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Management

Chair of Omnichannel approach to retailing

The human-technology relationship in the retail context

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Academic Year 2023/2024

TABLE OF CONTENTS:

Abstract *2*

Introduction *3*

Theoretical background *6*

2.1 The application of technologies across customer journey *6*

2.2 Benefits and limitations of autonomous shopping systems *10*

2.3 Consumer behavioral analysis versus technology use *14*

2.4 Technology adoption from the retailers' perspective in the omnichannel context *18*

2.5 My research contribution *21*

Research *25*

3.1Research method *25*

3.2 Findings *28*

3.3 Discussion *35*

Conclusion *38*

References *39*

Appendix I *42*

Abstract

This thesis explores the human-technology relationship within the retail context, with a specific focus on how emerging technologies can enhance consumer experiences in physical stores. The adoption of an omnichannel approach in retail has evolved from a strategic option to a necessity, driven by the increasing expectations of modern consumers. Through a comprehensive analysis of technologies applied throughout the customer journey, this research identifies the critical factors that facilitate effective interactions between consumers and digital systems, thereby improving both operational efficiency and customer satisfaction. The methodological approach involves qualitative interviews with 15 consumers to gain deeper insights into their perceptions and expectations regarding in-store technology usage. The findings reveal that while technologies that expedite and simplify the purchasing process are highly valued, concerns regarding perceived complexity and the reduction of human interaction persist. The research underscores the importance of designing technological solutions that are not only advanced but also accessible and intuitive for all consumers.
In conclusion, this research contributes to the understanding of the dynamics governing technology adoption in retail by offering practical recommendations for retailers on how to effectively integrate digital technologies within physical environments. This integration aims to enhance the overall customer experience and adequately address the evolving needs of consumers.

Introduction

The retail sector is one of the most dynamic and innovative in the modern economy, constantly driven by the need to adapt to rapid changes in consumers, technology, and society. Omnichannel retailing, once perceived as a strategic option, has now become an essential requirement for retailers who want to meet the needs of modern consumers. Research conducted by BVA Doxa in collaboration with Salesforce on retail evolution confirms this trend: out of a sample of 1012 Italian consumers, 68% consider themselves to be more demanding than 4-5 years ago, paying more attention to factors such as ease of purchase (50%), digital and innovative services offered in-store (49%) and the professionalism and empathy of sales staff (46%) (BVA DOXA & Saleforce, 2024). The importance of an integrated and seamless shopping experience emerges clearly, with 88% of consumers considering it crucial for a brand to offer omnichannel shopping experiences. According to a study cited by Il Sole 24 Ore, 73% of customers use multiple channels to shop, expecting an integrated and consistent experience between the online and offline worlds. This phenomenon underlines how the shopping experience is at the heart of retailers' strategies, with physical shops being transformed into experiential and immersive spaces. Furthermore, data from The Future of Commerce reveal that 74% of consumers prefer to spend money on experiences rather than products (Davalli, 2023), pushing retailers to invest in in- store digital technologies, such as virtual assistants and digital payment systems, to improve personalization and customer loyalty (Salvetti, 2019). This investment is particularly appreciated by 48% of consumers who value specific recommendations, and 44% who recognize the importance of retailers' advance knowledge of their needs (SMC Consulting, 2024). In Italy, retailers have significantly increased their investment in digital, from 2% of sales in 2020 to 3.1% in 2023, in response to a rapidly changing consumer environment. The value of online shopping in Italy reached EUR 35 billion in 2023, an 8% increase over the previous year, demonstrating how digital is playing an increasingly crucial role in retailers' development plans, with the aim of simplifying and enhancing the customer experience (Crisantemi, 2024). However, the BVA Doxa-Salesforce research also highlights some challenges: for 7 out of 10 consumers, many brands are still distant from offering a satisfying level of integrated and fluid solutions. Nevertheless, 1 in 2 consumers express confidence that they will have better shopping experiences in the near future. This optimism reflects the

realization that, despite the progress already made, there is still a lot of room for improvement in the integration between channels and the adoption of innovative digital solutions, which are crucial to meet consumers' growing expectations.

The identified research gap is that, although the existing literature has explored in depth the impact of emerging technologies such as augmented reality (AR), virtual reality (VR), chatbots and autonomous systems on the customer experience and the operational efficiency of retailers, there is a lack of studies examining in detail the specific factors that facilitate and enhance the interaction between humans and technology in physical shops.

In particular, while current research tends to highlight the general benefits of technologies and the difficulties associated with their adoption, such as perceived complexity and psychological and cultural barriers, it does not address in depth which specific elements of the technologies themselves are key to enabling effective and satisfying interactions with consumers. This includes, for example, the usability of interfaces, the adaptability of technologies to different demographic profiles and their integration into the in-store experience in an intuitive and non-intrusive manner.

The research gap is narrowed on two fronts: on one hand, there is a limited understanding of the specific technological features (such as ease of use, personalization, and interactivity) that are crucial for optimizing interaction in retail contexts; on the other side, there is a lack of in-depth knowledge of consumers' expectations regarding the use of such technologies in physical shops. These aspects are crucial not only to foster technology adoption, but also to maximize their positive impact on the customer experience.

The results of this research emphasize the need to develop technologies that are not only advanced, but also readily accepted by users. Key factors such as ease of use and personalization were identified as fundamental to improving human acceptability of these technologies, thus facilitating a more effective and satisfying relationship between consumers and digital systems within retail environments. Furthermore, the study highlighted specific areas for improvement in this human-technology interaction, providing insights to optimize the integration of digital tools to promote wider and more informed adoption.

In conclusion, this research aims to fill the existing knowledge gap by offering a comprehensive analysis of the enabling factors that support not only the positive interaction, but also the seamless acceptance of technologies in retail contexts. The insights derived will provide a strong basis for the strategic implementation of tailored technology solutions, ultimately improving the synergy between human users and technology in physical retail spaces and effectively responding to evolving consumer needs.

Theoretical background

2.1 The application of technologies across customer journey

The aim of the omnichannel approach in retail is to connect consumers with products and services to optimize customer satisfaction.

The adoption of emerging technologies enables the creation of highly consumer-focused experiences. To identify current enabling technologies, it is essential to analyze the stages of the customer buying process along the customer journey, as well as the actors involved and their respective functions.

Previous studies have examined the correlation between the channels used by companies, the involvement of these and customer choices.

Omnichannel customer journeys are inherently individualistic but driven by effects that apply to any single interaction, sequencing effects, and customer journey patterns. The latter pertain to sections of the journey that cover multiple interactions and include both research shopping and the novel impersonalization/interactivity reduction effects (Barwitz N. &., 2018).

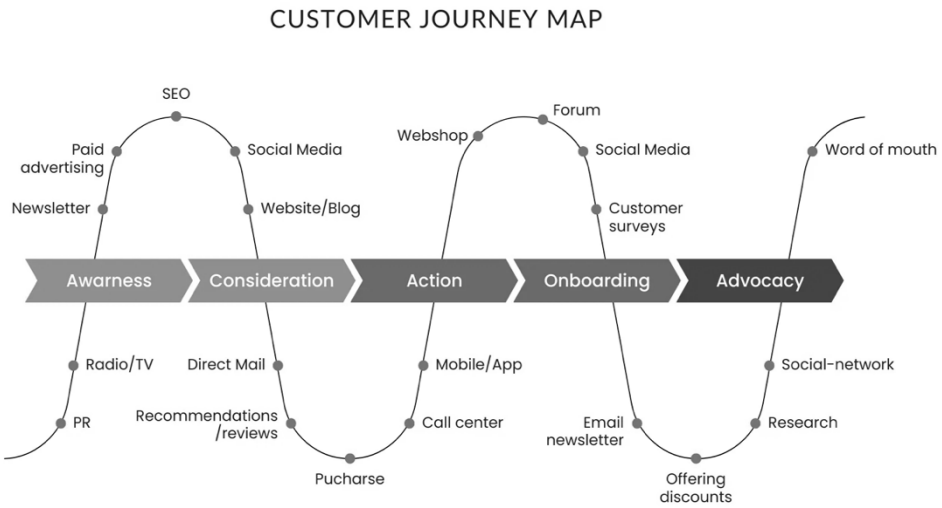

Figure 1: *Customer journey map*

Source: survalyzer.com

The importance assigned to different channels changes across the buying process and depends on the goals that customers pursue. Along the customer journey, different

touchpoints designed to attract the user's attention are incurred. Three key moments can be identified in the customer journey: the pre-purchase phase, the actual purchase of the product or service, and the post-purchase phase. Considering the information and purchase stages in the customer journey, it's possible identify three segments: multichannel enthusiasts, uninvolved shoppers, and store-focused customers (Konuş, Verhoef, & Neslin, 2008). This analysis has been replicated and extended to include the post-purchase phase, which leads to an expansion to six clusters, indicating the increased complexity when considering larger portions of the actual customer journey (De Keyser, 2015). Wang et. al (2014) identified two segments, innovative and conventional customers, based on their online versus offline channel use during the pre-purchase and purchase phases (Barwitz N. &., 2018).

Through the integration of multiple physical and digital touch points, omnichannel appears as an essential element for brands desirous of maintaining a competitive advantage in the marketplace. The goal is allowing customers to make purchases or interactions with the company from any location and device. Convenience, customer satisfaction and experience are the key elements that characterize the various stages of the buying process.

By interlinking multiple touchpoints, adopting the latest technologies and applying artificial intelligence, customers can enjoy engaging experiences, while businesses can collect valuable data to segment and anticipate consumer needs.

Technological innovation simplified the integration of these touchpoints; however, it can be an obstacle when using a tool or using a service becomes complex for users with limited technological skills.

The role of technologies is central in the phygital experience that brands want to offer to consumers, and it is based on three key principles: emotional experiences, behavioral insights, and social dynamics. Understanding the emotional journey of users is essential to ensure compelling digital experiences. This requires in-depth analysis of consumers' behavioral patterns while browsing online.

Today's new technology enablers are many and include connectivity through wireless communication, positioning, and user interface mapping and design. The combination of these elements, and more, represent most of the technologies employed by consumers during the buying process, including e-commerce, QR codes, applications, physical

stores, and the integration of Augmented Reality (AR) and Virtual Reality (VR) systems to assist customers in purchasing. Various applications are discussed below:

• Virtual product demonstration: Augmented Reality (AR) and Virtual Reality (VR) enable virtual displays of products, providing an immersive and informative experience for customers. This is achieved not only using interactive displays, but also in physical stores, where retailers can provide personalized assistance through the use of these technologies.

• To optimize the experience inside physical stores, the use of Augmented Reality (AR) is adopted to integrate additional digital elements into the surrounding environment, taking advantage of the camera. At the same time, Virtual Reality (VR) replaces the real environment with a simulated one, often requiring the use of viewers that enable immersive 360-degree viewing.

• AR shopping apps: allow users to sample the "try on" function, which offers the opportunity to try on eyewear, makeup and furniture directly in the context of their own homes, thus facilitating the purchase decision.

• Interactive packaging: augmented reality can be integrated with a product's packaging to provide additional information.

Along the buying process, other technologies are implemented to provide specific services, particularly related to e-commerce platforms. The choice by users to adopt different systems allows companies to conduct a more detailed analysis of consumer needs, facilitating the development of effective marketing strategies. An example is the offering of immediate delivery services through digital platforms, which helps to increase customer satisfaction. The click & collect is a shopping model that takes advantage of the benefits of the cross-channel approach, aiming at the integration between one of the online channels, namely e-commerce and the physical channel, the point of sale. The click and collect model attests to the transformations that have taken place in recent years in the retail world, which has aimed to adapt to new technologies and consumer expectations, offering solutions designed to make the shopping experience increasingly simple, satisfying and in line with the different needs of customers (Inside marketing, s.d.). In addition, in the e-commerce and applications arena, chatbots have been introduced, driven by AI, automated rules, natural language processing (NLP) and machine learning (ML), chatbots process data to provide answers to requests of all types

(Oracle, s.d.). This system allows companies to save costs and provide 24-hour customer support by answering questions and reducing the need for a human figure. In conclusion, it is crucial to highlight the role of recommendation agents in e-commerce. These systems have significant importance not only for retailers, but also for customer satisfaction, since by analyzing users' browsing and purchasing history, these algorithms can suggest products that are likely to be of interest to individual customers (Xcally, s.d.). The recommendation system thus represents a form of autonomous artificial intelligence that not only suggests personalized products online, but also assists companies in sending personalized emails and promotions, adapting to the recipient's preferences, and contributing to their loyalty.

Several studies have shown that the adoption of artificial intelligence not as a single entity but as a set of related technologies in consumer purchase decision making, especially in the context of e-retailing, can provide a positive customer experience. This is achieved by analyzing business data and forecasting future purchases. As per utility theory, artificial intelligence helps consumers choose best possible alternatives in less time at an affordable cost. Studies have further opined that artificial intelligence enabled e-retailing assists consumers in intelligent search, i.e., identification and selection of the most suitable and appropriate out of the available products (Bhagat, Chauhan, & Bhagat, 2022). According to Pantano and Pizzi (2020), artificial intelligence has emerged as a tool which filters information for targeted customers and provides them with desired solutions (Bhagat, Chauhan, & Bhagat, 2022).

In addition, numerous research has shown the correlation between trust and awareness during the online purchasing process: consumers having faith in e-retailing will more consciously choose the online mode and make the purchasing decision favoring e-retailing. Consumers reject those sites or online shopping sites that do not have artificial intelligence–enabled technology in them because those organizations failed to develop faith in customers. The use of artificial intelligence has enhanced the satisfaction level of consumers, as it has provided them with a shopping experience in a better, personalized manner (Bhagat, Chauhan, & Bhagat, 2022). The adoption of artificial intelligence has been shown to be gaining wide acceptance by influential groups such as family, friends, and society. Trust in AI is strongly correlated with the ease of use of e-retailing, and various studies indicate that this ease of use is directly associated with consumers'

purchase intentions. In brief artificial intelligence–enabled technology not only meets consumers' imaginations through its creativity but also enhances the consumer experience through online purchasing. The use of artificial intelligence has made many tasks of consumers much simpler, like searching for products, comparing features of a product with those of a product by its competitors, seeking in-depth know-how about the product and so on (Bhagat, Chauhan, & Bhagat, 2022).

2.2 Benefits and limitations of autonomous shopping systems

Over recent years, there is evidence of an increase in the incorporation of "smart" technologies within retail stores to optimize daily operations and improve the customer experience. These include self-service technologies (SST), radio frequency identification systems (RFID), interactive displays, touch screens, and self-check-out features (as in the case of Amazon Go). Essentially, the concept of "smartness" is linked to enhanced processes and efficiency from the retailers' side, and increased satisfaction and utility from the consumers' end (Sujana Adapa, 2020).

Transformations in the retail sector, both at the macro and micro levels, is happening with faster than expected, thus posing a pressing need for retailers to actively defend their position in the market in an environment of extremely tight competition. The concept of smart retailing and autonomous shopping is closely related. People are looking for fast and intelligent service, supported using autonomous technologies. Their unique qualities, autonomous retail technologies change consumer shopping processes by supporting or making various decisions for the consumer. For example, as artificial intelligence (AI)-based assistants learn through communication with customers, they become able to make suggestions to and even decisions for a customer, such as when and how many items to order. Moreover, autonomous technologies accomplish tasks during in-store shopping, such as adding objects that customers have selected in the store to their shopping apps, thus changing the system of conventional checkouts (Sohn, 2024).

Basically, objects are considered intelligent and autonomous when they communicate independently without human intervention.

Research conducted on this topic has generated a diversity of opinions among consumers, highlighting both the benefits and limitations of these technological approaches. Areas examined include customer service, automating payment, automating delivery. Among the positives, autonomy in the purchasing process promises to reduce costs, as the system can compare prices from different retailers and order products at the most advantageous time, eliminating the need for decision-making and offering additional benefits such as decreased cognitive trade-offs. In addition, these systems promise unprecedented levels of ease of use and convenience, which are powerful drivers of adoption. Convenience, defined as consumers' perception of time and effort that can make other options unthinkable. Has been described as the most underestimated and least understood force in the world today (Wu, 2018). Previous research has shown that convenience emerges as the main determinant of smart product adoption, overtaking technology trends and time savings. To incentivize consumers to take a more proactive approach to innovation and its applications, it is essential that retailers are able to persuade customers about the benefits of implementing technologies.

Moreover, technologies will only be effective when users are motivated to adopt them (Davies, 2011). According to Berman and Evans (2006) technology is beneficial to retailing relationships if it facilitates a better communication flow between retailers and their customers, as well as between retailers and their suppliers. New technology has improved the consumer supply chain by reducing distribution costs and improving availability of products to the consumer. Finne and Sivonen (2008), McGoldrick (2002) and Reardon et al. (1996) consider technological solutions as the opportunity to increase labor productivity because staff cost is the largest single element of operating costs for the majority of retailers (Renko & Druzijanic, 2014).

Several negative effects and limitations have been identified regarding the adoption of the autonomous shopping system and related technologies. A few of the factors that hinder their implementation are the lack of user preparation, often due to demographic characteristics such as age or socioeconomic status. Barriers to adoption are often not only functional but also psychological and cultural (Antioco & Kleijnen, 2010), (Schepers & Wetzels, 2007). Thus, consumers may value the benefits of a new technology but may nevertheless not adopt it because of how they feel about the technology. This is in line with research highlighting that consumption is not only driven by functional aspects but

also by playful and fun aspects (Holt, 1995); (Okada, 2005). Identifying and categorizing these “hidden” barriers to adoption is especially important for autonomous shopping systems due to their novelty and unique features, which in turn has implications for the firms providing these systems.

Research in marketing has shown that consumers may resist autonomous technologies for various reasons. For example, research has shown that perceived complexity and perceived risks (e.g., performance risks) may limit the adoption of autonomous products (Rijsdijk & Hultink, 2003). Specifically, highly autonomous products were perceived as riskier and more complex, with perceived risk negatively influencing consumer valuations. In addition, innovation characteristics such as perceived uselessness and intrusiveness can increase consumers’ resistance to these technologies (de Bellis & Johar, 2020).

Below the different limitations have been classified into various categories:

• Loss of control and autonomy: consumers like to believe that outcomes depend on their actions rather than on fate or external forces. For this reason, having control over purchasing decisions generates a sense of satisfaction, since in daily life there is often limited control over one's actions and their consequences. The striving for control is closely linked to individuals’ need for and sense of autonomy, an innate psychological need and one of the key characteristics of human self-awareness and motivation (not to be confused with a technology’s level of autonomy) (de Bellis & Johar, 2020).

• Limitation of meaningful experience: autonomous shopping systems not only threaten consumers' perception of control but can also deprive them of meaningful experiences and the ability to learn from them. Experiences, understood as sensory perceptions and emotional sensations in the context of consumption processes, are recognized for their ability to enhance consumer well-being more than material goods, as they can generate experiential gratifications. Such gratifications, in turn, are related to skill development, stimulate creativity, and promote a playful form of discovery.

• Loss of individuality and identity: users are worried that autonomous purchasing systems are not effectively able to take people's individual characteristics into account as they individuality relates to the inherent human motive of perceiving and portraying oneself as being separate from other people, with numerous studies showing that

consumption allows for distinction from other individuals (Snyder, 2012); (Tian, Bearden, & Hunter, 2001).

• Cultural elements: these factors influence and limit the adoption of autonomous purchasing systems along the customer journey. This phenomenon occurs from the moment people adopt different approaches to technologies based on their cultural roots. For example, in Japan, robots are considered an integral part of the system and daily life, not just for their functionality.

In the study conducted by Emanuel de Bellis & Gita Venkataramani Johar (2020), following the identification of adoption barriers, targeted interventions were identified that companies can experiment on. The following table suggests possible actions to overcome psychological and cultural barriers in reference to the autonomous purchasing system. Physical product and service level are distinguished, which may require different interventions.

Barriers	Interventions at the physical product level	Interventions at the service level
Control and autonomy	Anthropomorphize product and packaging to increase feelings of ownership	Frame system as control-increasing in marketing communication to ensure decision power
	Display technology in physical store; provide assistance and allow for extensive testing at point of sale	Allow for choices and integrate intervention options to prevent perceived disempowerment
	Provide money-back guarantee to increase consumer confidence	Be transparent why and how certain (important) decisions were made
Meaningful experiences	Highlight busy everyday life and time freed up by technology	Foster consumer learning in identity-relevant domains (e.g., by use of gamified elements)
	Advertise meaningful activities and experiences that can be undertaken instead of manual tasks	Advertise educational value to promote experiential growth
	Do not devalue daily chores in advertising and do not replace skills that are key to self-signaling and identity	
Individuality and identity	Foster consumer interactions on online social networks on unique outcomes achieved	Allow for consumer interaction to foster creativity
	Advertise ability of technology to match unique consumer personality	Advertise unique decisions and personalized solutions to foster customer centricity
	Provide opportunity to mass-customize product features (e.g., related to appearance or functionality)	Set pricing that allows for feelings of individuality
Social connectedness	Promote electronic word of mouth and incorporate other users into consumption experience	Integrate gamification and other interactive elements to foster community building and customer engagement
	Ensure social presence at time of purchase by sales on online social networks and for group purchases	Strengthen symbolic value of brands to transport feeling of connectedness
	Promote online reviews that emphasize the social character of technology	Implement measures especially for segment with high need to belong (e.g., as inferred from online social networks)
Culture	Advertise effort that can be put into other activities during freed-up time in markets that value effort and hard work more (e.g., India)	Advertise decision autonomy and ensure transparency in Western markets
	Leverage context effects and match autonomous features to prevalent culture	Advertise accuracy of technology and understanding of varying preferences in Eastern markets
		Implement measures to increase individuality and connectedness in Western markets

Table 1: *Possible intervention for firms to reduce barriers to adoption by barrier and intervention level.*

Source: E. de Bellis, G. Venkataramani Johar / Journal of Retailing 96 (1, 2020) 74–87

New technologies affect the customer journey in various ways, as barriers to adoption of autonomous shopping systems, become relevant at different stages of the consumer journey, and interventions are most effective when applied at the right times.

1. Pre-purchase phase: advertising and promotions reduce perceived threats by increasing awareness and familiarity with autonomous technologies in physical and online stores. Retailers can start with products that devolve manual tasks and gradually introduce autonomous decision-making elements.
2. Purchase phase: it is crucial to reduce the uncertainty associated with the autonomous shopping system by aiding at the point of sale through vendors or chatbots and ensuring that consumers feel in control of their purchase.
3. Post-purchase phase: sales and usage data help identify and overcome usage barriers, aiding, and improving the consumer experience, increasing retention and loyalty.

2.3 Consumer behavioral analysis versus technology use

It can be seen that the scope of application of artificial intelligence is wide: “from the automatic launch of orders to suppliers to the logistics of goods, from the receipt of products within the commercial network to their merchandising on the shelf, from significant changes in the buying and consumption habits of the demand carriers to the trader's communication with his clientele, from the reduction of waste in the commercial network to the elimination of waste in consumption (Dinu, 2021).

The bond that has been created between the consumer and smart technologies represents the consequent reinvention of retail organizations, implying the adoption of new models and behaviors that consider the new technological integration.

It is critical to understand how humans perceive and interact with technologies, both in online touchpoints and in the customer experience inside physical stores. Research conducted by Tiutiu, M. & Dabaija, D. (2023) showed that millennials are willing to spend more on a product if they can have an authentic and memorable in-store experience. They appreciate aspects such as decorations, music, cleanliness, and space between shelves. Innovation and technology play a crucial role in retail, as stores are constantly looking for ways to capture customers' attention. For example, stores with smart mirrors

allow customers to receive personalized information about the item of clothing they are trying on, such as how often it can be worn or how it matches the rest of the person's wardrobe. Thus, the customer experience will change significantly, the customer journey acquiring other values and allowing artificial intelligence to intervene in the different stages of the purchase process, so that the customer experience can be maximized. (Tiutiu & Dabaija, 2023).

The study conducted by J. Kim et al. (2023) aims to explore the perception of individuals' use of artificial intelligence, with reference to interaction with robots. This study builds on previous work which identified two types of interpersonal behaviors adoptable by individuals: the performance-oriented style, characterized by a functional orientation, and the relational style, with a social orientation (Forsyth, 2014). It is evident that completion of a task and maintenance of a social relationship are two important goals in a communicative exchange but with different orientations and objectives. The research shows that from the moment the social aspect is compared to the functional aspect, people tend to prefer the functional orientation, as technology is used, for example, for daily tasks, while only 5 percent of the research sample indicate the social aspect (such as providing entertainment or companionship) a positive factor.

In fact, through the technology adoption model (TAM) it is possible to observe two variables that explicate why users use technologies, in other words, based on the perceived usefulness of a technology and its ease of use.

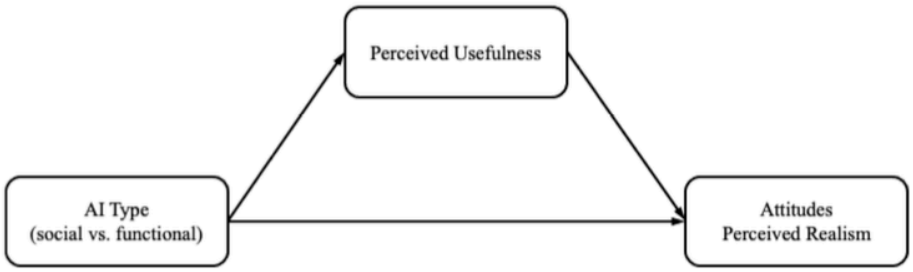

Figure 2*: The mediation model.*

Source: AI as a friend or assistant: The mediating role of perceived usefulness in social AI vs functional AI. Telematics and informatics.

This research shows how the perceived utility is represented by the mediator, specifically, the reason why people would have more positive attitudes and stronger perceived realism of functional AI than social AI (H1a-b) is because of perceived usefulness of AI. Taken together, the study proposes the following hypothesis (see Fig. 1): Perceived usefulness of AI serves as a mediator such that functional AI, compared to social AI, induces stronger perceived usefulness of AI, which consequently fosters more positive perceptions about the AI, such as (a) attitudes toward AI and (b) perceived (Kim, Merrill Jr., & Collins, 2021).

Based on the TAM and the TR (technology readiness) models, i.e., the predisposition to accept and use new technologies to achieve personal goals, the TRAM (technology readiness and acceptance model) was designed. It examines technology adoption by considering both individual cognitive readiness and technology-specific factors. The latter approach has previously been used to analyze the adoption of new technologies. However, recent research on artificial intelligence adoption focuses primarily on technological variables, neglecting consumer readiness.

TRAM is used to examine the adoption of new technologies in different sectors and is considered as a key study for the implementation of the AIPARS model.

The study conducted focuses on the use of artificial intelligence in operated retail stores and how it has affected the physical retail sector. AI can help in anticipating customer demand, automation of store operations, customer engagement, customer personalization and price optimization. AI has already improved 50% efficiency in the assortment, 20% stock reduction and a 30% increase in online sales of retailers who are using AI tools (Pillai, 2020).

This research, building on previous models, identified how innovative technologies in stores influence consumer behavior through three variables:

1. Perceived enjoyment (PEJ): previous research states that perceived enjoyment value occurs when users tend to be involved in using technology and experience satisfaction in using it to make purchases.
2. Personalization: this refers to a retailer's ability to provide products, services, and a sales environment customized to customers' individual needs. In the context of online sales, this refers to a website's ability to adapt to customer preferences, considering that many consumers prefer personalized products over standardized

ones. AIPARS technologies provide personalized purchase recommendations and assistance through chatbots, in-store digital screens, and mobile notifications. Personalization, therefore, is a significant advantage for different touchpoints, physical and digital, using AI technologies, facilitating personalized shopping experiences.

3. Interactivity: is defined the extent to which users can participate in modifying the form and content of a mediated environment in real-time (Steuer, 1992); (Ballantine, 2005). INY is the customers' belief to the level to which they can interact with the seller and how they feel engaged due to the interaction (Thamizhvanan, 2013). [...] AIPARS technologies facilitate an interactive environment by guiding the customers regarding the product location, usages, discounts, price and products available in the store through mobile apps and alerts (Kimberly, 2016).[...] Interactivity is one of the important strategies to attract customers by the retailers which can be achieved through AI technology (Berman B. , 2019). [...] The AIPARS environment is interactive, which will surely impact consumer shopping behavior (Pillai, 2020).

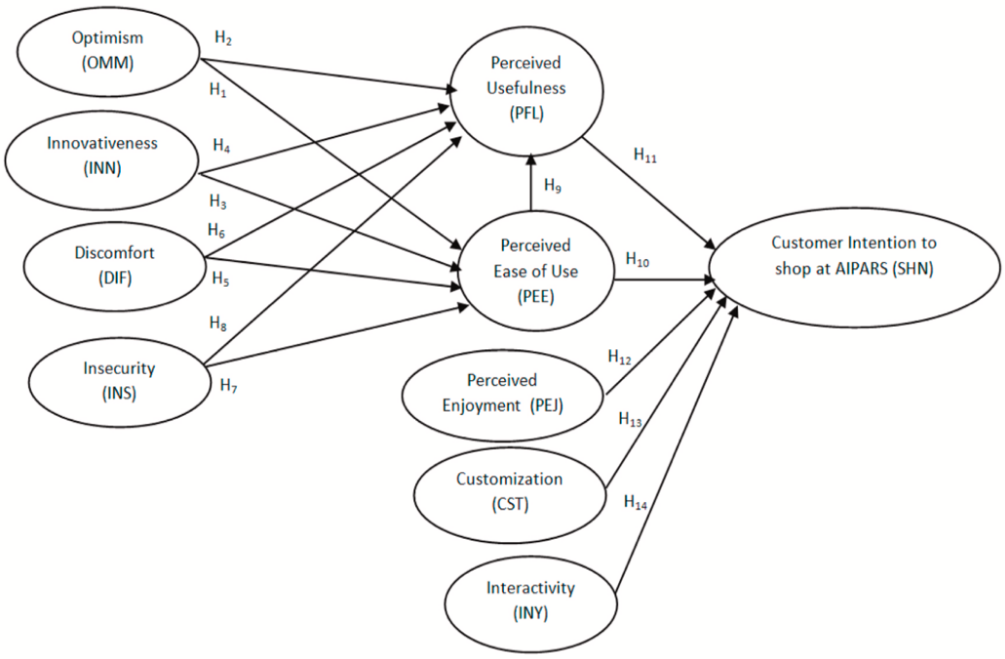

Figure 3: *Conceptual model of customer intention to shop AIRPAS.*

Source: Shopping intention at AI-powered automated retail stores (AIPARS). Journal of Retailing and Consumer Services

This study shows that perceived ease of use (PEE) influences perceived usefulness (PFL), and this implies that consumers experience ease of use of the AIPARS model. Customers believe that this integrated technology system has positive feedback on customers' purchase intentions because it is a faster, easier, and more useful way to improve the shopping experience. Perception of enjoyment (PEJ) and interactivity positively influence purchase intention in equal measure, as the AIPARS model enables a pleasant and enjoyable shopping experience through the integration of technologies such as the 3D mirror, smart mirror, Clarks' foot measurement technology, and RFID-enabled Interactive Fitting Rooms. In addition, virtual assistants, chatbots and robots contribute to the creation of systems that provide personalized information to customers, promoting targeted products and services based on individual needs.

In summary, previous studies have shown that consumers prefer technology for its functionality and are inclined to use it when it is easy to use. With technology, users can enjoy personalized and engaging interaction, helping to create an immersive and positive customer experience.

2.4 Technology adoption from the retailers' perspective in the omnichannel context

A previous study was conducted with the aim of identifying and evaluating technologies and application scenarios in physical stores within the Austrian context. The research aimed to understand, through a workshop involving several retailers, which perspectives were considered interesting to develop. Here is an overview of the results obtained.

Concept	Description
Digital shopping assistant	A multifunctional app or a robot, that combines a wide range of application possibilities. (e.g. information search, promotion finder, navigation)
Self-checkout	The customer scans the desired products himself and carries out the payment process independently
Smart shelf	Shelves to allow for real-time inventory analysis or price changes, as well as the display of product information
Mobile/biometric payment methods	Payment through mobile device or biometric characteristics
Automated checkout	The products to be purchased are recognized automatically, the payment process is triggered automatically when leaving the shop

***Table 2**: Most promising scenario for Austrian retail business*

***Source**:* (M. Stieninger, 2021)

Based on these data, experts showed how cell phone use is key to different applications and scenarios of digital technologies. Consumers use their phones to access digital product information or to receive support during payment processes, for example. The use of this device represents an important opportunity for retailers: that of interacting with customers during the normal daily shopping routine.

As highlighted in the previous paragraphs, the applications of digital technologies in the context of retailing are multiple from a business perspective. Brands, using artificial intelligence in their integrated systems, can collect and analyze data provided by customers to develop functional strategies, with the goal of responding to and anticipating consumer needs.

AI-enabled capability approach allows firms to transmit solutions to customers through seizing and analyzing customer insights in real-time. This view is consistent with the academic literature, which suggests that AI-enabled analytics enhances substantial competitive advantage for the firm as it create more real-time solutions for customers by grabbing the customer's insights (Davenport, 2020); (Dubey, 2019).

This analysis allows the brand to define customer insight by capturing information related to the attitudes, behaviors, lifestyles, emotions, and desires (etc.) of consumers.

A technological resource becomes relevant when it becomes an integral part of a company's operating system, enabling the integration of a wide range of valuable, rare, unique, and non-substitutable assets. This integration enables the creation of distinctive competitive advantages for customers, unrepeatable by competitors.

This perspective, known as the Resource -based view (RBV), emphasizes the importance of resources, both tangible and intangible, in taking a crucial role in creating and maintaining a sustainable competitive advantage for the company.

Table 1 shows several examples of the application of artificial intelligence in the context of retailing.

Retail Example	Analytics and AI deployment
Tommy Hilfiger	The luxury fashion retailer Tommy Hilfiger introduced Facebook Messenger chatbot, which is an AI-enabled advanced data analytics system that provides personalized shopping experience to the customer. The system gathers information by asking a series of questions to the customers and makes an outfit suggestion by predicting the users underlying desires.
American Eagle	American Eagle's physical store introduced AI-enabled fitting room. If a customer grabs a wrong size or interested in another colour while trialing, then they can simply scan the item in the system that attached in the dressing room. AI-enabled advanced data analytics process will run the algorithm within the system and will display all the sizes and colours of the item that are available in stock. Customer can easily click the preferred one, and an employee will be notified to deliver the new item immediately in front of the fitting room.
Stitch Fix	Stitch Fix is a US-based online personal styling service that delivers monthly AI-enabled personalized recommendations to the customer. Customers can keep the offer if they like, or they can return with feedback. The advanced data analytics system records all the transaction and try to make the future recommendation more accurately.
ASOS	Online fashion retailer ASOS deploys a machine learning system that learns shoppers' previous purchases and item returns behaviour. In the future, the system recommends the perfect size to the shopper that generates a customer delight and reduces the return rate.

Table 3: *Example of retail and application of AI*

Source: *Deployment of Analytics and AI: examples in the retail context* (Hossain M. A., 2021).

Analyzing these strategies, we can state that the "retailers should consider AI-enabled CA to meet customer needs more precisely. Customer centricity is the goal for retailers to remain competitive (Hossain M. A., 2021).

Retailers can leverage AI- capability approach with respect to different functions:

• Personalization: A retailer can tailor its offerings to customers through personalized suggestions, such as matching product promotions, price personalization, and preference-based geolocation. These actions are supported using artificial intelligence in order to understand and respond to consumer behavior, resulting in an improved overall experience.

• Distribution: to establish an effective distribution system, the company must consider two fundamental aspects: process consistency and order fulfillment. Process consistency is involved with technical compatibility that ensures high service performance and generates good feelings within the customer's shopping journey in various channels (Banerjee, 2014).

Order fulfillment on the other hand primarily concentrates on customer's order accomplishment (Hossain & al., 2019). Artificial intelligence plays a crucial role in managing these processes, especially about click-and-collect services, and the management of returns of products purchased online at physical stores.

• Communication: it is essential that the company communicate information consistently across all relevant channels, including, for example, communication systems that integrate chatbots and artificial intelligence.
• Data management: data management is considered a key element of the capability enabled by AI in the context of data analytics. The use of analytics and AI is directly dependent on the availability and quality of the data itself, which serve as the driving engine for a company's operational activities. The goal of analytics is to identify meaningful insights within the vast volume of available data.
• Data protection: AI-enabled CA enables the protection of data that is collected, and this is critical to gaining customer trust. Using advanced techniques, such as Hadoop software, within an analytics system can protect the identity theft of a customer's credit card (Akter, 2016).
The integration of digital technologies, particularly artificial intelligence, enables retailers to improve customer interaction, personalize offers, optimize distribution, and ensure effective and secure data management. These innovations are a key element in gaining and maintaining a lasting competitive advantage in the retail industry.

2.5 My research contribution

In the previous paragraphs, the theoretical background on the adoption and implementation of technologies in the omnichannel retail context was examined, offering an in-depth overview of existing research and the results obtained.
Firstly, section 2.1 explores the application of technologies along the customer journey. Studies indicate that the integration of physical and digital touchpoints, such as Augmented Reality (AR) and Virtual Reality (VR), significantly enhances the consumer experience. These technologies allow for virtual product demonstrations and the use of AR applications to try items at home, contributing to more informed purchase decisions. Additionally, AI-powered chatbots and virtual assistants provide continuous and personalized support, increasing customer satisfaction and loyalty.
Section 2.2 analyzes the benefits and limitations of autonomous shopping systems. Technologies such as self-service systems, radio frequency identification (RFID), interactive displays, and automatic checkouts improve operational efficiency and

customer experience. However, limitations related to perceived complexity and associated risks remain. Psychological and cultural barriers represent additional obstacles, as consumers may perceive a loss of control and a reduction in meaningful experiences.

The next section focuses on the analysis of consumer behavior concerning the use of technologies. Research shows that the adoption of technologies is influenced by perceived usefulness and ease of use. Consumers tend to prefer technologies that simplify daily tasks and enhance the shopping experience through personalization and engaging interactions. For example, the use of smart mirrors in stores, which provide personalized product information, has been shown to improve the shopping experience and increase purchase intention.

Finally, section 2.4 examines the adoption of technologies from the perspective of retailers in the omnichannel context. The integration of artificial intelligence and data analytics enables retailers to develop targeted strategies that respond to consumer needs, improving interaction, offer personalization, distribution optimization, and effective data management. The ability to leverage these technologies is crucial for maintaining a competitive advantage in the retail sector.

In summary, the second chapter highlights how the adoption of advanced technologies in omnichannel retail can improve consumer experience and operational efficiency, although challenges related to risk perception and psychological and cultural barriers persist. The integration of technological tools such as AR, VR, chatbots, and virtual assistants, along with autonomous systems like RFID and automatic checkouts, offers a range of benefits from increased customer satisfaction to reduced operational costs for retailers.

The adoption of technologies such as AR and VR allows consumers to visualize and interact with products in new and engaging ways, facilitating more informed purchase decisions, and reducing uncertainties. These technologies also enhance the in-store experience by integrating digital elements into the physical environment to offer more personalized and satisfying shopping experiences.

AI-powered chatbots and virtual assistants provide continuous support to customers, answering their questions and offering personalized recommendations. This not only

improves customer satisfaction but also allows retailers to collect valuable data on consumer behavior, which can be used to optimize marketing and sales strategies.

However, the implementation of these technologies is not without challenges. The perceived complexity and risks associated with the use of autonomous technologies can significantly hinder adoption. Psychological and cultural barriers, such as the fear of losing control and concerns about the reduction of meaningful experiences, can negatively impact consumer attitudes toward these innovations. Additionally, demographic variations, such as age and socioeconomic status, can influence the propensity to adopt new technologies.

From the retailers' perspective, the integration of artificial intelligence and data analytics is fundamental for developing effective strategies that meet consumer needs. AI can help personalize offers, optimize inventory management, and improve communication with customers. Data management becomes a crucial element, as the quality and availability of data directly influence the effectiveness of AI-based analyses and decisions.

The strategic implementation of these technologies requires a mindful approach that considers not only the functional benefits but also the psychological and cultural implications for consumers. Retailers must be able to clearly demonstrate the advantages of autonomous technologies, reducing concerns related to perceived complexity and risks. Targeted interventions, such as awareness campaigns and personalized support during the adoption process, can facilitate consumer acceptance.

In conclusion, while advanced technologies offer significant opportunities to improve consumer experience and operational efficiency, their successful implementation depends on the ability to address and overcome challenges related to risk perception and psychological and cultural barriers. A well-planned adoption strategy, including consumer education and continuous support, can help fully leverage the potential of these innovations, ensuring a sustainable competitive advantage for retailers in today's rapidly evolving market.

Nevertheless, despite the extensive exploration of emerging technologies and their impact on the omnichannel retail context, it is evident that there is a lack of specific focus on the enablers of the human-technology relationship within stores. The analyzed studies primarily focus on the general benefits of technologies such as AR, VR, chatbots, and

autonomous systems, but do not thoroughly address which specific factors facilitate and enhance the interaction between humans and these technologies in the retail context.

Therefore, my research question, "What are the enablers of the human-technology relationship and what does technology offer within stores to ensure its utilization?" aims to fill this gap. This research will focus on two main aspects: first, identifying the technological elements that facilitate effective and satisfactory interaction between users and digital systems; second, understanding what consumers expect from the implementation of technologies in retail stores.

Investigating these aspects will allow for a better understanding of how technologies can be designed and implemented to improve the consumer experience and foster positive interaction with digital systems. Through this research, it will be possible to outline consumer expectations regarding the use of technologies in retail stores, providing insights on how technological solutions can be adapted to meet these expectations and encourage user adoption.

Research

3.1Research method

Despite the extensive exploration of emerging technologies and their impact on the omnichannel retail context, there is a clear gap in the specific focus on the enablers of the human-technology relationship within physical retail stores. The studies analyzed primarily highlight the general benefits of technologies such as AR, VR, chatbots, and autonomous systems, without thoroughly addressing the factors that facilitate and enhance the interaction between humans and these technologies in the retail environment. My research question is: "What are the enablers of the human-technology relationship, and what does technology offer within stores to ensure its utilization?" To answer this question, I will focus on two main aspects: identifying the technological elements that facilitate effective and satisfactory interaction between users and digital systems, and understanding what consumers expect from the implementation of technologies in retail stores.

This research aims to fill the existing gap by focusing on the specific enablers that foster a positive human-technology relationship in the retail context. By identifying and understanding these enablers, the research will provide insights into how technologies can be designed and implemented to improve the consumer experience and encourage positive interactions with digital systems. This will ultimately help retailers better meet consumer expectations, increase user satisfaction, and promote the adoption of advanced technologies in stores.

The results of this research should outline the key technological elements and consumer expectations that drive effective human-technology interactions in retail contexts. These insights will be valuable for designing and implementing technological solutions that not only meet consumer needs but also ensure a seamless and engaging shopping experience. The research should lead to either better acceptance of the technologies or improved interaction between humans and technologies in the store.

The strategic implementation of advanced technologies in retail stores requires a thorough understanding of the enablers of human-technology interaction. This research will contribute to the knowledge base by identifying these factors and providing practical recommendations for retailers to improve the consumer experience through technology.

A qualitative analysis was conducted in the context of the present study through in-depth interviews with a sample of 15 consumers. This methodological approach is aimed at exploring the enabling factors of the human-technology relationship and understanding the in-store technology offerings that incentivize consumers' use of technology.

The method employed for these interviews is inspired by the research described in the papers "Understanding the Omnichannel Customer Journey" (Barwitz & Maas, 2018) and "Navigating between Real and Virtual Spaces: An Exploration of the Hybrid Shopping Experience (Collin-Lachaud & Vanheems, 2016)." The research focuses on detailed interviews to gather rich data, perceptions, motivations, and behaviors of consumers.

The one-on-one interviews, conducted online or in person, are about 30-40 minutes in each. They were recorded and transcribed with the help of an automated transcription system. Then, the collected data are analyzed, coded, and divided into different categories to identify the patterns of similarities that emerged. This strategy aims to provide a clear and detailed picture of the dynamics influencing the adoption and use of technology in physical stores.

The interview structure is designed to collect detailed data on consumers and their relationship with technologies in retail stores. The first part of the questions aimed to investigate the socio-demographic and behavioral conditions of the participants. Information on age, gender, education level, and occupation were collected, as well as exploring their shopping behaviors, with a focus on how often and how they use retail stores. This allows contextualizing the subsequent responses and understanding the profile of the interviewed consumer.

The second part of the interview focuses on consumers' experience with technology use within retail stores. Specifically, questions are asked about the last time the participant used a technology in a physical store to bring out perceptions, emotions, and evaluations regarding that experience. Next, the interview aims to understand the limitations and benefits experienced by consumers when using technologies in retail stores. It is crucial to identify obstacles and difficulties encountered in technology adoption, as well as possible areas of intervention to improve the consumer's relationship with these innovations.

The questions aim to highlight the main difficulties encountered in technology use, the technology features that have been most beneficial, unsatisfied expectations, and

suggestions for improving the technology experience in retail stores. This phase of the interview is critical for collecting useful information to develop strategies that facilitate technology adoption and improve the overall consumer experience in physical stores. Below are the guiding questions asked to the sample:

PART I: Socio-demographic and behavioral aspects
1. Tell me about yourself
2. How often do you buy products offline? What products do you buy most frequently?
3. Do you often buy in retail stores? Is there a particular area where you prefer to shop?
4. Why do you prefer to buy products in a physical store? What aspects of offline shopping do you find most beneficial?
5. How much do you use technology and in what ways?

PART II
Purchasing experience
6. Can you describe your last shopping experience in a physical store?
7. How did technology influence this experience?
Use of technology
8. What technologies did you use during your last in-store purchase (e.g., QR codes, apps, interactive screens, virtual reality, automated checkouts, digital payment via blockchain, augmented reality)?
9. Have you ever used technologies that offer personalized experiences (e.g., smart mirrors, virtual assistants, recommendations agents)?
10. What did you like or dislike about these technologies, so what would you like to repeat and what not?

PART III: Identification of benefits and limitations and future areas of intervention
11. How do you use the following technology within the retail store? What are the main limitations and benefits you find in its use?
12. Have you encountered any difficulties or obstacles in using technology in the store? If yes, what are they?
13. What technologies would you like to see more adopted in physical stores?
14. How do you see the evolution of technology use in stores in the coming years?

Table 4: *Research interview question*

3.2 Findings

The research question ("What are the enablers of the human-technology relationship and what technologies can be implemented in physical shops to ensure their use by consumers?") comes from the need to understand how technologies can be designed and integrated in the retail environment to enhance the consumer experience and foster a positive interaction with digital systems. Although existing literature has explored the impact of emerging technologies, there is a lack of studies focusing on what specific elements facilitate and enhance the interaction between consumers and technologies within physical shops.

Through qualitative analysis based on in-depth interviews with a sample of 15 consumers, this research attempted to identify the factors that enable an effective and satisfying interaction between users and digital systems, as well as to understand consumers' expectations regarding the implementation of these technologies in shops. The responses obtained provide a detailed insight into what consumers consider crucial for technology adoption in the retail environment and what barriers might hinder such adoption.

The sample revealed that consumers attach great importance to technologies that improve the efficiency and personalization of the shopping experience, but concerns related to complexity and lack of human interaction also emerge.

Respondents discussed in detail the sectors in which they prefer to shop in physical shops, with a particular focus on clothing, cosmetics and food. These sectors were chosen mainly because of the need to touch, try on and evaluate products in real time, characteristics that cannot be easily replicated through online shopping.

"I prefer to buy live because I can see and touch the material better. On the website there may be the description, but you don't know if the fabric will bother your skin" (Interview 11).

Another respondent said: *'I live shopping as an all-round experience. I usually only buy online if I have an urgent need for a product and don't have time to go and buy it in the shop, or for products I have already tested, such as skincare products, or items I already know the size of. In general, however, I prefer to shop in shops."*

The enabling factors identified during the interviews are divided into positive and negative drivers, each of which influences the acceptance and adoption of technology in retail environments.

The positive drivers are listed below:

- Speed and Efficiency: One of the most recurring responses relates to the appreciation of technologies that speed up and simplify the shopping experience. Technologies such as contactless payment and automated checkouts are seen as significant improvements, especially in grocery and clothing shops. One respondent emphasized the importance of being able to avoid queues thanks to these technologies.

  "I like to use automated checkouts because they allow me to avoid the queue and complete my purchase quickly" (Interview 7).

- Personalizing the Experience: The ability of technologies to personalize the shopping experience has been recognized as a key enabler. Virtual assistants and recommendation agents offering suggestions based on personal preferences significantly enhance the interaction with digital systems. However, it was also noted that these technologies must be managed in a way that is not intrusive, as reported by one respondent.
  "I find recommendation agents useful, but they can be annoying when they keep showing products I have already bought" (Interview 10).

- Touch and Try Product: The possibility to touch and try products before purchase is another key positive driver. This is crucial in the clothing and cosmetics sectors, where consumers prefer to assess the quality and fit of products in person.

  "The first advantage is that I can test the product right away and I don't have the burden of having to bring it back" (Interview 4).

The negative drivers are listed below:

- Difficulties in Using Technology: Although technology offers advantages, the perceived complexity of using some tools may hinder their adoption. Cash machines, in particular, were mentioned as a source of frustration for some users, especially when they are not intuitive. One respondent reported having problems understanding how to complete a transaction without the help of staff.

  "I found it difficult to use the cash machines because it was not clear how to proceed, and I had to ask the staff for help" (Interview 11).

- Lack of Human Interaction: The replacement of human interaction by technology is perceived negatively by many consumers. The lack of personal contact can reduce the quality of the shopping experience, especially in contexts where the support and advice of sales staff are considered irreplaceable. Several respondents emphasized the importance of receiving personalized advice from sales staff, which not only improves the overall experience, but also creates a sense of trust and security.

  "For me, the sales staff is an integral part of the shopping experience. I like to ask for advice and receive suggestions on what would suit me better' (Interview 15). Another respondent added: "I really appreciate it when staff are helpful and can guide me in choosing products, especially when it comes to items, I am not familiar with" (Interview 6).

- Returns and Purchase Uncertainty: The uncertainty associated with online shopping, especially the possibility of having to make returns, is a significant deterrent for many consumers. This problem is particularly present in sectors where fit and quality of materials are crucial, such as clothing.

"I do not like buying online except for products that do not concern clothing. I happened to buy online on Amazon for example furniture items or paintings but never clothes' (Interview 4).

During the interviews, several suggestions emerged to improve the checkout experience. These suggestions aim to make the checkouts more accessible and intuitive:

- Interface simplification: Many consumers suggested making the interfaces of automated checkouts simpler and more intuitive.
  One respondent suggested the introduction of vocal or visual guides to help customers during the process.

  "I think a voice guide or a flashing cursor showing you where to find the menus would be very useful, especially for people who are not used to technology" (Interview 5).

- Automating the deactivation of anti-shoplifting: Another problem reported concerns the need to improve the process of automatic deactivation of anti-shoplifting, which currently can require staff intervention, causing delays.

  "The only problem was that the anti-shoplifting was not automatically deactivated after payment, so I had to go back and do it manually" (Interview 8).

- Integration with other technologies: Respondents suggested improving the integration of automated checkouts with other technologies, such as bag size recommendation systems based on the products purchased, to make the process smoother and more personalized.

Consumers expressed a strong interest in a few advanced technologies that could improve the shopping experience in physical shops:

- Smart Mirrors: Smart mirrors in fitting rooms have frequently been mentioned as a desired technology that can improve the shopping experience by allowing

customers to see other available sizes and colors without having to leave the fitting room.

"It would be useful to be able to check the availability of sizes directly from the fitting room. Maybe a smart mirror that lets you know if there are other sizes available' (Interview 13).

- Scanners to keep track of total purchases: Respondents also suggested the use of scanners to keep track of total purchases before going to the checkout, thus facilitating budget management and reducing surprises at the time of payment.

  "It would be useful to have a scanner that allows you to keep track of the total of the items before you go to the checkout, so you know exactly how much you are spending" (Interview 7).

- Augmented Reality (AR): Augmented reality is seen as an opportunity to improve interaction with products, especially in the clothing and cosmetics sector, by allowing customers to try out products virtually.

  "I really like the idea of augmented reality, like when you can virtually try on sunglasses. It's a technology I really appreciate and like to use' (Interview 3).

- QR Codes on Shelves: Another technology required is the use of QR codes on shelves to provide additional product details. This would allow customers to easily access detailed information, such as technical specifications, reviews, or demonstration videos, enhancing their ability to make informed decisions directly in the shop.

  "I would like to see more interactive screens in clothing shops, a kind of touch catalogue to find available products and sizes, maybe with a click & collect system, a bit like how it works at Ikea in the warehouse part. Also, I would like to see QR codes on various products, especially in supermarkets, to get detailed descriptions and information." (Interview 15).

In the last part of the interviews, respondents were asked to express their views on how they see technology evolving in physical shops in the coming years. The responses revealed a predominantly positive outlook, with many respondents anticipating an increasing adoption of advanced technologies to make the shopping experience increasingly integrated and personalized.

"I think technology will continue to evolve to make everything more fluid and intuitive. It should not be intrusive, but rather integrate seamlessly with the shopping experience' (Interview 12).

Other interviewees emphasized the importance of continuing to develop technologies that can improve personalization without sacrificing the quality of human contact.

"I hope that technologies will become even more personalized, but without eliminating the human aspect of the shopping experience. The two should work together' (Interview 6).

Finally, some participants expressed the conviction that although technology will be increasingly integrated into physical shops as an added value, it will not completely replace sales staff.

" Technology will support companies and customers, making purchases faster and improving the shopping experience, but the in-store experience will remain unique because it involves various senses and cannot be compared to buying online. Moreover, I believe that in Italy there will be a slower process of technology acceptance than in other countries."

From the findings, it is clear that it is crucial for retailers not only to implement advanced technologies, but also to ensure that these are intuitive and accessible to all consumers. Staff training and the availability of on-site technical support can play a crucial role in overcoming the difficulties faced by less technologically savvy consumers. Retailers should also consider introducing technologies that not only improve efficiency, but also enrich the emotional experience of the consumer by integrating human interaction with technological innovations.

In conclusion, the interviews revealed a broad acceptance of technologies in retail contexts, if they enhance the shopping experience without introducing unnecessary complexity. Consumer expectations are oriented towards technologies that offer both speed and personalization, suggesting that retailers who can meet these expectations will have a significant competitive advantage.

3.3 Discussion

The results of this research offer a new perspective on technology integration in retail, highlighting that consumers' interaction with technology is strongly influenced by operational efficiency and ease of use, rather than personalization of the experience. The analysis of the interviews revealed that consumers value solutions that simplify and speed up the shopping process, such as contactless payment systems and automated checkouts, over those that are more complex or focused on personalization. This dynamic is well represented in the research model, which breaks down the key factors into positive and negative drivers (Figure 4). Positive drivers include speed, efficiency, customization, and the ability to physically interact with products, all of which enrich the user experience. Conversely, negative drivers such as lack of human interaction, technological complexity and uncertainty in online shopping represent significant barriers to technology adoption.

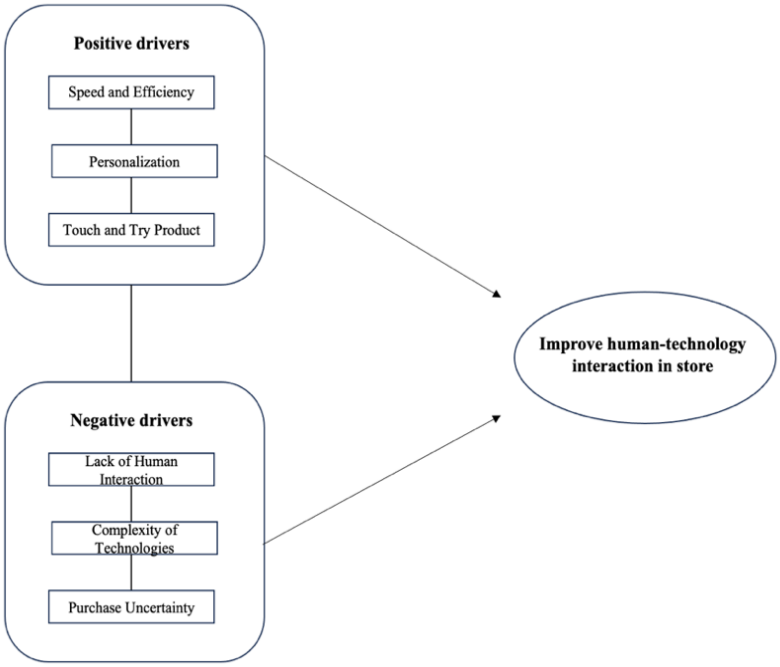

***Figure 4**: Conceptual research model*

A key topic emerged from the interviews is the crucial role of user-friendliness. Participants showed a clear preference for intuitive and easy-to-use tools, while the perception of complexity is seen as a significant obstacle. This suggests that, in the retail

context, technologies must be designed with a strong focus on ease of use to minimize consumer frustration and improve the overall experience. Another relevant aspect is the perception of technology as a complement to human interaction, rather than a substitute for it. Several participants expressed concern about the possible reduction of human contact, pointing out that the presence and assistance of sales staff is considered irreplaceable. This indicates that despite the increasing adoption of technology, the role of staff remains an essential pillar of the shopping experience. Comparing these findings with previous studies, a consistency emerges with the research of Barwitz and Maas (2018), who emphasize that personalization and ease of use are key determinants of consumer choice along the omnichannel journey. However, this study extends these concepts, showing that not only personalization, but also simplicity and accessibility of technologies are crucial for improving in-store interaction. These findings fit well with the theoretical framework outlined in the literature review. As discussed, the existing literature highlights that the integration of emerging technologies, such as augmented reality (AR) and virtual reality (VR), chatbots and automated payment systems, can significantly enhance the consumer experience along the omnichannel customer journey. However, this study, focusing specifically on technologies used in-store, further explores these aspects, revealing that efficiency and ease of use are more critical elements for technology adoption than previous research has shown. Theoretical background has highlighted how technology can enhance the consumer experience, but our study shows that this value does not necessarily come from personalization, but from reducing the operational and cognitive barriers that consumers face when using in-store technologies. Furthermore, as Sujana Adapa's (2020) and de Bellis & Johar's (2020) research points out, autonomous technologies, if not designed to be user-friendly, can generate a perception of complexity and risk, holding back adoption. Our findings confirm and extend these observations, emphasizing the need to design technologies that are advanced yet accessible and intuitive for a range of users. The results of this research open new perspectives for further studies. A future direction could explore how emerging technologies, such as artificial intelligence and augmented and virtual reality systems, can be further integrated into shops to improve efficiency and user experience, without sacrificing human contact. In addition, it might be interesting to analyze how the combination of simple and intuitive technologies with appropriate staff

training can improve the interaction of technologies in physical shops even more. Another direction shows potential in studying demographic and socio-cultural variations in technology adoption. Better understanding how factors such as age, education level and cultural differences influence interaction with technology could help retailers design more inclusive and accessible solutions. Finally, longitudinal research observing the evolution of consumers' preferences and their interactions with technology over time could offer a valuable perspective on the long-term sustainability and effectiveness of technology strategies in retail. This approach would make it possible to assess how technologies adapt or need modification in response to changes in consumer expectations and behavior. In conclusion, research suggests that technology adoption in retail must be driven by a clear understanding of consumer needs for efficiency and simplicity, without compromising the importance of human interaction. Retailers that can effectively integrate these aspects will have a significant competitive advantage when responding to consumers' rising expectations.

Conclusion

The integration of emerging technologies within the omnichannel retail landscape represents a transformative shift for the industry, significantly impacting both consumer experiences and operational processes of retailers. This study indicates the potential of these technologies to enhance operational efficiency and elevate consumer engagement, provided that they are implemented in a manner that is both intuitive and accessible. The key findings of the study reveal that consumers place a high value on solutions that streamline and expedite the shopping process, such as contactless payment systems and automated checkouts. However, there is a critical perspective on technologies that are regarded as excessively complex or invasive. Furthermore, the personalization of the shopping experience, enabled by tools like virtual assistants and recommendation systems, emerges as a pivotal factor in enhancing the interaction between humans and machines. Nevertheless, the deployment of new technologies is not without its challenges. The perceived erosion of human interaction in favor of technology, coupled with the complexity of certain digital solutions, presents considerable obstacles to widespread adoption. In order to overcome these obstacles, it is of the utmost importance that retailers provide their employees with the necessary resources and guidance to assist consumers who may lack the requisite technological proficiency. The practical implications of these findings suggest that the adoption of new technologies must be accompanied by a comprehensive strategy that ensures these innovations are accessible and beneficial to all consumer segments. It is crucial to give due consideration to both operational efficiency and the emotional aspect of the shopping experience. This requires the integration of technological advancements with the human element, an aspect that consumers continue to value. In conclusion, the success of advanced technologies in the retail sector will depend on the ability of retailers to achieve a balance between innovation and the evolving needs and expectations of consumers.

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Appendix I

Interview transcription

Interview 1 - Luca, inspector (Generali)

Tell me a little about yourself, how old are you? What do you do in life?

Today in life I'm a clerk, I work for Generali Assicurazioni.

And passions, hobbies?

Let's say I'm very dedicated to model sailing. And I don't have any passions, in the sense that there are many things I like. Well, one thing that's not really a passion, but I have a great love for perfumes**.**

OK, so let's get into the subject a little bit more. So, I wanted to know how often do you buy products offline, so in physical shops?

So, this happens to me most of the time when I fail to complete an online purchase. Let's say mostly for one reason, which is the fact that I maybe have to measure the item I want to buy, just so that I don't risk getting the size wrong. So mainly for this reason.

So mostly you buy products like clothes?

Let's say most of the purchases are made online. I buy all kinds of things online, whereas in the retail store for example, I don't know, at Zara big ones. I get that too, but I still prefer online over offline, except if I have to measure the garment as I said before, so I don't risk getting the size wrong.

And if you were to talk about other benefits of buying in physical shops, what are the most advantageous aspects?

Certainly, the benefit of buying offline, i.e., in a physical shop, is mainly related to the social aspect, i.e., the fact of having to leave home, so moving around, maybe not going alone to make the purchase and then also participating with someone else. This type of experience is also the fact of moving to areas that are normally not close to our home and therefore maybe discovering the area as well. If we want to have a more 360° experience,

let's say a more complete experience that also involves the emotional empathic part and not only the part related to the satisfaction of the desire to buy.

And how much do you use technology in general and in what way?
Technology in general but always in relation to shopping, yes, all round I use them. All as often as possible too. For example, paying with the credit card saved in the phone so I don't have to use pull out the card each time, use the payment device on my smartphone directly. Also, the simple online shopping, so I also use payment platforms that I think are very convenient and very secured, see PayPal rather than others, e.g., Klarna.

Like virtual reality, I don't know, these things?
I use it very rarely because in fact my purchases do not need to be compared or visually allocated in a space for which I can take advantage of virtual reality. It only happened to me maybe once when I was buying a sofa. I wanted to get an idea of what it looked like once it was placed in the environment and in that case, yes, I used virtual reality to see what it would look like in its final destination.

Going back to the physical shop experience, can you describe your last shopping experience in a physical shop and how technology influenced the experience?
Basically, technology helped me in speeding up my experience. I am talking about a purchase I made at McDonald's where I used a totem where I could directly place my order and pay without having to go to the cashier where there was a huge line. In that case, even though I was in a physical location, I could have a virtual experience there as well.

And what did you like and dislike about this experience or other experiences with technology in a physical shop? What would you like to repeat and what not?
I would definitely repeat this one because I found it really smart. It also takes some of the pressure off and the workload created at the cash desk by a large number of people, and also gives the customer a tool to speed up and not have to stand in the line in an uncomfortable position. Other experiences of this kind I have not had, because I believe that perhaps that is the only context in which it may be possible to combine the two things:

the physical presence in a physical shop and the shopping experience as if it were done online.

OK, have you also generally used other technologies within retail stores? Give me some examples, like virtual payments or using apps to show discount codes?

I happened upon automatic cashiers. I was in a physiotherapy Centre, and I saw a sign on the checkout counter indicating that you could also proceed with PayPal payment. I took advantage of it because I was making a fairly large payment and I would have liked to be able to spread it over several instalments and not have everything charged in one lump sum, which would have weighed me down quite a bit. I asked for an explanation, was instructed and made the purchase with PayPal's pay in three instalments, an ultra-convenient tool.

And in your opinion are there any main limitations or benefits of using technology in shops?

But I don't see any limitations because I think it is always possible to combine the virtual and the physical and it depends a lot on the customer. I, who am a technology enthusiast, may find it more enjoyable to shop online. But there is a segment of customers who feel safer making a purchase with human interaction than with virtual or even no interaction at all. There are upsides and downsides to both experiences. In the physical shop you may find the salesperson rude and therefore report a negative experience, while online you may have frustration at not having a person in front of you. However, the selection of staff in physical shops remains important.

And still remaining in the area of physical shops, how would you like technologies to implement the offline experience? If you see obstacles, what could be improved?

Staff selection is very important. I often find myself in shops with unprepared staff, which makes the shopping experience negative. As far as technology is concerned, I see the application of smart mirrors in the fitting rooms as useful. They could be useful for selecting different sizes or colors without leaving the fitting room. I was not familiar with this technology, but it could be appropriate and useful.

But on the technology level, do you think it can be implemented or are there things that can be improved to facilitate the always offline interaction between the consumer and the technologies?

There are. Then it is clearly also the choice of each individual shop, each individual unit, to have them or not, but maybe there are some that can help and can be applied. See the experience I was telling you earlier like McDonald's. But for example, I don't imagine inside a clothing shop, a totem where you go and order your suit and then go and pay at the till because you are there. You're going to ask someone, they're going to show it to you, you're going to have to try it on, you're going to have to wear it. So that kind of technology for example might not be useful.

While, for example, there are still not in many retail stores. But the application of smart mirrors inside the fitting rooms, so where you try on clothes, maybe the size is wrong. From the smart mirror you can select a different size and it is brought directly to you in the fitting room, or you can select a different color. You can even, perhaps if there is no product in the shop, virtually see how it fits you. And in case, order it. How would you rate such an application?

But I don't think the technology would be of much use. Maybe look at the first part of what you're describing. Yeah, like a dressing room. Let's put it in the most fitting situation for this kind of example, Zara, a big, rather dispersed shop, and the shop assistants are constantly being approached by customers anyway, so they have to listen to maybe several people. At the same time, if they take you to try on a garment, then they are clearly waiting for you to try it on. If the garment doesn't fit, rather than having them waste their time standing outside waiting for you, having a kind of smart mirror, but it's almost like an intercom though, where I point out what the problem is with the article, could maybe go to his receiver at this point. He comes straight back to me with the correct size head rather than anything else. But I didn't even know this technology existed, so still not this could be appropriate. Now useful for both of us for sure.

What about technologies that offer personalized experiences? Smart mirrors, virtual assistants, recommendation agents?

Recommendation agents annoy me a bit because they are pushed too far. One or two suggestions that can help you find your way around what you are looking for are fine, but then they become annoying. These kinds of suggestions bombard you for a week on the same thing, so I find them useful, but they are currently badly managed and badly used.

Last question: how do you see the evolution of the use of technology in retail stores in the coming years?

Technology could help but it has to complement the shopping experience which is very emotional. It must integrate to give something extra rather than offer a virtual alternative. People who shop in shops are looking for emotional gratification that cannot be replaced by technology.

All right, we're done, thank you.

Thank you.

Interview 2 - Sara, marketing student

Tell me a little about yourself, how old are you? What do you do in life?

So, I'm Sara, I'm 24 years old and I'm a marketing student. I'm finishing my master's degree at Luiss, and I study marketing because together with communication it has always been my passion. In fact, let's say that I have dedicated my entire course of study to this, and I must say that I am also very happy for my future job prospects.

So, let's get to the heart of the matter: how often do you buy products offline, i.e., in retail? And which products do you buy most frequently offline?

Almost always. I mainly buy offline rather than online, and that's mainly clothes, because the fact that I can try on a dress on site and thus be able to choose whether it suits me or not and have the knowledge of what I'm buying at that moment, I have to say that it gives me a lot of confidence. So, I buy offline a lot. But I must say that in some cases the experience of buying online has been positive.

OK, why do you prefer to buy products in a physical shop? What advantages do you find? And in this regard, since you also told me about the positive online experience, what are the differences you encounter between offline and online?

Well, I think the offline shopping experience is better because the fact that I can touch the product I have to say makes the difference for me. On the other hand, the fact that I have to trust an online purchase, what I am showed on the website, let's say that it doesn't convince me so much, more because it doesn't give me an idea of what the product actually is. So, I like to touch and try a product and really see its qualities in person.

OK, even though you know there is a possibility to return anyway. You prefer to buy offline, right?

Yes, absolutely. Let's say that the possibility of making an immediate return then from the online site is still an advantage that I have taken advantage of on several occasions, and I have been happy with different brands. Let's say that the online platform allows you to make a purchase in real time, so it's more convenient because you don't have to waste time, you have to leave the house, and many times in our hectic lives between work, study, it's much more convenient to make a purchase online, perhaps at a time of day when you couldn't go to the physical shop, for example last night. So yes, the online shopping experience is also positive.

There are some studies that say that in the evening especially women are more active on online shopping platforms. Maybe there is impulse buying during the night, who knows. Anyway, it's good that you like to shop offline, because my study is really about shopping in retail stores and in particular the relationship that people have with the technology inside the stores. So, I ask you, when you go to a physical shop, how much do you use technologies, if you use them, what do you like and how do you use them, how do you interface with technologies? We're talking about different technologies, from the coupon app to digital payments, contactless payments with your phone, to automated teller machines. So, everything that you find inside a store that has a relationship with technology anyway.

Yes, I use them a lot because even though, as we said, I prefer an offline shopping experience, I think technology can support the physical shop in a very valid and

convenient way. To date, however, many companies are implementing this strategy, precisely because it is true that the offline shopping experience is of value, but if supported by technologies such as contactless payments or all the platforms that make it possible to see in real time whether that garment is actually available in the shop or the application. For example, I have an application where I download all the Fidelity Cards and I have to say that one is very useful. When the shop assistant asks me for my loyalty card, without carrying all the cards with me, I have this app that saves me a bit more space in my bag and is very convenient and accessible. So yes, absolutely, I agree with technology supporting the physical shop.

I also give you other examples, I don't know, of technology, for example information totems or for placing orders. So, referring to all these, can you describe your last experience of shopping in a physical shop? How did technology influence this experience? So, what did you do in the physical shop purchasing stages?

Basically, I first went to the physical shop because I wanted to try on different dresses, only the dress I wanted, in the particular size I needed, wasn't there. But since the brand seemed to me to be of value and I liked it, I went online. I actually found the product I needed and then finalized the purchase. On the other hand, a not-so-recent experience, where I actually used totems to place the order on the spot, happened in a fast-food chain many years ago. There was a long queue at the till to order, and there were totems at the same time in the shop to order, so I did it earlier.

You found them useful?

Yes, exactly.

OK, can you think of other examples of technologies that you've used, like QR codes, the apps you told me about Fidelity Cards or automated checkouts? Other examples do you have?

Yes, then automatic checkouts pretty much all the time in a shop I go to quite often. I think they also speed up the purchasing process a lot, which can make a difference, because, for example, I don't like queuing to pay. So, I have the option, as an alternative, because maybe there are physical tills in the shop, but at the same time they are supported by

automatic cash machines. There, too, I use them in this way to speed up. And QR codes, I happened to use them mainly in restaurants. I didn't happen to use them in clothing shops, but I think that nowadays the QR code in restaurants is also fundamental for a fact of sustainability and hygiene, because passing so many menus can be saved. So, to have access by taking a picture of the QR code to the whole menu is in any case an absolutely useful thing and something that more and more companies are implementing.

OK, fine. Based on all these experiences that you told me about anyway, and the technologies involved, what did you like about using it and what did you not like? If you had to repeat, what would you repeat or what would you not repeat? What would you recommend improving the experience with the technologies, where there is something, you did not like?

Yes, I am trying to remember all the questions you asked me. So, what didn't I like? What I was anticipating is precisely that many times the technology and the sites or in any case the applications do not give you a true idea of what the product is that you are going to buy, because many times it is true, it is put on the site in the best form, but this form then does not correspond to reality. And so certainly this I know is being implemented so much by companies through the virtual try-on that it still manages to give a better form to this technology, to this buying experience. And so, I would improve that.

OK, and if you were to improve something always referring to the relationship of technology within the physical shop, so if you were to give some advice with respect to a negative experience you had to improve the experience?

Well, from personal experience, I can say that there are very few shops I have gone to where technology is really used to support the shop. I'm talking about more advanced technology, not just the app, but also, to say, the totems we were talking about. Before, actually a lot of shops still don't have them. So, I had to stand in really long queues for payment, for example. And instead, being able to pay through totems instead of just through the automatic cash machine which, I repeat, is not present everywhere, could be something that would also guarantee many more purchases to the brand in real time. And nothing, then the positive factors...

Positive factors, like being able to speed up, things like that?
Exactly. The fact that I don't need to go to the shop means that I can always go offline. We always talk about the moment when you are at the shop.
The fact that when I choose to make the purchase, I am sure of the product I am buying. So, I don't need to change, to make a return, as is too often the case on the online platform, and so surely that is the main reason why I make an offline purchase. Also, the fact that I can rely a little bit on the experience of the people who work in the shop, because we know that maybe a lot of people aim at boosting sales, but there is just as much really good advice. Also, because you also have to rely on the experience of the workers.

Clearly it is the human touch. Let's say it's still important, right? As for technologies on the ground, what positive evidence do you see?
Well, let's say that compared to the past, technologies are being implemented. They are being implemented well. With technologies and customer service increasingly ready to listen to the needs of the consumer, so increasingly customized technologies. At the same time, I see that they are also being used a lot in POP up stores, so for targeted and personalized experiences. Technologies applied in stores guarantee personalized and immersive experiences.

Yes, to guarantee an immersive experience. Also, because it is the future, let's say.
Absolutely, yes. Because the digital experience is important and fundamental for today's businesses. The physical shop and the digital shop have to co-exist, in my opinion, precisely because they both have significant potential.

I ask you a question about paying by telephone or contactless, let's say digital payment at the store. How do you use this technology, what do you think are the limitations and what benefits do you find in using it?
For some time now I have been using practically only apps for payment. I have to say that I am very happy because many times I have forgotten my wallet, but my phone is always with me and therefore I could always have access to a fast, simple and very useful payment method. I think it is truly fundamental. Now who doesn't pay by card or via app really? There are few stores that do not allow this payment method.

Ok, while always in the in-store experience, combined with the use of technologies, have you ever encountered difficulties, obstacles in using in-store technologies? Has something happened to you that made you unable to use a device? If so, what?

Sometimes it happened that due to a lack of connection or a system block the platform was actually not available and therefore the order could not be made.

Maybe totems or technologies we talked about. I'm at the store, I was using this technology, this happened. I encountered this difficulty, I couldn't use it, or this happened, I had to ask the staff for help. Things like that.

I've never encountered any particular difficulties in using technologies. Maybe the use of applications, often the fact of having to enter a lot of data that I don't know is essential to personalize the offer etc. etc. It was a bit boring because there was really a lot of mandatory information and so I ended up having to take longer to fill out the form rather than pay at the checkout.

And which technologies would you like to see more exploited and adopted in physical stores? Or is there any advice you would like to give to implement the experience between technology and physical store?

As I said before, in my opinion the use of augmented reality could be implemented a little more. Major brands are certainly using it, but we don't see it so much in fast fashion. For example, the use of smart mirrors or apps to virtually try on clothing products could greatly improve the shopping experience. Implement augmented reality and continue with these immersive experiences because I think they are the future. A consumer who has an immersive experience in contact with the brand is certainly willing to choose the brand in the long term and pay a premium price. Always monitoring consumer feedback through online platforms is really the basis. Listening to even the not so positive reviews to improve online reputation, which is fundamental.

Last question, how do you see the evolution of the use of technology in stores in the coming years? In your opinion, is there an acceptance of technology by consumers? Will there be greater acceptance? Will there be an implementation? What will happen?

Now acceptance is mainly by young people, while older people are suspicious of all these changes and new technologies. However, in the future we will find ourselves faced with stores that will be able to use technology more and more because they will adapt to the needs of consumers and the dynamic market. I see it in a positive way, with growth potential.

Interview 3 - Michela, medical student

Tell me a little about yourself and your interests.

I am a final-year medical student. As for hobbies or passions, I don't really have much free time. I play sports, read, and I used to take a French course. These are, let's say, my hobbies.

How often do you shop offline?

I would say 50% of the time online, mainly because of the various discounts. The products I buy most frequently are cosmetics.

And do you often buy in retail shops, like Zara? Is there a particular sector where you buy?

I've tried to cut down on fast fashion purchases, so I would say very few times a year. However, if we talk about chain shops in general, I will say that I buy more in the food sector, definitely more than once a month.

Why do you prefer to buy in a physical shop rather than online?

By buying more cosmetics products, I can try them in the shop and see what is new. Online I always find the same products, while in the shop I explore a bit more. It is also a moment of leisure for me.

How do you use technology in shops? Do you use discount apps, augmented reality, or digital payments?

Very little, perhaps out of laziness or because I am not familiar with these technologies. Sometimes I use apps for discounts, but otherwise, no.

Can you describe your last shopping experience in a physical shop?

I usually look for the product myself or ask for advice on something specific, like a shade of eyeshadow. I do everything quite independently and, if needed, I ask for help. It also depends on the shop, because often the staff will offer to help you.

During this experience, did technology influence you in any way?

Yes, I often make payments over the phone, with the card registered. So yes, payment is when I use technology most in the shop.

Is there anything you would like to repeat or implement in the use of technology in shops?

I really like the idea of augmented reality, like when you can virtually try on sunglasses. It's a technology I really appreciate and like to use. Trivially, we were talking about glasses: when you try on a pair of glasses sometimes it doesn't quite match the image, even if you do the try-on. Even if it matches your face shape, there are often nuances that you can't perceive.

Do you see the support of technology as positive or negative?

I see this as a positive rather than a negative aspect. Even in the physical shop, sometimes I don't use certain technologies because I am lazy, or I don't know them well. Sometimes I don't even know that there are facilities or facilitations with a certain app because I don't know the app world well.

How do you see the evolution of technology use in the coming years?

It will certainly make shopping easier. Although it is not my area, I think it will move towards more automation, such as automated checkouts, which speed up the process a lot.

Do you think automated checkouts are an advantage?

Absolutely, for speed. However, they could lead to a loss of jobs.

Are there aspects of current technologies that could be improved?

Perhaps customer service could be improved. For example, on Amazon I had problems contacting sellers for returns or scams. Communication could be clearer and more controlled.

Interview 4 - Francesca, Law student

Tell me about yourself. How old are you, where do you live, what do you do for a living, what are your hobbies?

I am Francesca, I am a 22-year-old law student. I dedicate a lot of my time to studying and divide my day between study, work and friends.

How often do you buy products offline, i.e., in a physical shop? Which products do you buy most frequently? Is there a product category you buy most often, from furniture to clothes to cosmetics?

Most of the products I buy I get in the shop. I do not like buying online, except for products that do not concern clothing. I have bought furniture or paintings online, on Amazon for example, but never clothing. For clothing, I consider in-store shopping to be essential, especially because the few times I have bought online, I have had to return them. The body is very personal and buying online does not allow you to try on and see the product.

Why do you prefer to buy products in a physical shop? What aspects of offline shopping do you find advantageous?

The first advantage is that I can test the product immediately and do not have the burden of having to bring it back. I can choose in person from the various articles and immediately have a complete overview of everything I could try and then buy. I have no surprises in the purchase, whereas online it can happen that the product is exchanged, or the order is wrong. The waiting time is very long online, although deliveries are now faster.

Let's talk about the relationship you have with technologies. I mean technologies such as digital payment, contactless payments, coupon scanning via apps, loyalty apps, immersive experiences, or automated checkouts.

I was very much behind with these innovations. The innovation I liked the most is definitely the contactless payment, because it is very efficient and reduces queues at the checkout. The payment is made immediately and there is no waiting for change. The POS can be out of order, but that rarely happens. I find the automatic cashiers inconvenient, mainly because of the lack of clear signage. They should speed up the process, but they often slow it down because the steps are not well explained.

Do you think that, in time, people might accept and use cash machines more?

I think there might be a process of acceptance, but it will affect us young people more. Older people might find it difficult to accept these innovations because they have not lived in a technological age like ours.

Can you describe your last shopping experience in a shop and how technology influenced it?

I recently went to Zara. I liked being able to look at all the products and have a wide choice. I selected the product I liked, stood in line at the fitting room and tried on the dress. At the checkout, the shop assistant recommended the automatic checkout, but we had problems because the screen did not recognize my products. I had to queue at the normal cashier because the automatic cashier could not complete the purchase.

So not a very positive experience. Is there a technology in the shops that you like to use?

The McDonald's automatic checkouts, for example, I like very much. They are like a digital menu, and I find them very efficient. I think they have a better explanation than those in Zara or other retail stores.

Speaking of digital menus in restaurants, what advantages do you think they have?

I think they are a great advantage for restaurateurs and for us customers. They allow you to choose quickly without waiting for the waiter to arrive with the paper menu. They are also more hygienic, because paper menus are difficult to clean.

What are the main limitations and benefits you have found in using technologies?
The benefits are efficiency and speed, but there are limitations in Zara's automated checkouts. I think they should index the purchasing process better. I wish there was a voice guide to help elderly people as well.

How do you see the evolution of the use of technology in shops in the coming years?
I think there will be more integration of technology in the shops. I don't think we will go back to relying only on human staff.

Have you heard of Smart Mirrors in fitting rooms, which allow you to see available colors and order other garments directly from the mirror?
I have never tried them, but it seems like a good idea. It would be convenient if the shop assistant could bring the clothes to me in the fitting room without having to go out. I'm not convinced by the idea of the virtual try-on via mirror, because it doesn't reflect the actual fit. However, in terms of choice, it seems great to me.

What do you think about customization through apps, where you are recommended products that reflect your style?
I happened to be recommended products that were very similar to those I had just bought, but that's not what I'm looking for. I would like it if you ranged more, recommending products from different categories that I might like.

We're done, thank you. It was very helpful.
Thank you!

Interview 5 - Ilaria, Junior export sales (Pininfarina Segno)

Tell me a little about yourself. How old are you, where do you live, work or study?

I am 24 years old, live in Frosinone and am currently not working. I have just graduated in marketing from Luiss.

Let's get into the subject of the interview a bit. How often do you buy products offline, i.e., in physical shops? Is there a particular category that you buy most frequently?

Yes, I buy a lot in physical shops. Although I like to buy online because of the ease and flexibility, I prefer physical shops for products like clothing, especially shoes, because I like to try them on and see them in person. Even for food, like fast food, I always buy in physical shops.

What are the most advantageous aspects of buying in a physical shop versus an online shop?

In a physical shop, you can see and touch the product, try it on and see if it fits. Speaking of clothing, you can better evaluate quality and comfort. You also have a different service compared to online. For food, as in fast food, the experience is different, especially if you are in company.

How much do you use technology and in what way? Let me give you a few examples to get a broader idea: contactless payments, loyalty applications, augmented reality, order desks or totems.

I use these technologies a lot. Whenever I can pay or order at the desks or at self-check-out, I do it because it is faster. I often use contactless payments because they are quick, and I don't have to worry about having cash. I use them a lot when I travel, for example to pay for the metro or the bus.

Can you describe your last shopping experience in a physical shop, from the moment you entered until the final stage?

I am reminded of when I bought a dress for graduation. I went into the shop, walked around to see the clothes I liked. I tried them on, the shop assistant helped me choose and convinced me to buy it. I paid with contactless payment.

So, the only technology you used in that experience was contactless payment. What are the advantages of this technology in your opinion?
The speed, it is very convenient and practical. You don't have to worry about having enough cash and it makes the shopping experience easier and faster.

In other offline shopping experiences, are there other technologies you have used, such as QR codes, interactive screens, or automated checkouts?
Yes, I often consult a shop's website before going there to see what products are available. I use the totems at McDonald's or the self-check-out at supermarkets because I am better off and can avoid the queue. It is always a question of speed.

Have you ever used technologies that offer personalized experiences such as virtual assistants or recommendation agents?
I have used virtual assistants. It depends on their implementation: sometimes they are useful and direct you well, other times the experience is disappointing because they fail to answer more complex questions. As for recommendation agents, yes, every time I search for something online, advertisements appear.

Of the technologies you mentioned, is there anything you did not like or would not want to repeat?
No, I would do everything the same way. I like totems and self-check-out and I would like to see them in more shops, especially large retail stores, because they improve the shopping experience by making it faster and more dynamic.

In your opinion, are there limitations in current technologies that could be improved in shops?

Yes, shops could increase the use of applications with QR codes to see prices and product information. Not all shops have personalized assistants to ensure a complete shopping experience. They could use apps to show available stock and improve loyalty programs.

Do you think they are already implemented well, or could there be something they could add to help the customer?

No, they could simplify them because sometimes it can be difficult to find products or understand how to do it. They could put items on the home screen where, for example, totems could have two options: start automatically do it yourself or with a virtual assistant. The virtual assistant could direct the user on what to select and where to find products. It would be easier for everyone, even those who are not used to technology.

So, a virtual voice assistant, you mean?

Yes, or with a flashing cursor showing you where to find menus or sandwiches, for example.

Have you ever encountered difficulties in using technology in the shop?

Not me, because I am used to these technologies. But my parents, for example, who are from an earlier generation, find it more difficult to use totems at McDonald's. For them it is a slowdown in the process.

Is there a way to help generations less used to these technologies, to make the process faster?

They could simplify the totem interface and perhaps include an option for virtual help. This could guide the user step by step and make the experience easier for everyone.

How do you see the evolution of technology use in the coming years?

I think everything will be automated and physical shops will become less common, especially small shops. The big chains will survive thanks to channel strategies. The shopping experience will be predominantly online, with technologies such as augmented reality making the shopping experience more like the real thing.

Do you think interaction with the real world will be reduced?

Yes, I think that especially in urban centers, where life is more hectic, people will prefer to shop online. After Covid, we changed our lifestyle and now everything is much more virtual.

Interview 6- Lavinia, economics student

Tell me about yourself.

I am 23 years old and an economics student, in my spare time I like to read and hang out with my friends.

I am studying consumer behavior within physical shops, particularly retail shops, and their relationship with offline technologies. This includes contactless payments, loyalty apps, augmented reality, and automated checkouts. How often do you buy products offline? Is there a reference category that you prefer to buy in offline retail stores?

I mostly buy in physical shops, especially for clothes. I like to see the product in person and try it on to see how it fits me. I also prefer to avoid the complicated returns that can result from online shopping. I don't like having to contact the retailer for returns.

Can you describe your last shopping experience in a physical shop? It does not matter if it is clothing or something else, such as fast-food chains.

Yesterday I went to the supermarket. The only technology I interfaced with was the automatic checkout. I used the scanner to swipe the products and handled the payment.

Did you use a virtual payment, such as via POS or telephone?

Yes, I used the phone for payment.

Have you ever had experience with technologies that offer personalized services, such as virtual assistants, or with personalized advertisements that appear online after your searches?

Yes, I use virtual assistants mainly for telephone and landline problems. If the problem cannot be solved by artificial intelligence, they refer me to a call. As for personalized advertisements, I don't like them, and I always deactivate this mode. I find them annoying because they only offer me what I have searched for, limiting other options.

Regarding experiences in physical shops, is there anything you would repeat or something you did not like and would not do again?
There is nothing I didn't particularly like. The good thing nowadays is that all you need for loyalty with a shop is a phone number or email, whereas before you needed detailed forms. This I find advantageous.

Are there any technologies you have tried that you did not like, as well as those you would do again, such as automated checkouts?
I like ATMs because they are fast. There are no negative experiences that I can think of, I would do everything the same way again.

Have you ever experienced difficulties in using technology in shops, such as inefficient or unintuitive technology?
No, I had no difficulties in using technology in shops.

You gave me the example of automated teller machines. In your opinion, in general, what are the main limitations and benefits you find in using automated teller machines?
The benefits are that they are faster, also because a minimum number of items is required to use them, so there will never be a queue. The downside is that there is effectively no controller. I could pass less items than I purchased without being checked.

So, you think there is a risk of theft?
Yes, because even if a receipt is required to leave, in the end there is no one to check if I have passed all the products. Even if there is someone to help in case of difficulties, they don't do a detailed check.

Many have made comparisons between supermarket checkouts and those in clothes shops. Have you ever tried automated checkouts in clothing shops?
No, I didn't know there were cash machines in clothes shops. I heard that at Zara and other shops like Pull Bear and Stradivarius there are, but I have never tried them.

Are there technologies that you would like to see adopted in physical shops? How could they be made more accessible, especially for those not used to technology?
Obviously, there must be a simple technology that is within everyone's reach. It would be helpful to have clear illustrative pictures showing the steps to follow to use the technology. We young people are used to it, but for older people, even a simple picture can be very helpful.

How do you see the evolution of the use of technology in shops in the coming years?
I think there will be a middle ground. It will depend both on the sector and the company. Small companies, which focus on consumer loyalty, might limit their use of technology. Large companies, on the other hand, which aim to reduce personnel costs and increase profits, will expand the use of technology. The use of technology elements reduces personnel costs and thus increases profits, so the larger the company, the more they will use technology.

Interview 7 - Ilaria, Sales Planning & Control Intern (IGT)
Hi Ilaria, can you tell me a bit about yourself? How old are you, what do you do in life?
Of course! I'm Ilaria, I'm 23 years old and a marketing graduate from Luiss. I really like travelling and listening to music.

My thesis aims to study consumer behavior with respect to offline technologies, i.e., those integrated in physical shops. I am talking about technologies such as digital payment, automated checkouts and loyalty apps. How often do you buy products offline? Is there a category you prefer to buy in retail stores?

I buy mostly in physical shops, especially clothes. I don't like buying online too much. I like trying on clothes and seeing how they fit, as well as touching the material with my hand.

Can you describe your last shopping experience in a physical shop? It can be any shop, even a fast-food restaurant.
I once bought a T-shirt at H&M and used the app in the shop to check if there was the size I needed. At the checkout I paid with my card.

Have you ever used technologies that offer personalized experiences, such as intelligent mirrors or virtual assistants? Or have you ever noticed the advertisements that appear online after doing research?
I happened to see advertisements for clothes that I had been looking for. I find it useful because it understands what I am looking for and directs me to products that suit my taste.

Have you used other technologies, such as QR codes, augmented reality or automated checkouts?
Yes, I used the cash machines at Uniqlo. They are very convenient because you put the clothes on, and the cashier automatically recognizes them. I prefer to do it myself when there is less queue.

Do you think the automated checkouts are intuitive? Are there aspects that could be improved?
I think they are quite intuitive, at least for us young people. I don't see any particular improvements needed.

What are the benefits and limitations of technology in shops?
The benefits are that it is easier to find what I need thanks to recommendations based on my recent purchases. However, a con is that they have to collect a lot of sensitive data to achieve these benefits. Also, if there is a technical problem, everything can crash.

As for the shop part, what are the benefits and limitations?

The benefit is the speed of being in the shop. I can quickly see if a product is available via the app. However, if I didn't have the app, I could have asked an assistant.

Have you ever encountered difficulties in using technology in shops?
I don't use them often, but it has happened to me that in crowded shops the network doesn't work well.

How do you see the evolution of the use of technology in shops in the coming years?
I think it will be more and more integrated. They are experimenting with prototypes like the ones in America, where you do your shopping and pay automatically. I think they will take up a lot of space in shops, as we have gone from loyalty cards to automatic checkouts and the ability to see everything in real time from your phone.

All right, thank you very much for your time!
Thank you!

Interview 8 – Francesco, economics student

Tell me a little about yourself. How old are you, where do you live, do you have any hobbies?
Well then, I am a university student. I am finishing my three-year degree in economics and management at Luiss. My passions are the world of economics, cooking and, every now and then, I go running as an amateur.

How often do you buy products offline? Is there a category you purchase most frequently offline? Do you prefer to shop offline in a specific sector?
Offline shopping? Practically almost daily. My purchases are mainly concentrated offline compared to online. The categories I prefer to buy offline are food and clothing. I am passionate about cooking, and I like to have direct contact with the people who sell the food, especially if I don't get it from large retailers.

Why do you prefer to buy products in a physical shop? What aspects do you consider to be more advantageous than buying offline?

For me, the real advantage of buying offline is the contact with the product and the person selling it. In food, it is useful to deal with a professional who can advise you. In clothing, I appreciate the possibility of having assistance in the purchase, such as suggestions on pairings. It is also convenient to try on clothes before buying them, realizing immediately if I like them or if they fit me well, without having to go through the online return process.

I will give you a list of some of the technologies that can be used in physical shops: contactless and mobile payments, smartphone scanning of apps, loyalty apps, augmented reality, information totems, online order desks, personal shopping assistants, immersive experiences such as virtual reality, interactive mirrors, customer feedback terminals, smart cards, smart shopping trolleys and self-check-out. How often do you use these technologies in retail stores?

I tend to use them if they are present, like self-check-out, especially to skip the queue. I find other technologies very interesting, but I rarely find them in shops. Recently, in a men's clothing shop, Nuvolari, they put screens through which one can order products.

When did you go to Nuvolari for this experience? Can you describe one of your last experiences in a physical shop?

Last summer. I liked a T-shirt, but my size was not available in the shop. The staff helped me look it up in the online catalogue via the screen to order it and have it delivered to my nearest shop. I could try it on and pay for it directly in the shop.

Do you remember a more recent experience where you can describe the path you took in the shop?

Lately, at Zara, I have been using the self-check-out to buy products. The advantage is that these checkouts have fewer queues than those with an attendant. At Zara, there is no need to scan the products, just place them in a box next to the till, which deactivates the anti-shoplifting and calculates the total automatically. The only problem was that it didn't automatically deactivate the anti-shoplifting after payment, so I had to go back and do it manually.

Are there any other technologies you use when shopping?

Inside the store, no, but I use the phone to see the online catalogue and make targeted purchases. Sometimes I use computers in shops to enter the code and find products. I have also used interactive maps in a shopping Centre to find a shop.

Have you ever used technologies that offer personalized experiences, such as intelligent mirrors, virtual assistants or recommendation agents?
Yes, as far as targeted advertising is concerned, it sometimes succeeds in arousing interest, especially for impulse purchases. However, it becomes annoying when it keeps showing me similar products after I have already purchased.

Of all the technologies you mentioned, what did you like and what did you dislike?
I like them because they make the in-store experience more complete and allow you to learn more about a product on your own. They also speed up the purchase by reducing the queue at the checkout. I don't like it when they require too much customer interaction, I would like more ease of use.

Regarding automated checkouts, how do you think they could be improved?
Zara has already improved the automatic checkouts but could automate the various steps further. For example, suggesting the right bag to take according to the products and automating the deactivation of anti-shoplifting.

Which technologies would you like to see increased in physical shops?
I would like to have smart mirrors in clothing shops to interact more with the products and see feedback from other users. It would be useful to be able to leave feedback on the in-store experience, especially on the quality of service.

In what way do you think it would be useful to leave a judgement?
Being able to leave a rating on the in-store experience, perhaps on a terminal, would help to understand whether the experience due to the human side was positive or negative. I think the presence of shop assistants is the most complicated variable to control in retail.

How do you see the evolution of the use of technology in the coming years in shops?
I believe there will be an increase in technology in shops, but not to replace human

contact. Technology will enrich the customer experience, hybridizing the in-store experience with the online experience and making it more complete.

Thank you for your time, Francesco!
Thank you!

Interview 9 - Gioia, Junior Communications and Public Affairs Specialist (Strategic Partners)

Tell me a little about yourself.
Hello Aurora, I am very happy to be here. I'm Gioia, I'm 25 years old, I live in Rome, and I work in a communication agency. My passions include sailing and I also go to the gym in my spare time.

Do you often buy offline? What do you buy most frequently?
I often buy products offline, especially at the supermarket, for groceries, at the pharmacy, or when I buy technology products such as phone cables. In retail shops, I often buy products in the food and beverage sector, for example in wine shops. I prefer to buy products in physical shops when I need advice on a technological product. Sometimes I prefer to buy on e-commerce for speed, speed and for a logistics factor.

What aspects of offline shopping do you find advantageous?
Certainly, the advantage of having someone who can guide you in choosing an optimal product and the opportunity to touch and see the product you would like to buy. It is also useful to be able to try out the product.

How much do you use technology and in what way?
I use technology every day because I can also work in smart working via phone or PC. I have a very advanced relationship with technology, especially when it comes to payments.

I often use my bank's app to pay directly or make transfers, but I don't use Apple Pay, Google Pay, or Samsung Pay. Instead, I use POS terminals for contactless payments and self-check-out when I go shopping, I scan and pay myself quickly. I use a phone app that helps me choose products while shopping via a scanner that indicates the quality of the product. I never use discount apps, but I use artificial intelligence to structure the weekly shopping schedule. I enter the coupons with the week's discounts and the app creates a program of products for me to buy. I have never experimented with augmented reality for shopping, but I would be tempted to try it, as well as immersive experiences and interactive mirrors.

Can you describe your last offline shopping experience and explain how technology influenced this experience?

My last experience of shopping in a physical shop was about a fortnight ago at Decathlon, which sells sporting goods. It was a different experience compared to an e-commerce, because having a person to help me and direct me towards the right product made me feel more confident when choosing a technical product such as mountain equipment. Technology did not influence this experience; I did not use QR codes, apps, or cash machines, and I paid in cash.

Have you ever used technologies that offer personalized experiences, such as virtual assistants or intelligent mirrors?

I have never used technologies for personalized experiences such as intelligent mirrors or virtual assistants, so I cannot express an opinion on them, but I would like to try them out.

What are the main limitations and benefits you find in using technologies?

One limitation may be the Internet connection, which sometimes does not pick up, so payments do not go through. With the technologies I have experienced, I have not found many difficulties. I would like to see more self-service checkouts to speed up purchases, for example in pharmacies. It would be interesting to have augmented reality to experience products in sports shops.

How do you see the evolution of the use of technology in shops in the coming years?
It's a good question. There is a lot of talk about the future with Amazon, where you can log in with your personal account and pay with your physical presence, without money or apps. It's an interesting idea and I think we will get closer to this type of technology soon. However, in Italy, given the average age of the population, I don't think we will see something like this in the next 10 years. It would be interesting to see how this revolution will change, perhaps making everything more user-friendly.

Thank you for your time, Gioia!
Thank you!
Interview 10 - Salvatore, Software product manager (Accenture Song)
Tell me a bit about yourself in general. What do you do? How old are you? What are your hobbies?
I am 30 years old and live in Lugano, where I have been working in a consulting company for almost four years. I was born in a small town, but I moved to Milan for studies, where I graduated. Among my hobbies, I like to explore new technologies and I am passionate about cooking, so I often experiment with new dishes when I get the chance.

The topic is about offline shopping and technology. So, I ask you how often do you buy products offline? Is there a reference category with which you shop more in retail stores?
The product category I buy most offline is food. It is easier to buy food directly in the shop or supermarket. It is more convenient, especially when you need to see and choose fresh produce such as fruit, vegetables, and meat yourself. I prefer to go to the shop to see what to buy, maybe without a clear idea, I walk around and decide what to get for lunch or dinner. In addition, I like to visit local markets to discover special and higher quality products.

In your daily life, how much do you use technology and in what way?
I use technology a lot, especially for work, so mainly the Internet. I am often connected to manage projects and communicate with clients and colleagues via video conferencing platforms. In addition, I shop online from both mobile and PC. I use apps to manage my

finances and to organize my personal and professional commitments. For everyday life, technology is indispensable.

Can you describe your last shopping experience in a physical shop?
It was definitely grocery shopping. I usually go to the supermarket at least once a week. I never pay in cash; I always check out and use electronic payments via contactless. This not only makes the process quicker, but also more hygienic, since I do not have to handle money.

How has technology influenced your shopping experience in this case?
Technology definitely helps to speed up queues at the checkout. I prefer the self-check-out and pay there independently because it is faster. I find that this technology greatly reduces waiting times, especially at peak times, allowing me to have a smoother shopping experience.

Have you ever used technologies that offer personalized experiences, such as virtual assistants or recommendation agents?
Yes, I have used recommendation systems, especially on platforms like Amazon. They are very useful when I have to make an online purchasing choice. They help me discover similar products to those I have already bought or searched for, and often offer me relevant suggestions that I might otherwise overlook. However, they can sometimes be intrusive when they keep showing advertisements for products I have already purchased.

What did you like and dislike about the technologies you used, such as check-out and digital payment?
I would say that I get along well with all these technologies. One useful thing is that when I go shopping, I use an app called Yuka, which allows me to scan products and assess their quality. It also offers me healthier alternatives, which helps me make more conscious food choices. There are no particular aspects I dislike, but I think they could improve the integration of these technologies to make the experience even more intuitive.

What do you think about Virtual Try-On?

I think it is very useful in the luxury sector, where we try to reproduce online the same experience that the customer has in the boutique. For example, Virtual Try-On can help you see a watch on your wrist or a ring on your finger. This kind of technology can make all the difference when buying an expensive product and you want to make sure it is perfect before completing the purchase.

Are there any technologies you would like to see more adopted in physical shops?

It could be useful to have the technology of Amazon Go, where you can shop and go out without having to scan products. It would also be useful to have an online list of products you usually buy, ready for pre-filled shopping. This function would be especially useful for everyday items, simplifying the preparation of the shopping list and saving time.

How do you see the evolution of technology use in the coming years?

I believe there will be an increase in the use of personalized virtual assistants, somewhat like digital secretaries to manage our needs and habits. In the future, we could ask these assistants to place orders for us, without having to physically go to the shops. I think technologies will evolve to become more and more integrated into our daily lives, making many aspects of our routines easier and more efficient.

Well, thank you for your time, Salvatore!

Thank you!

Interview 11 - Ludovica, student of Economic-Political Philosophy

Tell me a little about yourself. Tell me where you live, what are your hobbies, what do you do in general?

I am Ludovica, I am 23 years old. I live in Grottaferrata, and I study philosophy with a political economy focus on Tor Vergata. In my spare time I play tennis, I like sports in general, reading, and shopping.

I would like to know how often you buy products offline and which products you buy most frequently. Is there a category or categories you prefer?

I mainly buy clothes in physical shops, especially fast fashion shops like Zara and Stradivarius. I have noticed that these shops have updated a lot, also in the payment methods, reducing the number of staff and introducing automatic checkouts.

Why do you prefer to buy products in a physical shop? What aspects of offline shopping do you find advantageous?

I prefer to buy in person because I can see and touch the material better. There may be a description on the website, but you don't know if the fabric will feel uncomfortable on your skin. Also, I can try the garments on in the fitting rooms and get positive or negative feedback straight away. Online, on the other hand if something doesn't fit, I have to return it, losing days. In addition, I can ask for advice from the shop assistants, who are always willing to give an opinion or recommend the right size for my physique.

How much do you use technologies in your daily life? What is your relationship with them?

I use them a lot, mainly because I am still at university. All my books are digital, and I study on the iPad. I use the Internet to do research. I don't use notebooks anymore: I take notes on my phone or iPad with the Apple Pencil. Technology is an integral part of my study and my daily life because it is more practical and less cumbersome than traditional methods.

Can you describe to me your last experience of buying in a physical shop?

*The last purchase I made was at F**k in Rome. I like going there because the owners are always the same and they know me. They always greet me with kindness, and I like the interaction with people. I bought a clutch bag, and they offered me a 10% discount if I signed up for their newsletter. I used.*

Do you think this is a useful thing you would do again?

Yes, it was a nice experience. There was no sign saying 10% discount for those who signed up, so it was a nice bonus at the checkout that enticed me to buy.

Another shopping experience where technology has had an influence? For example, many people talk about automated checkouts.

Yes, at Stradivarius in a shopping Centre they have done away with traditional checkouts. You have to do everything yourself at the automatic checkouts, but I found it a bit difficult. It was not clear whether I had to put the clothes on first or do another operation. Many people were asking the shop assistants for help, so it seemed a bit pointless if you need staff to assist anyway.

Do you think that once you learn how to use it, it will improve, or will it always remain slow?

I believe that once I understand the mechanism, it can improve. However, for those who are not used to technology, like my grandmother or even my mother, it might cause some queues. If there was a clear initial explanation, maybe the process would be faster.

Have you ever used technologies that offer personalized experiences such as smart mirrors or recommendation agents?

I have never seen smart mirrors here in Italy. Instead, I often see advertisements on social media for products that I have searched for online. If they offer me more opportunities to see the same product, perhaps in other variants, that is good. But sometimes it gets repetitive and confusing.

What did you like and dislike about the technologies you used during your purchases? What would you like to repeat?

I like playing with my phone, it is very convenient. The app points accumulation system, like at McDonald's, is also useful. I also tried the virtual try-on for glasses and liked it. I find it useful for accessories that you don't have to touch to see if you like them. For clothes, seeing how they fit you virtually is an advantage, but the fabric still needs to be assessed in person.

Are there any technologies you would like to see more of in physical shops?

It would be useful to be able to check the availability of sizes directly from the fitting room. Maybe a smart mirror that lets you know if there are other sizes available. Discounts for newsletter subscribers are also a good idea.

How do you see the evolution of the use of technology in shops in the coming years?

I think they are developing a lot. However, I think it is important to inform and educate customers on the use of technology. In fast fashion shops, the customer base is different than in luxury, so more initial assistance is needed. Technology in shops is bound to improve, but you have to consider the variety of users.

Well, thank you for your time!

Thank you!

Interview 12 - Claudio, retail entrepreneur

Tell me a little about yourself. How old are you? What do you do in life?

Hello, I am Claudio, I am 53 years old. In life I am an entrepreneur, I work in the retail sector, specifically in the fast fashion sector.

I would like to know how often you buy products offline, particularly in retail shops. Is there a category you prefer to buy offline?

I definitely prefer to buy clothes offline. I like to buy clothes in boutiques that have specific brands, in specialized shops, and not in chains. In terms of retail, for example, I don't go to Zara. I prefer family shops, even for food; I like to go to have human contact and socialize.

Why do you prefer to buy products in a physical shop? What aspects do you find advantageous?

When it comes to clothing, I like to try the product and see how it fits. As far as food products are concerned, I like human contact and social interaction with the people in charge.

How much do you use technology and in what way? Tell me a little about your general relationship with technology, both in your daily and work use.

Workwise, I use technology a lot, mostly through email or management programs that we have created for our network of shops. We use technology such as people counting and PC programs for product evaluation, margin and more. On a personal level, I use technology to check my accounts daily, and I mainly use my computer, phone and iPad.

Tell me about the technologies you use in offline stores, such as contactless payments, information totems, interactive mirrors, etc.

I recently used an interactive screen at McDonald's to avoid the queue. Contactless payments I have been using for about a year now for everything. Cash machines I have rarely used, but it has happened in places like Ikea or supermarkets.

Compared to these technologies, what advantages have you found?

Surely the main advantage is the avoidance of queues and the speed of execution. However, sometimes it is not clear how to terminate a payment or replace a product, and I think wizards could improve the situation.

Have you ever used technologies that offer personalized experiences, such as virtual assistants or online advertising recommendations? What do you think?

They don't bother me; on the contrary, I find them stimulating. They have been useful to me, for example, in the automotive sector, where I have been able to see more advantageous solutions.

Would you ever use a Smart Mirror in a dressing room?

I find it extremely interesting and useful, especially for the man who is often undecided on how to create an outfit. It helps to make better choices and avoid buying mistakes.

Have you ever encountered difficulties in using technology in the shop?

No, but the shops I frequent have not yet adopted all these cutting-edge technologies. I would like to see more virtual assistants in the shops.

How do you see the evolution of technology use in the coming years?

I think the use of technology will be increasingly incentivized, both economically and fiscally. I think that at the point of sale it could lead to a reduction in costs, with less staff and an increase in revenue. On a commercial level, I see this as a positive thing, but it is dangerous for the productivity of human resources. This is because, as happened in the banking sector, where the use of interactive systems led to the closure of many bank counters, the same could happen in other sectors. Many bank branches no longer exist, many premises have closed, and many employees have ended up in redundancy or early retirement. This has led to a revolution in the banking system, and I fear the same could happen in other sectors.

Well, thank you for your time!

Thank you!

Interview 13 - Matteo, Law student

Tell me a little about yourself. What do you do, how old are you, and what are your hobbies? Feel free to tell whatever you want.

Hi! So, I am 22 years old and study law. I got into technology around the age of 12, when I started using the first iPods for music. Then, as technology evolved, these devices became touch and new possibilities opened: games, music, digital calculators, pictures, HD cameras, and even YouTube videos. Right from the start, I had a strong interest in technology.

So, you have a special relationship with technology from a young age. Let's talk a bit about your buying habits. How often do you buy products offline, in physical shops, compared to online? And are there products that you prefer to buy one way rather than the other?

I buy a lot online, especially on sites like Amazon and Farfetch. When it comes to luxury brands, I prefer to use their apps or interact directly with managers via WhatsApp, thus avoiding queues in boutiques. When I find myself passing through the city Centre, I sometimes also shop in physical shops, but I often find this less practical because of the

queues and the time involved. However, physical reality offers a unique experience: you can touch and see what you buy up close, something that online shopping cannot offer you.

I see. And which product category do you prefer to buy in physical shops?
Shoes. Each shoe model fits differently, and it is often necessary to try them on to make sure they fit. Although I sometimes buy shoes online, especially if I already know my size for that specific brand, I still prefer to try them on in person.

I understand. Now, tell me about your last shopping experience in a physical shop. How did you use technology on that occasion?
I always use Apple Pay when I shop. The main advantage is convenience: I don't have to carry cash or cards, and there is less risk of losing my wallet. Also, everything is fiscally traceable.

Have you ever used augmented reality or virtual reality for shopping, e.g., to try out glasses or other accessories?
Yes, I happened to try out glasses with augmented reality. It is an interesting experience, but it is not comparable to trying them on in person. In the shop you can see how they really look on you, from different angles, and feel the material on your skin. Augmented reality is useful, but it lacks that real, tangible dimension.

What if an augmented reality technology was developed that mirrors your face exactly and allows you to see the glasses from different angles, would you find it useful?
It would certainly be interesting and could save time. But, as I said, it can never completely replace the physical experience and human contact one has in the shop.

What do you think of interactive mirrors in shops, which allow you to choose sizes and colors directly from the fitting room?

It may be useful, especially to speed up the buying process. However, it will never completely replace the experience of touching and trying on the actual garment. In luxury shops it might add value, but in ordinary shops it might become inconvenient.

Have you ever encountered difficulties in using technology in shops?
Sometimes yes, perhaps when a credit card is not accepted or there are technical problems. However, these problems are increasingly rare with the modernization of payment systems.

Which technologies would you most like to see adopted in physical shops?
I would like to see more modernization in some shops, especially the less niche ones. In addition to improving aesthetics and the shopping experience, it would be useful to harness social media to engage customers more.

How do you see the evolution of technology in the coming years, especially in relation to the relationship between people and technology?
Technology has enormous power to influence the masses, as we have seen with phones and social media. In the coming years, I think we will see further integration of technology into our daily lives, with new developments such as electric cars and artificial intelligence. However, it is important to manage this development well to avoid negative effects, such as job losses or social isolation.

Thank you, Matteo, it was a pleasure talking to you.
Thank you!

Interview 14 - Sara, medical student
Tell me a little about yourself. How old are you? Do you study? What are your hobbies?
I am 19 years old and in September I will start medical school. I live in the province of Rome. In my spare time I like to cook, especially sweets and ice cream, and I practice sport, in particular horse riding.

How often do you buy products offline? Is there a product category you prefer to buy in-store rather than online?

I buy products offline very often; I would say once a week. The products I buy most frequently are clothing and skincare.

Why do you prefer to buy these products in a physical shop? What are the advantages for you?

I prefer to buy in a physical shop because I can see the type of material and how the dress is made, especially for sizes. I don't like buying clothes online, trying them on at home and then maybe having to return them. In the shop I can try everything on without any problems. As far as skincare is concerned, it's more a question of practicality: when I go clothes shopping, I walk around and get the skincare products I need as well.

How much do you use technology in your daily life? And in what way?

I use them daily for almost everything, mainly social. In fashion, for example, I find inspiration online by looking at other people's outfits, so I get an idea of what I want to buy later in the shop.

Would you like to describe your last shopping experience in a physical shop?

I went in and had a general look at the products available. I already knew what I wanted to buy, but I still walked around the shop to see if there was anything else that might interest me. Once I had chosen the products, I went to the checkout, but there was a very long queue because it was the sales period. I noticed the automatic checkouts available and decided to use them, which I found to be very good because the system was intuitive and fast.

Did you use other technologies during your last purchase, such as contactless payments or QR codes?

I tend not to, the only technology I use is contactless payment. I find it advantageous because I can use the phone, which I always carry with me, without having to worry about the physical card.

Have you ever used technologies such as virtual assistants or recommendation agents for your purchases?
I have never used virtual assistants or technology to choose sizes online. I have used recommendation agents a few times, but rarely. I don't find them intrusive; they can be useful if they propose something you need at that moment.

If technologies such as smart mirrors were introduced in the fitting rooms, allowing suggestions on sizes and outfits, do you think they would be useful?
I think they could be useful to save time. Personally, I would have no problem sharing my data for this purpose. If these tools can speed up the purchasing process, I think they should be implemented.

Would you rather get outfit suggestions from a smart mirror or a sales assistant? *I wouldn't mind getting tips from the mirror, but I think a sales assistant could do the same job, maybe even better. I'm not sure how much an intelligent mirror can personalize advice compared to a person.*

Have you ever encountered difficulties in using technology when shopping?
No, I always got along well with the technologies I used.

Is there any technology you would like to see in physical shops?
I would like to be able to carry a device to scan prices with me, so I can get an idea of how much I am spending before I go to the checkout. That would be very convenient.

How do you see the evolution of the use of technology in physical shops in the coming years?
I don't think it will change much in the short term. I think technology will continue to be a support, but the in-store experience will remain fundamental. Maybe we will see more widespread use of automated checkouts, but not much else.

Thank you, Sara, for sharing your experience!
Thank you!

Interview 15 - Claudia, Marketing Inter (IGT)

Hi Claudia, tell us a little about yourself.

Hi, I am Claudia, I am 24 years old and live in Rome. I am currently an intern in the marketing department at IGT. My main passions are cooking and sport.

How often do you buy products offline? Which products do you buy most frequently?

I very often buy products offline, especially clothing and food products.

Why do you prefer to buy products in a physical shop? What aspects of offline shopping do you find most advantageous?

I prefer to buy in a physical shop because I like to touch the products and try them directly, thus avoiding the risk of having to make a return. I live shopping as an all-round experience. I usually only buy online if I urgently need a product and don't have time to go and buy it in a shop, or for products I have already tested, such as skincare products, or items I already know the size of. In general, however, I prefer to shop in shops.

How much do you use technologies and in what way? Tell me about your relationship with technologies.

I use technology daily, both for study and work. I easily switch between PC and mobile phone, using various specific programs. I like to stay up to date with new technologies and innovations.

Can you describe your last experience shopping in a physical shop and how technology influenced your purchase?

In my last shopping experience, I went to a supermarket and decided to use the automatic checkout. I find it faster in case of queues and, in a way, also more satisfying. I also used payment via Apple Pay, which I find very useful because I do not have to carry cash with me, and it is more convenient since we always have our mobile phone at hand.

What did you like or dislike about these technologies? What would you like to repeat and what not?

I like everything about these technologies, but I think that similar tools programmed differently can give different results. For example, I also used automated checkouts in a clothing chain, but the process was different and, in my opinion, less intuitive. This made the experience more difficult.

Have you ever used technologies that offer personalized experiences (e.g., intelligent mirrors, virtual assistants, recommendation agents)?

Yes, I have used online virtual assistants, but I find that they provide limited information, similar to what can be found in the FAQ section. As far as recommendation agents are concerned, I find them useful when searching for a specific product, but limiting, because in the long run a kind of personal online profile is created, which, due to cookies, leads to the so-called 'bubble effect', preventing one from seeing different products. In addition, online advertising is sometimes intrusive; it has happened to me that I have talked about certain products without looking for them and then seen them immediately offered online.

Have you ever used augmented reality?

Yes, out of curiosity I have used augmented reality to buy a piece of furniture, but I think it is just an additional experience for the customer. Currently, as it is developed and used by companies, I don't really find it useful.

Did you encounter any difficulties or obstacles in using technology in the shop? If so, which ones?

I have never encountered any difficulties. Sometimes I had to ask for help with the automatic checkouts, e.g., to remove a product from the purchase, to find the bar code, or for anti-shoplifting problems on products.

Which technologies would you most like to see adopted in physical shops?

I would like to see more interactive screens in clothing shops, a kind of touch catalogue to find available products and sizes, perhaps with a click & collect system, a bit like how

the warehouse part works at Ikea. Also, I would like to see QR codes on various products, especially in supermarkets, to get detailed descriptions and information.

How do you see the evolution of the use of technology in shops in the coming years?
I think technology will be more and more integrated into the shops as an added value, but I don't think it will completely replace the staff. Maybe there will be a reduction in staff, but people also go to shops for human contact. No artificial intelligence or robot will ever be able to replace the relationship between customer and sales staff, which is also fundamental for creating loyalty. Technology will support companies and customers, making purchases faster and improving the shopping experience, but the in-store experience will remain unique because it involves various senses and cannot be compared to buying online. Moreover, I believe that in Italy there will be a slower process of technology acceptance than in other countries.