cannot replace the real try-on as it is not possible to give this feeling during a virtual fitting:

''I think it's good because it allows you to see whether or not it would fit well or the look you get with it, but at the same time, I don't think it replaces a real fitting because you think it's fine, but in fact when you put it on you realize that it's itchy or that there's a button that's in the way, but the mirror won't tell you that.'' (ID28)

Garment's characteristics such as the material, cut, buttons, or pockets cannot be fully appreciated with a virtual fitting. Additionally, the finishing and quality of a piece of clothing (i.e. if it is damaged or has poorly done seams) and the actual color of the garment cannot be accurately assessed. These crucial elements are missing for consumers:

''When you don't try the garment on, you see how it looks on you, but you don't see a possible manufacturing defect in the garment. A seam that's not quite right. For me, before someone puts it in a bag, I generally look at all the seams to see if there's a thread that's pulled, a missing button, or something crooked.'' (ID13)

Several participants also expressed a fear of losing access to physical clothes, which is an important factor in rejecting technology. Given that many respondents emphasize the

importance of trying on clothes, they consequently suggested that the removal of clothes from store shelves would lead them to turn away from the technology.

Moreover, consumers feel fitting, and accuracy concerns due to uncertainties and apprehensions about technology's ability to provide relevant outcomes to help in purchasing decisions. Respondents especially highlight virtual try-ons' inability to determine the proper size fit, given individual body shape variations and differing size requirements across brands and models. This results in the inability of SMFT to answer all consumers' questions consumers during their decision-making process. Moreover, the technology functioning of superimposing garments onto the user's existing clothing also fails to offer a relevant and realistic preview, especially for items like tank tops and swimsuits, resulting in a misleading impression of how the garment will look on its own.

The effect of this factor of fitting and accuracy concerns is reinforced in the specific context of the season, especially winter. For example, when consumers wear several layers of jackets and jumpers but want to try on a summer dress, respondents doubt the technology's accuracy and consider this as a major barrier to adoption. This concern was validated by a participant with prior experience:

> *''[...] actually, like the quality of how it fit me, it wasn't like super perfect. You could tell that I wasn't wearing it, and you could see that it didn't fit properly, maybe on some parts of my body because also I was wearing a sweater so maybe that was a mistake that I should be more naked. So that's also maybe another thing with these mirrors that if you would have to stand there like with minimal clothes on so that it can really well reflect it on you because otherwise, I don't know ... if you're wearing a coat and you want to try a tank top, I don't know how that would fit.'' (ID27)*

Based on those findings, it can be noted that while previous research on SRT (Kazancoglu and Yarimoglu, 2018; Kaushik et al., 2020; Chuawatcharin and Gerdsri, 2019; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Ponte and Bonazzi, 2021; Lin, 2022; Perumal et al., 2022) highlights perceived risk and perceived complexity as factors leading to the rejection of the technology, it does not address the insufficiency of virtual try-on and the resulting need for in-person trials. Certain similarities can therefore be highlighted between the existing literature and the results derived from the analysis of the interviews, but new aspects have also emerged. Therefore, these findings suggest complementarity to obtain a

more comprehensive understanding of the smart mirror phenomenon in the retail sector. Based on that, and on the specific factors leading to SMFT rejection, we can propose:

Proposition 6: The more consumers perceive sensory experience loss and fitting and accuracy concerns, particularly in specific seasonal contexts, the more likely they are to reject SMFT.

Respondents mentioned that as such, the technology will not change the overall in-store experience, but would rather represent a complement, a plus to the basic consumer experience, without becoming the main experience. Therefore, in this perspective, the level of intelligence of the mirror can be seen as another contextual variable that could reinforce the rejection or acceptance of technology. Consumers will adjust their behavior and usage based on how advanced the mirror is. If the mirror has basic intelligence and only reflects how clothes look on the body, participants mentioned they would use it primarily as a tool for pre-selecting clothes to be tried on to save time by avoiding items that do not fit well and nothing more. Conversely, if the mirror is highly intelligent and can incorporate user inputs such as skin tone and body shape into its recommendations, consumers will emphasize its usefulness and integrate it into their shopping experience as a real partner that can directly indicate to them the type of clothes that look best as well as give real objective advice:

> *''Personally, I am a very bad shopper because for me, it's always very difficult to have an objective opinion of myself in an outfit. […] So often, when I need a particular outfit for a specific event, for example, a wedding or something like that, I go shopping with someone to get an opinion […] because I have this problem with my self-image and knowing what suits me. […] Once you can trust the mirror's opinion, I don't see why you wouldn't use it. If I go with someone to a store, it's not to have a salesperson saying 'Oh, but that looks so good on you!' when I actually look sick.'' (ID16)*

In this perspective, the mirror becomes a partner in decision-making by providing an objective and impartial opinion that users are seeking. Recent research (Jin & Zhang, 2023) illustrates that artificial intelligence (AI) recommendations are perceived as more competent than human ones for material products, likely because people believe AI-equipped technology can perform objective tasks. In the case of experiential products, human recommendations are favored over AI recommendations due to the perceived lack of human feeling. However, it is noteworthy that this study suggests that this preference diminishes when technology acts as an

assistant rather than a replacement for human recommendations (Jin & Zhang, 2023). Additionally, this study confirms that artificial intelligence is already functioning as a decision-making partner or interaction for recommendations in various domains, owing to its perceived ability to make more precise and efficient judgments than humans. (Jin & Zhang, 2023). It should be noted that the concept of AI viewed as a partner rather than a tool is a growing topic in the literature, raising questions about the extent to which AI can be a partner.

In their study, Schmidt & Loidolt (2023) assert that when it comes to interaction with artificial intelligence, recent research increasingly emphasizes the ‘’acting together‘’ aspect. AI-systems are perceived as more than mere instruments (Schmidt & Loidolt, 2023). The authors suggest that this perception becomes evident when considering how humans engage with smart machines. They argue: ‘’If a machine shows responses to a situation in a way that appears to make sense, it is easy to imagine that interacting with such a machine can give rise to the feeling that one is dealing with a partner.‘’ (Schmidt & Loidolt, 2023). However, they have demonstrated that one must be cautious about the terminology used to describe human-intelligence interaction, highlighting significant constraints that prevent AI-systems from becoming social partners in a strict sense, given the current state of technology (Schmidt & Loidolt, 2023). Therefore, it is stipulated in the article that ‘’even if humans perceive their interactions with machines as social partnerships and treat them accordingly, this alone is not sufficient for the establishment of a genuine social partnership.‘’ (Schmidt & Loidolt, 2023). The authors propose that while partnership between humans and machines is feasible in a trivial sense of coordination or collaboration and in a weaker sense of cooperation, true social partnerships, which they consider reserved for interactions between conscious agents, remain elusive (Schmidt & Loidolt, 2023).

Therefore, in the context of smart mirror, the ‘’partner‘’ relationship would result in enhanced shopping enjoyment and convenience, as users would feel more satisfied and confident with the outcome. Respondents indicated that with such a mirror, they would no longer need to try on clothes afterward as the technology could accurately determine the right size and fit based on their specific body shape. They also mention that it could be highly beneficial for people who do not know how to dress well. Based on those findings, we can propose:

Proposition 7: The more consumers perceive mirrors as intelligent, the more likely they are to adopt SMFT.

This specific case of highly intelligent mirrors raises questions about the role of the stakeholders, particularly technology, in the customer shopping process. With this advanced technology providing impartial advice and allowing customers to request different sizes or colors with a click, the role of the employee is increasingly called into question. If consumers no longer need to try on clothes, there is less need for employees to manage folding and shelving. On top of that, if the technology offers recommendations and opinions that users find valuable and relevant, to what extent is a shop employee still necessary? The mirror essentially takes on the role of the employee to some extent, impacting consequently the consumer-employee relationship. It is no longer a simple tool to help the consumer in the buying process, but a real shopping partner contributing to the consumer's informed decision. This is an element seldom considered in existing literature that raises important questions about the future dynamics of retail shopping.

In line with that, another important factor leading to SMFT rejection brought up by respondents during interviews and which does not appear in the existing literature on SRT (Roy et al., 2018; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Ng et al., 2021; Peruma et al., 2022) is **ESG** (Environment, social and governance) **concerns**. This barrier refers to consumer's apprehension regarding environmental and societal issues. On the one hand, *societal considerations* pose a barrier to consumers regarding SMFT acceptance. Respondents specifically mentioned concerns about job reduction. As this technology eliminates the need for trying on clothes, participants noted a reduction in work for employees, including fewer clothes to fold, but also reduced demand for assistance or advice since the technology offers a straightforward and efficient way to find answers. Moreover, respondents express concerns about the potential widening gap between boutiques and department stores following the introduction of SMFT as stated by a respondent:

''From a more societal point of view, I say to myself "Ah!" which, in any case, are already glaringly obvious between what we call the "mercière de Rodèze" and the big groups that will have the financial clout to be able to equip themselves, and so this means that we're going to ... that we risk to squeeze out all those who won't be able to use this technology. This means that we have to ask ourselves the question of the balance between small local shops, which are important for a certain type of population versus going all digital.'' (ID25)

On the other hand, participants are concerned about the *environmental impact* of technology use. This negative impact includes increased energy consumption, as the technology

relies on an electronic screen, cameras, and sensors that need to be powered by electricity. Additionally, the polluting industry it may fuel can lead to more waste, pollution through production, and other harmful environmental effects associated with the textile industry:

> *''That's it, and then you can say energy-wise because it will still run on electricity. So it's going to consume a lot of energy. So I'm thinking about that aspect. It's obviously not very environmentally friendly.'' (ID9)*

Therefore, these findings enable us to propose:

Proposition 8: The more consumers perceive ESG concerns (reflected in environmental concerns and societal considerations), the more likely they are to reject SMFT.

Alongside these concerns, it should be noted that while SMFT addresses certain concerns happening in the in-store experience resulting in a pleasant shopping experience, it can also conduct to **unpleasant shopping experience** on several dimensions that can hinder technology acceptance. First, *reduced shopping enjoyment* which refers to consumers' feelings of reduced enjoyment when engaging in in-store SMFT shopping since it takes some of the fun out of the experience:

> *''I find that it takes away some of the pleasure of retailing because seeing something in a shop, touching it, and then saying to yourself I'm going to go into a fitting room to try it on and see what it feels like. It's still fun for me.'' (ID2)*

This barrier to technology adoption can be further strengthened in the specific context of parents with children. The busy parent's inability to virtually try on clothes at the same time as looking after and supervising the children can make the experience more unpleasant and stressful.

Secondly, in line with potential job reduction, *customer care inconvenience* is highlighted as an obstacle to adopting SMFT. This barrier refers to the perceived lack of consumer support and contact, as participants point out the absence of assistance when needed. If there are no longer employees present in-store, consumers could find themselves frustrated if no one is there to help, especially in case of a breakdown. Additionally, in line with Kazancoglu and Yarimoglu (2018) in which the need for interaction was highlighted as a barrier in the context of self-checkout systems, our results further show that respondents do not like that implementing the technology would reduce human contact and the lack of direct advice or

assistance. This is considered as a factor hindering smart mirrors acceptance as stated: *‘’On the other hand, I think it would be a great shame to no longer have the opinion of a sales assistant [...] If we decide that this is supposed to replace the good sales assistant, I don't like that.‘’ (ID2)*

Alongside these concerns, it should be noted that while SMFT addresses certain hygiene issues, it also raises *contamination concerns* which refer to ‘’disgust that consumers feel when they are aware that an object has been physically touched by someone else‘’ (Bardhi & Eckhardt, 2012). Consumers perceive the technology as potentially unclean which hinders its acceptance. Since the mirrors are equipped with a touch screen for choosing garments to be tried on virtually, they are inevitably touched by many people representing therefore a contamination risk and generating apprehension about the tool’s cleanliness.

At the same time, given that the mirror can be seamlessly integrated into the in-store environment among the shelves, some respondents are reluctant to use it due to *social judgment*. As mentioned by Pitardi et al. (2022) ‘’embarrassment is typically related to what others may think of a person’’. Therefore, respondents mention that they might not feel comfortable at the prospect of standing in the middle of the shop and trying in front of everyone while potentially being watched or judged by others:

> *‘’I think I'd use it more if it was, for example, in the dressing rooms rather than on the shelves because when you're trying on a new item of clothing, you don't necessarily know if it suits you and you think if I'm in the middle of the shop and everyone sees me wearing something that doesn't suit me at all, I think I'd be a bit uncomfortable.‘’ (ID8)*

In this perspective, this element pointed out by respondents represents a contextual variable in the sense that in the context of private use (e.g. in the anonymity and privacy of the fitting room) they could use smart mirrors as no one is there while in the case of public use (e.g. in the middle of the shop) they hesitate to use it and express discomfort due to social scrutiny:

‘’ I think that if I know that there isn't a girl behind me watching everything I test ... it's true that if there's one in every fitting room, you don't have to worry about ... you just go about your life, you know. You don't have 52 people looking at you and saying ... making their little comment at the back saying "Well, she's hurrying along or ... um, it's ugly". Clearly, I think that if it's in the middle of shopping and I have to test it with the other people around, I'm not sure I'll do it. Well, maybe children ... if it's for children, yes, I'll probably use it for them, but not for myself ... clearly. [...] Because children are easier. They don't care.‘’ (ID28)

Based on those findings, we were able to extend the existing literature, especially regarding the need for interaction introduced by Kazancoglu and Yarimoglu (2018). As a result, we can propose:

Proposition 9: The more consumers perceive an unpleasant shopping experience (reflected in reduced shopping enjoyment, customer care inconvenience, contamination concerns, and social judgement), the more likely they are to reject SMFT, particularly in the specific context of parents with children or public use.

Finally, apart from an unpleasant shopping experience, a last factor that would lead to technology rejection is **marketing practices frustration**. It refers to consumers' concerns and feelings of frustration regarding marketing practices implemented with SMFT and can be derived in three dimensions. The first one is the *entry barrier* which refers to the consumers' preoccupation of not being able to use the technology due to a specific marketing process as stated by a respondent:

> *''The only thing that would bother me is if the mirror could only be used, for example, if you had a customer account with the seller, that's something that would clearly bother me [...]. And so, if there was that, clearly, it would be disturbing for me and I don't think it would even encourage me to use it.'' (ID1)*

The two other factors representing a barrier to technology adoption are *advertising concerns* and *fear of manipulation*. The first one refers to consumers' apprehensions of intrusive advertising practices that disrupt their shopping experience such as on-screen ads obstructing their view or personalized email spam filling their inbox. As for the second, the constant reminder that technology is just another marketing tool erodes trust. Consumers are aware that this tool is intended to aid sales, and are cautious about whether it genuinely enhances the buying experience or merely manipulates them into making purchases. This skepticism significantly impacts their willingness to technology acceptance which enables us to propose:

Proposition 10: The more consumers perceive marketing practices frustration (reflected in entry barrier, advertising concerns, and fear of manipulation), the more likely they are to reject SMFT.

4. Conclusion

4.1. Discussion and Theoretical Implications

Although Smart Mirror Fashion Technology is among the innovative forms of retail that physical stores can adopt to compete with e-commerce, only a limited number of stores have already adopted it. This technology is still relatively new and, as a result, research on the subject is limited (Alanazi and Alenazi, 2023). This is why retailers need to understand what drives consumers in their decisions to adopt or reject this technology during their shopping experience. While there is research in the existing literature on the reasons for adopting SMFT, these are mainly generic reasons for SRT acceptance developed using classic behavioral models such as TAM (Davis 1989) or HISAM (Van Der Heijden, 2004). This is why this research aims to study the reasons specific to SMFT adoption by looking at both the drivers and barriers to understand and explain the reasoning underlying consumers' adoption decisions.

The exploratory study conducted (n = 31) identifies a series of context-specific reasons explaining consumer decisions to adopt or reject SMFT (Annex 6). This research therefore highlights that while consumers see various reasons *for* SMFT adoption, several factors *against* its acceptance are not extensively covered in the existing literature. While previous studies in this field (Kaushik and Rahman, 2015; Kazancoglu and Yarimoglu, 2018; Roy et al., 2018; Kaushik et al., 2020; Chuawatcharin and Gerdsri, 2019; Perumal et al., 2022) have identified perceived usefulness, perceived ease of use and perceived enjoyment as key factors for technology acceptance, the exploratory analysis confirmed these factors but also introduced new ones. Three reasons for adopting SMFT were highlighted through this research: *convenience*, *pleasant shopping experience*, and *decision efficacy*. While shopping enjoyment was also identified in the research, some nuances were added to the concept, such as the fact that this factor is part of a broader reason *for* which is a pleasant shopping experience that also includes limited social contact and better hygiene. Regarding perceived usefulness and perceived ease of use, these factors are grouped and defined as convenience in this research.

At the same time, the study highlighted the existence of 5 reasons for rejecting SMFT: *technology concerns*, *process inconvenience*, *ESG concerns*, *unpleasant shopping experience*, and *marketing practices frustration*. In line with prior research that highlighted perceived risk, perceived complexity, and technology anxiety as barriers to SRT adoption (Kazancoglu and Yarimoglu, 2018; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Perumal et al., 2022), the findings extent this literature with additional factors opposing SMFT technology

which are ESG concerns, marketing practices frustration and process inconvenience. Some nuances have also been added to the concept of perceived risk and perceived complexity, as they are part of a broader concept identified as technological concerns, which bring together the various concerns that consumers may have about technology.

Furthermore, as mentioned in Behavioral Reasoning Theory (Westaby, 2005) and reflected in the results of this exploratory study, reasons *against* SMFT are not simply the logical opposite of reasons *for* its acceptance but constitute distinct factors that influence consumer adoption decisions. Therefore, they cannot be ignored. Retailers need to consider both the reasons *for* and *against* SMFT to gain a comprehensive understanding of consumer thinking and decision-making regarding technology acceptance and use. These counter-reasons, as shown, play a crucial role in the consumer's mind. Moreover, the exploratory analysis underscores that reasons *for* technology adoption can vary depending on the specific technology in question. While the existing literature often treats innovation in a broad sense without differentiation (Roy et al., 2018; Adapa et al., 2020; Roy et al., 2020; Fazal-e-Hasan et al., 2021; Ng et al., 2021; Peruma et al., 2022), this study provides specific insights into SMFT, rather than generic factors thereby offering a comprehensive understanding of consumer adoption decisions within the SMFT context.

When studying these factors, it is important to bear in mind that some mentioned by respondents are not directly related to smart mirror technology itself but rather to how it is implemented and integrated into stores (e.g. availability of mirror, advertising concerns). These factors will therefore vary from one retailer to another and will not necessarily be perceived as obstacles to adoption and use in the same way. As a result, retailers must consider these factors and integrate the technology appropriately to prevent them from being seen as barriers by consumers.

Finally, this exploratory study highlighted the existence of some specific contextual variables that reinforce the effect of certain reasons *for* or reason *against* SMFT acceptance. For example, the qualitative study results suggest that the context of parents shopping with children reinforces both the positive impact of convenience on technology adoption and the negative impact of process inconvenience on its rejection.

4.2. Managerial Implications

Based on these results, it is possible to derive some managerial implications that might be important for retailers to take into account. First, thanks to the reasons *for* and *against* SMFT adoption derived through this analysis, retailers can understand consumers' decisions to use or reject mart mirrors in their in-store shopping experience. Certain specific contexts have been identified as reinforcing the effect of the associated factor, making them crucial for retailers to consider in their decision-making process. For example, we have highlighted that using SMFT in public spaces makes consumers reluctant to adopt the technology due to fears of social judgment. Therefore, we recommend that retailers aiming to implement smart mirrors should consider placing them in private areas such as fitting rooms, to address privacy and judgement concerns.

However, as we have shown, privacy concerns are also a very important factor for consumers in rejecting SMFT. Therefore, retailers also have to consider that, especially if they aim to place smart mirrors in the fitting rooms as users might feel uncomfortable if they have to try on in front of it. It is therefore essential for retailers to guarantee the confidentiality and security of data or to inform consumers in the event of data capture by clearly communicating how data will be used and how long they will be stored to respect users' privacy, reassure them about these concerns and remain compliant with all relevant legislation.

In addition, while consumers appreciate having limited social contact, they will feel frustrated if they encounter a problem and there is no employee to assist them. Additionally, some consumers still desire human contact and access to help or advice when needed. Therefore, if a retailer is considering reducing the number of employees or jobs, they should ensure that they retain someone, at least initially, particularly to help customers when they first use the machine, as they express concerns about complexity. Interviewees emphasized that having someone explaining how the machine works the first time is crucial to avoid wasting time resulting in potential rejection of the technology in favor of familiar methods. With this in mind, retailers should provide specific training on how technology works to train their staff and therefore, enable them to assist customers to navigate and use SMFT effectively.

Finally, consumers were enthusiastic about the recommendation functionalities. They felt, particularly in the case of a mirror of high intelligence, that this would be useful, especially for people who do not know how to dress properly or who have difficulty determining their style. They also highlight one advance that they would like to see incorporated into this

functionality, which is the integration of filters such as being able to tell the machine the maximum budget that you would like to spend or the type of occasion for which you are looking for a garment. This innovation could enable retailers capable of implementing it to stand out from their competitors and meet their customers' expectations.

However, although consumers are highly interested in recommendation functionality, retailers need to bear in mind that consumers are not fooled and will easily realize when the tool is designed as a marketing tool to make them buy more. Given that this is an aspect that consumers keep in mind, retailers need to design the technology so that it is neutral, objective, and non-intrusive, as this is what consumers are looking for. In the event of it being a little too marketing or misleading, consumers have announced that they will turn their backs on it.

4.3. Limitations and Suggestions for Future Research

Although this work has been written scientifically following a rigorous procedure, certain limitations should be noted and taken into consideration when analyzing and interpreting the results. Moreover, on this basis, certain avenues of exploration for future research can be proposed.

Firstly, although the sample for the qualitative study was relatively large (n = 31), it should be noted that the interviewees were mostly people who had limited experience with the technology in real life due to the limited development of the technology and limited access to people who might have tried it. Only one of the interviewees has tried out the smart mirror that has been developed so far. This may therefore influence the reasons given by respondents since they do not know how the technology works.

Secondly, although the participants were spread over a wide age range and approximately the same number of men and women were questioned, it can be pointed out that the majority of respondents are from Belgium which could constitute a certain bias in the reasons given due to cultural similarities. Therefore, one avenue for further research could be to study and evaluate the reasons *for* and *against* acceptance of this technology in other parts of the world, to take account of different cultures and make the results more generalizable. A cross-country comparison might also be of interest to determine whether cultural factors come into play, as well as to compare perceptions and acceptance of SMFT in different contexts, both cultural and geographical.

A third limitation is that the company manufacturing the technology did not accept to be interviewed. As a result, no specific insight into how the technology is built and operates could be derived which would have brought an interesting perspective to the study. This could therefore trigger an approach for future researchers more in line with the retailer rather than the consumer as it might be interesting to study the extent to which retailers would be willing to implement this technology in their physical stores. Along the same line, as a suggestion for future research, a logical next step of this study carried out is to empirically test the absolute and relative importance of the identified reasons in driving adoption. This can help define if there are some combination of factors that might be crucial in the adoption or rejection of SMFT. As a result, it will enable retailers to gain a more global understanding of the phenomenon and the consumer decision-making process, to determine whether there are any factors on which they can play to influence customer behavior. Furthermore, research in the form of experiments could be carried out to determine what the factors are for successful implementation and thus provide retailers with the codes on how to integrate the technology into their in-store environment to maximize its acceptance and use.

Finally, some longitudinal studies could be developed over a long-term period to study the evolution of consumer behavior over time about the use of the technology. This could also include exploring any advances in the development of the technology and the influence these might have on the acceptance and adoption of SMFT, particularly through the development of AI.

In conclusion, although this research has certain limitations that are important to take into account when evaluating the results, it also provides innovative results in the field of research on the SMFT phenomenon. This opens the door to new research in the future intending to broaden the understanding of this technology and its evolution in the future by, therefore, contributing to the existing literature on smart retailing.

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Appendix [1]

[1] see Appendix document

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