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Gratifications in change of privacy? The response of four consumers' generational cohorts toward facial recognition technology in retail settings

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Abstract

New technologies enable retailers to collect large amounts of information about consumers, which might lead to ethical issues and risks of individuals' privacy loss. However, consumers might choose to disclose information to retailers when they perceive that the information would generate more benefits for themselves rather than for the retailer. Since little research has been done to explain the role of age in disclosing personal information to third parties, the present study investigates the difference in the perception of one's own control when it comes to the usage of privacy-threatening technology depending on respondents' age. Drawing upon uses and gratification theory, the present study explores the response of consumers from four generational cohorts towards the facial recognition technology in retailing. Results reveal that the locus of control over information collected by the technology is neither related to the age of consumers nor to their knowledge of a specific technology used to collect their personal data. Instead, consumers' expected gratifications (in terms of economic and utilitarian) vary across different age groups. Implications for practitioners are discussed.

1 | INTRODUCTION

Technological change continues to impact the rapidly evolving retail landscape and brings benefits for both consumers and retailers (Chen, Perry, et al., 2022; Chen, Sun, & Liu, 2022; Guha et al., 2021; Shankar et al., 2021). Consumers' interactions with the new retail technologies provide a huge amount of information that retailers might use to develop more customized strategies and services (Pantano, Dennis, & Alamanos, 2022). For instance, new data would provide information about the responses of consumers to certain marketing campaigns, favorite characteristics of a brand, and potential reasons behind selecting particular product categories (Klostermann et al., 2018; Pantano & Stylos, 2020; Rapp et al., 2013).

The downside of data collection might also result in potential ethical issues and risks of individuals' privacy loss (Giovanis et al., 2019;

Jahari et al., 2022). These issues and risks might raise consumers' negative feelings toward the company. An example of a technology that brings benefits for retailers in terms of consumer behavior analysis, but which backfires when it comes to ethical considerations, is facial recognition technology (Pantano, Dennis, & Alamanos, 2022). This technology identifies individuals by detecting facial proportions and related features, and categorizes people by profiling them based on socio-demographic characteristics (e.g., age, gender, race, mass index etc.). Due to the versatility and non-intrusiveness of this technology, it has become one of the most favored biometric methods (Adjabi et al., 2020). An example of such technology that is available to a wider audience include the function to lock/unlock iPhone X smartphones, which replaced fingerprinting with facial recognition. Another example was its employment during the COVID-19 pandemic when

Governments like China and South Korea adopted facial recognition technology with other devices to detect people with fever, coronavirus symptoms and track contacts (Lai & Rau, 2021). Also, the technology can be used to protect monetary transaction (since it a unique way of identifying consumers and harder to be hacked if compared to fingerprints), and detect suspicious behavior (Kim et al., 2016; Pantano, 2020; Tezuka et al., 2019). Nevertheless, its application still solicits questions about the possible misuses by companies (Lai & Rau, 2021). Indeed, consumers believe that retailers might abuse the collected personal information (Inman & Nikolova, 2017; Pantano, 2020), while limiting personal freedom (Center for Data Ethics and Innovation, 2020). Therefore, this technology brings new opportunities for retailers but also legal and ethical challenges.

However, past studies demonstrated that consumers might disclose information with retailers if (i) they perceive that the information would generate more benefits for themselves (Pizzi & Scarpi, 2020), or (ii) they would receive a personalized product or experience (Martin & Palmatier, 2020). The rationale for consumers' decision-making can be explained by the privacy calculus framework, postulating that privacy risks can be outweighed by the perceived benefits that the behavior entails (Gutierrez et al., 2019; Massara et al., 2021; Plangger & Montecchi, 2020; Sun et al., 2015). Similarly, retail managers should have the right balance between the demand for personalized consumer experiences and privacy-protecting measures.

Despite the existing body of literature on the perceived costs and benefits of technology use when privacy concerns are involved (Aboulnasr et al., 2022; Gutierrez et al., 2019; Jai & King, 2016; Maseeh et al., 2021; Scarpi et al., 2022; Sun et al., 2015), the changes in gratifications when locus of control over the disclosure of personal data shifts from a retailer to a consumer have been under researched.

Therefore, two research questions arise in this emerging scenario:

> RQ1: What is the difference in the underpinning factors of the disclosure of personal information collected by facial recognition technology used by retailers across different age groups in terms of gratifications?

> RQ2: How do different generations perceive their role in the control over personal data collected by facial recognition technologies?

To investigate the proposed research questions, the research adopts a qualitative approach design. The study uses data collected during 80 in-depth interviews from the participants representing four generational cohorts, namely, baby boomers, Generation X, millennials, and Generation Z. In particular, the paper shows the variance among generational cohorts in terms of reluctance to provide consent to data collection that might be compensated with specific gratifications.

The article is structured as follows: the next section discusses the theoretical background underpinning the study. The subsequent section explains the methodology adopted by the study, including data collection technique, sampling frame and analysis. Drawing upon the discussion of results, the final section highlights the contribution to the literature and practical implications. The article concludes with suggestions for new lines of inquiry.

2 | LITERATURE REVIEW AND THEORETICAL FOUNDATION

2.1 | Information disclosure and privacy perspective

The information-driven relationships between retailers and consumers imply that retailers collect, store, and exchange a large amount of data, resulting in increasing knowledge about consumers' preferences and behavior (Norberg & Horne, 2007; Olivero & Lunt, 2004). Retailers get hold of personal data as a result of privacy-related behavior, which can be manifested in two ways: (i) active personal information disclosure that refers to situations in the provision of personal data in commercial exchange resulting from explicit consumers' intention to disclose data; and (ii) passive information disclosure that occurs when information is collected automatically through digital technologies, such as facial recognition (Norberg & Horne, 2007). The collected data about existing and prospective consumers' preferences and behavior enables retailers to tailor offers and improve services.

The importance of decision-making based on customer insights has led to the continuous growth in demand for personal data. However, inquiries into personal data are often perceived by consumers as a violation of privacy (Martin & Murphy, 2017). The growing concern about privacy intrusion makes consumers reluctant to disclose personal information with retailers and third parties (Aiello et al., 2020; Rodríguez-Priego et al., 2022; Wanjugu et al., 2022).

Despite the increasing concerns over personal data misuse in digital-mediated interactions, consumers still engage in privacy-threatening behavior (Wanjugu et al., 2022). Hence, a trade-off between personalized service and privacy concerns is needed for the retailer's success (Chen, Perry, et al., 2022; Chen, Sun, & Liu, 2022; Pizzi et al., 2022).

Privacy calculus explains the act of engaging in behavior incurring the disclosure of private information despite privacy-related threats (Gutierrez et al., 2019; Plangger & Montecchi, 2020; Sun et al., 2015). Privacy calculus refers to rational evaluation whereby an individual assesses the risks and benefits of the consequences of revealing personal information. Such rational assessment governs decision-making (Al-Jabri et al., 2019; Dinev & Hart, 2006). Accordingly, consumers would be willing to disclose information——and assuming the risk of privacy loss——when they have something in return (Lee et al., 2008). Similarly, this willingness is affected by the perception that consumers have of the locus of control from external (i.e., retailers) to internal (i.e., personal choice if sharing or not) (Schmidt et al., 2020). Accordingly, recent research has demonstrated that when consumers feel that companies respect their privacy, they are more willing to share personal information and interact with digital technologies (Rodríguez-Priego et al., 2022).

TABLE 1 Summary of prior literature on information disclosure and privacy perspective

Topics	Authors
Mitigating factors	
Strong relationships with organizations	Wanjugu et al., 2022
Enrollment in loyalty programs	Jai & King, 2016
Customization/Personalized (e.g., customized discounts, experiences, or services)	Aboulnasr et al., 2022; Dinev & Hart, 2006; Gutierrez et al., 2019; Fernandes & Costa, 2021; Fernandes & Pereira, 2021; Kim et al., 2019; Martin & Palmatier, 2020; Maseeh et al., 2021; Olivero & Lunt, 2004; Pantano, Dennis, & Alamanos, 2022; Pantano, Viassone, et al., 2022; Pizzi et al., 2022; Scarpi et al., 2022; Schmidt et al., 2020; Sun et al., 2015; White, 2004
Self-improvement benefits	Attie & Meyer-Waarden, 2022
Trust	Chen, Perry, et al., 2022, Chen, Sun, & Liu, 2022
Perceived warmth	Aiello et al., 2020
Negative consequences	
Negative impact on attitudes toward technology usage	Maseeh et al., 2021; Plangger & Montecchi, 2020
Withdrawal	Dienlin & Metzger, 2016
Consumers' search for new solutions to protect own privacy	Rodríguez-Priego et al., 2022
Risk awareness effects	
Reduced individuals' trust	Olivero & Lunt, 2004
Impact on individuals' intentions but not their actual behavior	Norberg et al., 2007
Impact on firm's privacy strategies	Martin & Murphy, 2017

The main drivers of consumers' willingness to disclose personal information can be summarized as: (i) the characteristics of the requested information, (ii) the personal traits of consumer's involved in the disclosure, (iii) the relationship between the company and the consumer, (iv) the context of the inquiry for personal information, (v) perceived warmth (emerging from consumers' perception of retailer being sensitive or caring), and (vi) benefits such as specific contents, offers, discounts, rewards, and other benefits (Aboulnasr et al., 2022; Maseeh et al., 2021; Olivero & Lunt, 2004; Scarpi et al., 2022; White, 2004). Thus, consumers should perceive a value emerging from the exchange. Specifically, the value is defined as "the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given" (Zeithaml, 1988: p. 14). In the context of retailer-shopper relationships, the perceived value would be further defined as "the shoppers' assessment of the overall utility of an exchange with a retailer based on perceptions of what is received and given" (Inman & Nikolova, 2017: p.15). Therefore, value perception represents the difference between the shoppers' benefits and the sacrifices they need to bear in the exchange with the retailer. Indeed, previous studies revealed that consumers would not supply any personal information for no real benefit (Gutierrez et al., 2019; Norberg et al., 2007; Norberg & Horne, 2007; Plangger & Montecchi, 2020). In this vein, new technologies, such as facial recognition solutions, are able to increase the benefits offered and positively influence consumers' value perceptions (Inman & Nikolova, 2017; Pantano, Dennis, & Alamanos, 2022).

Several studies examined the difference in the perception of technology adoption and its benefits depending on gender (Pantano, Dennis, & Alamanos, 2022; Sun et al., 2015). For example, as far as the benefits of technology are concerned, males emphasize the importance of utilitarian value, while females focus on the hedonic aspects of utilization (Sun et al., 2015). Also, the literature provides mixed findings on the willingness to disclose personal data among different gender groups (Dienlin & Metzger, 2016). Thus, when it comes to age, some inquiries into the factors associated with the moderating role of age provide evidence that privacy perceptions change along with the changes in attitudes and habits as people grow older (Fernandes & Costa, 2021; Fernandes & Pereira, 2021; Jai & King, 2016). Accordingly, young people are usually less concerned about privacy issues (Fernandes & Costa, 2021; Kim et al., 2019) and more open to personal data sharing in exchange for marketing benefits (Massara et al., 2021). However, evidence on the role of socio-demographic factors in the attribution of control over the disclosure of personal data and associated gratifications is relatively scarce (Table 1). Accordingly, this study aims to explore perceived locus of control when disclosing to and collecting information via privacy-threatening (e.g., facial recognition) technology and gratifications associated with technology across different generations. The next section will discuss the principles of the uses and gratifications theory that is adopted as a foundation guiding this research.

2.2 | Uses and gratification theory

The uses and gratification theory (UGT) posits that a user seeks gratification from the usage of a certain medium/technology based on his/her individual needs and motivations (Katz, 1959; Kim et al., 2021). Specifically, UGT has been employed to investigate the relationship between social media/technology use and privacy concerns (Quinn, 2016), and to understand the adoption of and behavior with cutting-edge technologies, like augmented reality (Ibanez-Sanchez et al., 2022), social media like Instagram (Devadas, 2022) and smart connected devices (including health/activity trackers) (Attie & Meyer-Waarden, 2022).

The theory emphasizes that individuals are not passive entities who merely accept messages transmitted from various media channels, but they voluntarily choose and use media/technologies

according to their needs and motivations (Lee & Cho, 2020). Specifically, gratification represents the "perceived fulfillment" of needs through media/technology usage (Palmgreen, 1984). In other words, gratifications concern intended or expected gains from the usage (Rauschnabel, 2018). Drawing upon the principle that individuals are motivated to fulfill unsatisfied needs through the usage of a particular media/technology (Rauschnabel, 2018), UGT helps understanding why a user adopts a certain medium to satisfy own needs.

Social and psychological literature indicated categories of uses and gratifications needs as cognitive, affective, social integrative, personal integrative, and tension release (Katz et al., 1973). Cognitive needs are related to acquiring information, for instance, to increase the personal knowledge/understanding of a particular issue. Affective needs are related to emotions, pleasures and moods deriving from the usage of the technology/medium. Social integrative needs are related to keeping and maintaining contacts with others (including family and friends), for instance, technology/medium could help building and maintaining social relationships. In a broader sense, the usage of social media addresses the social needs of users (i.e., gain social rewards) (Huang et al., 2014). Personal integrative needs are related to individual desire to (re)affirm a certain status or gain credibility. Finally, tension release needs are related to escapism, for instance, from everyday life (Rauschnabel et al., 2017; Shang et al., 2017).

UGT helped postulating that the main drivers of use are (i) entertainment and connection to others (Huang et al., 2014), (ii) social support and convenience (Kim et al., 2011), and (iii) information gathering (Ku et al., 2013). The development of technologies and emerging use cases also resulted in the typology of gratifications associated with a certain medium/technology use, such as content gratification (in terms of utilitarian value and hedonic value), social-relation gratification (in terms of tie strength, homophily, trust, normative influence, and information influence), and self-presentation gratification (Shang et al., 2017). Due to the continuous progress in technology to provide new and diverse interactive functions, Banda and Banerjee (2020) added a further category of needs: technology-related needs. It includes modal experience (the presence of content in different formats leading to better experiences) and navigability (easy to use and intuitive interfaces).

In marketing literature, UGT has been widely applied to understand the drivers motivating consumers to adopt and use emerging technologies like food delivery apps (Ray et al., 2019), Twitter (Dindar & Yaman, 2018), mobile augmented reality games (as Pokémon Go) (Rauschnabel et al., 2017), personalization in online/mobile shopping (Huang & Zhou, 2018), luxury brands' marketing activities on social media (Athwal et al., 2019), interactive television (Banda & Banerjee, 2020), and augmented reality wearables (like smart glasses) (Rauschnabel, 2018). However, those studies did not consider the extent to which the emerging gratifications might compensate for the sharing or loss or personal/sensitive information in retail settings.

Similarly, recent studies in retailing considered age as an influential factor in consumer behaviors, including experience and purchase decisions (Khan et al., 2020; Lissitsa & Kol, 2021). To this end,

scholars encourage further investigations of the effect of age on the usage of new technologies in retailing (Pantano, Viassone, et al., 2022), and on the perceived risk of privacy loss (Rehman et al., 2020; Willis et al., 2021). Despite the importance of age in understanding the gratifications resulting from technology use, the application of UGT to explore generational differences in technology uses and motivations is still limited (Athwal et al., 2019; Banda & Banerjee, 2020; Huang & Zhou, 2018; Rauschnabel, 2018). Thus, there is a gap in understanding the balance between the gratification emerging from consumers' acceptance of technologies, like facial recognition solutions in retail, and their consequence information sharing/loss, based on the different generational cohorts.

3 | METHODOLOGY OF RESEARCH

This research focuses on Italian consumers. The rationale of using this sample is explained by the low adoption of innovative technologies at the points of sale compared to other European countries, such as Germany and France (EU, 2021), and strong concerns associated with privacy intrusion (Pantano, 2020). The main technologies adopted by Italian retailers are systems to support payment modalities (e.g., contactless payment systems). To the best of our knowledge, facial recognition technology in Italy is almost exclusively adopted in the airports, while there are no cases of adoption by local municipalities yet (even if they are already equipped with CCTV). Thus, Italian consumers might have encountered facial recognition technology, but not in the retail context.

Figure 1 shows an example of information that can be potentially collected through facial recognition technology. Since the picture does not include humans for privacy protection purposes, the technology is not able to detail the demographics of the subject. However, it does provide other information that could be considered sensitive by consumers.

As per the inductive research design, this research adopts a qualitative approach, which is largely employed for theory generation (Hackley, 2005). In particular, it is based on online semi structured interviews, with participants recruited in July and August 2021. Following Etikan et al. (2016), the study involved a non-probabilistic convenience sample. We collected 80 interviews from four different cohorts: 20 for Study 1a (baby boomers, born between 1944 and 1964), 20 for Study 1b (Generation X, born between 1965 and 1979), 20 for Study 1c (millennials, born between 1980 and 1994), and 20 for Study 1d (Generation Z, born between 1995 and 2015). Table 2 shows a summary of the demographic characteristics of each generational cohort.

Respondents in the groups are also equally distributed in terms of gender (10 females and 10 males in each group). Each interview lasted approximately 50 min and followed the same interview guide. In particular, the interview guide was based on five main sections: (i) typology of data that is acceptable for sharing with a retailer and related motivation, (ii) motivations to accept retailers' adoption of facial recognition technology (in-store), (iii) typology of data emerging
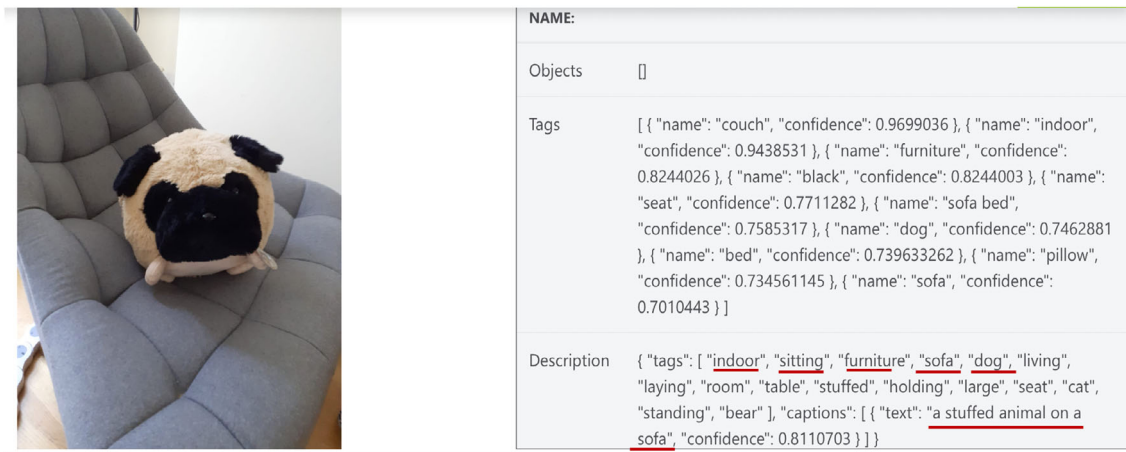
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Description	{ "tags": ["indoor", "sitting", "furniture", "sofa", "dog", "living", "laying", "room", "table", "stuffed", "holding", "large", "seat", "cat", "standing", "bear"], "captions": [{ "text": "a stuffed animal on a sofa", "confidence": 0.8110703 }] }

FIGURE 1 Example of facial recognition system results (potential sensitive information are underlined) [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 2 Summary of sample demographics

	Baby boomers (born between 1944 and 1964)	Generation X (born between 1965 and 1979)	Millennials (born between 1980 and 1994)	Generation Z (born between 1995 and 2015)
Gender	9 male and 11 female	8 male and 12 female	9 male and 11 female	10 male and 10 female
Education	12 High School Diploma, 8 Master Degree (or higher)	11 High School Diploma, 9 Master Degree (or higher)	10 High School Diploma, 10 Master Degree (or higher)	12 Bachelor Degree, 8 Master Degree (or higher)
Usage of facial recognition (including locking/ unlocking mobile phone, airport passport gate, etc.)	13 never used (5 unfamiliar), 7 used (5 very familiar)	10 never used (5 unfamiliar), 10 used (8 very familiar)	20 used (18 very familiar)	20 used (20 very familiar)

from facial recognition that retailers can use, (iv) information-sharing decision against the improved service, and (v) retailers' modalities of the usage of personal information. Each interview was conducted and transcribed in the respondent's mother tongue (Italian). Interviewees provided a written consent for the interview being recorded.

Data were analyzed through a thematic analysis, following the procedure of Braun and Clarke (2006) (transcription, coding, analysis and written report). Accordingly, in the transcribed interviews, we used the research questions to identify the main elements for coding (translated in Italian, since the interviews were conducted in Italian) as: (i) privacy, (ii), risk, (iii) personal information, (iv) expected usage, (v) gratification facial recognition, (vi) consent, and the resulting themes associated with the codes in each interview. Thus, only the relevant quotes associated with the emerging themes were translated into English.

4 | FINDINGS AND DISCUSSION

The analysis revealed two clear overarching standpoints, common to all the four groups: (1) limited control over the collected information, and (2) expected specific uses and gratifications in change of personal information.

4.1 | Study 1a: Baby boomers

4.1.1 | Limited control over the collected information

Respondents belonging to the baby boomers cohort declared a very limited knowledge of facial recognition technology in terms of working, functionalities, information collected and so forth. However, they have seen the technology in practice in the airports at self-scanning passport gates. Thus, they have a sound understanding of the usage of the technology for matching the photo taken at the gate with the photo in the passport, and demographics and immigration information. Although this technology is poorly known and accepted by this generational cohort, it appears as an intrusive technology that captures sensitive data, thus leading to consumers' perception of a loss of privacy. The limited knowledge of the technology further leads respondents to feel exposed and vulnerable toward retailers. While the usage for security reasons is clear at the border control, they almost ignore the nature and usage of collected information by retailers. Specifically, they are afraid that retailers adopting such technological tools may acquire personal information that they are even not aware of, and further pass the information to third parties without any authorization. Accordingly, one respondent said:

"I don't want to release personal information to retailers because they might resell it (as it is often the case). If the company guarantees that they will not disclose my personal information to others, I may release it, but I do not trust them. I don't want that others to access my personal information (1a#7, female).

And another respondent said:

"The problem is that we are too exposed, retailers can track our every move and so even if some technologies could be useful, it ends up that consumers don't want them because they know that they are already widely tracked and observed by retailers" (1a#5, female).

Consequently, baby boomers would prefer releasing only limited and mostly nonspecific personal information such as name and age, which they think they have already released at other stages while shopping.

Accordingly, another respondent said:

"During a purchase, I can release little information; those that do not interest me are dispersed, such as my name, my age, and maybe the town of residence" (1a#18, male).

To summarize, baby boomers highlight the locus of control over the information that retailers might collect and (mis)use through facial recognition systems, since the purpose of this technology is quite unclear and unacceptable in retail settings.

4.1.2 | Expected uses and gratifications in change of personal information

Although baby boomers showed a certain fear of the misusage of the collected information by retailers, they also showed a willingness to accept data collection if they can have something in return. In particular, they emphasize two main advantages in this sense: (i) economic gratifications such as ad hoc discounts and customized offers and (ii) improvements and personalization of the provided service. In other words, if both categories are provided by retailers, they would be less reluctant to give consent to the data collection through facial recognition technology.

Accordingly, a respondent said:

"In exchange for customized offers, I might allow retailers to take my photo and analyze it. However, I would like to have special offers tailored to my needs (e.g., a proper discount and just for me!)" (1a#13, female).

Baby boomers would like to receive a better service at the store entrance, suggesting this context as a possible useful application of facial recognition technology. Indeed, they noted that sales personnel do not usually welcome consumers in the store, providing information on how to navigate in-store to find favorite products. However, baby boomers would appreciate this support, since it would improve their experience. Thus, customized and punctual assistance would be beneficial to clearly identify and select the products to buy, including recommendations and information about the new lines, arrivals and promotion, and to support the payment.

Accordingly, a respondent said:

"I would be willing to release my information to get help when purchasing the right product for me. For example, by reducing the assortment to only clothing products of my favorite color and size, or in the case of sportswear to only items suitable for my ability level in my sport" (1a#2, male).

Hence, for baby boomers, perceived that gratifications (economic or utilitarian) in return of releasing personal information might be more important than protecting privacy.

4.2 | Study 1b: Generation X

4.2.1 | Limited control over the collected information

Compared to baby boomers who only noticed at the passport control stage in the airport, Generation X is more familiar with facial recognition technology. Indeed, a small part of them claimed to have used it mainly to access personal devices (i.e., to unlock the phone) or to pay with home banking or credit cards. However, none of them has ever seen its application in stores (in Italy or abroad).

Despite this knowledge, Generation X is very skeptical about the possible usage of emerging data by retailers. In their opinion, retailers already have enough data on consumers and there is no need to collect additional information. Similarly, respondents in this generational cohort do not understand why retailers would need more data, and how this data would generate value for retailers and consumers. One respondent specified:

"They already have much data about us. What do they need from us? Will I get more emails and phone calls for personalized offers. It is so annoying!!!" (1b#3, female).

Another one said:

"I can share my age, my educational qualifications, my profession, and my tastes and preferences. This data is useful for companies, for customized offers, and to do studies on consumer preferences. Identifying data such as email addresses, residence, and

phone number are used to bombard us with advertising. Why should I also give retailers the possibility to take pictures of me to know even more about me? I don't know how this information will be used" (1b#6, male).

Thus, also Generation X sees facial recognition technology as an intrusive technology in principle, leading to unnecessary violation of the privacy. While it would be accepted under specific circumstances where the advantages for consumers are evident (e.g., as protective measure for own devices), in the retail context, the gratifications for consumers do not emerge so clearly.

4.2.2 | Expected uses and gratifications in change of personal information

Similar as for baby boomers, receiving discounts or personalized offers would be considered an incentive for Generation X to provide personal information through facial recognition technology, but not as the main driver. Thus, the economic gratifications (e.g., personalized offers and discounts, different payment modalities, and rewarding loyalty programs) would lead consumers to accept the usage of facial recognition technologies in stores. Also, the respondents of this generational cohort stressed utilitarian gratifications. While baby boomers suggested a better service at the store entrance and product recommendations, Generation X proposed the usage of facial recognition technology only to improve the products assortment, emerging as the one circumstance leading to the acceptance of this technology. Specifically, they proposed that facial recognition technology collects information about the product selected by each individual, and then matches it with the one that s/he effectively bought. In this way, it is possible to understand the number of products selected but not bought, and improve the number of relevant products for each consumer. Therefore, Generation X would show a positive attitude towards the usage of facial recognition systems to collect personal information only when that information is transformed in a more relevant assortment able to better meet own needs.

Accordingly, a respondent said:

> "I would be willing to release personal data, also with the facial recognition technology, if it would be used to improve the retailer's offerings." (1b#7, male).

Facial recognition technology is able to collect information related to age and gender, recognize individuals and match this information with purchase history and product development and so forth. Therefore, members of this generational cohort are aware that a more customized product assortment would require the collection of more detailed and sensitive data. This goal is considered a proper usage of personal data, which would be rewarding for consumers.

4.3 | Study 1c: Millennials

4.3.1 | Limited control over the collected information

Similar to Generation X, millennials are familiar with facial recognition technology, being present on their smartphones and many apps that they use. They are further aware of the huge amount of information that they usually disclose not voluntarily as they are registered on most social media. However, in contrast to the older generational cohorts, many of them believe that sharing information with companies is a requirement to access services. Thus, they seem less reluctant towards retailers' usage of information collected by facial recognition systems. Unlike the older generational cohorts, millennials also show a certain awareness of the possible uses (and misuses) of personal information that retailers could have. For instance, they reported the examples of companies and retailers involved in selling data to third-parties without consent and notification, or many security leaks in data storage and sharing. Accordingly, a respondent said:

> "I do not know the protocols behind it and even less the actual company ethics (I mean the real one, not the one they show on the front). Facial recognition systems seem fascinating [...]. Surely a more excellent communication by the company of how data are managed, together with greater transparency, could give a more trustable scenario" (1c#4, female).

Thus, millennials are more aware of the risk of privacy loss involved in the usage of technology in general, while they emphasized the limited control that they have over the data that retailers collect and subsequently use. Although consumers are almost obliged to share their data and accept this obligation, they suggest that retailers should inform them about the specific purposes of data collection, usage, and storage, while ensuring that the usage will be for the specific retailer only and not shared with a third party.

4.3.2 | Expected uses and gratifications in change of personal information

Millennials believe that they could release personal data for mainly utilitarian gratifications, such as improved service (i.e., faster payments and checkout). Differently from older generational cohorts, economic gratification is not a priority for millennials. Instead, the easy end speed of the purchase process emerge as the main benefit they expect to achieve. Accordingly, a respondent said:

> "I do not particularly love sharing my personal data, especially if I cannot return something exciting back. For instance, I would like to get quick and easy purchases, highlighting products that interest me, that are suitable for me, which I can pay without cueing for

checkout. Indeed, facial recognition should allow me to pay quickly, purchasing in the shortest possible time and with the least possible sacrifice in terms of time and effort required" (1c#8, male).

Thus, millennials recognize the usefulness of facial recognition technology as a facilitator of the purchasing process. They are willing to release personal information almost exclusively for achieving advantages in terms of the reduction of the checkout and waiting time in a store. This result reveals that millennials showed a certain sensitivity toward convenience in terms of time and very limited (almost absent) sensitivity toward economic convenience, which was largely relevant for baby boomers and Generation X. Thus, time (saved or lost) emerges as the most important element in (in-person) shopping experience.

To summarize, millennials would be willing to use facial recognition technology for payment, which is also the main beneficial usage they suggest to retailers.

4.4 | Study 1d: Generation Z

4.4.1 | Limited control over the collected information

Similar to millennials, Generation Z has a large knowledge of facial recognition technology. It is mainly used to unlock the phone, use the credit card, and access some apps (especially the ones for health). Although this generation makes extensive use of this technology (the highest usage among the four generational cohorts), the reluctance to disclose personal information with retailers is still high. Indeed, Generation Z's common belief is that retailers share the collected data with other companies without any permission, resulting in a misuse of their sensitive data. Thus, also Generation Z emphasizes the limited control over the data collected by retailers with this technology. Accordingly, a respondent said:

> "I could also release all my data, but only if I was sure it was protected and kept in secret. I think that some data may be useful for statistical purposes or to help other users, but it is apt to the retailer to keep them with care and use them in full respect of privacy" (1d#13, female).

Similarly, another said:

> "The system should not be able to store all consumer's traits, but only those that are indispensable to the performance of the function for which it was designed. There are many risks related to the development of image processing and recognition technologies that could harm people if the data of face mapping falls into the wrong hands" (1d#12, female).

Generation Z is well informed about the possible misusage of personal data, which in their opinion goes beyond sharing with third parties. They also assume that the data can be used beyond retailing purposes, even to control national votes. Thus, the limited control over the data collected by retailers results in unacceptable privacy loss or violation of privacy.

Furthermore, members of this cohort noticed limited motivation of retailers to describe the effective nature of the data collected and the intended purposes. As a consequence, the introduction of a technology as facial recognition is considered much intrusive with many consequences for privacy protection. However, Generation Z's reluctance would be limited if reassured by retailers about the effective usage of data for specific retail purposes, especially if the specific purpose would generate some forms of gratification.

4.4.2 | Expected uses and gratifications in change of personal information

Similar to millennials, members of Generation Z are scarcely attracted by economic advantages like discounts or customized offers. However, Generation Z' members believe that facial recognition is a valuable tool if associating customers (faces) to previous purchases. In this way, a track record of past purchases would help them to save time in the different phases of the purchase process (from need identification to effective purchase, to post-purchase behavior, such as complains and returns). Accordingly, a respondent said:

> "Knowing exactly the person, both faces and past purchases, the retail could send more relevant notifications only for the products they are interested in. In this way, the customer is encouraged to look at the new products continually. And the payments could be much faster" (1b#1, female).

While another one said:

> "If used correctly, facial recognition can offer many advantages to both the consumer and the retailer. For us as consumers, it could associate our face with previous purchases to show only the products we are more interested in. Also, the technology might read emotions could, on the one hand, exclude products that do not arouse positive feeling and, on the other, help retailers improve their offerings. At the end of the day, it would make customers more satisfied and loyal" (1d#16, female).

Also for this generational cohort, utilitarian gratification largely prevails. In particular, they emphasized the importance of better service, such as faster purchases (also emerged in the case of millennials) and better offerings (also emerged in Generation X's interviewees). However, they suggest that retailers should limit notifications to the

TABLE 3 Summary of the findings emerging from the four generational cohorts

	Baby Boomers (born between 1944 and 1964)	Generation X (born between 1965 and 1979)	Millennials (born between 1980 and 1994)	Generation Z (born between 1995 and 2015)
Limited control over the collected information	Very limited knowledge of how the technology works, what information would be collected, and how (and with whom) will be shared without specific authorization	While the information usage is clear in other contexts (e.g., to protect own devices), the usage by retailers is unknown and would lead to additional intrusive notifications (e.g., phone calls, emails, etc.)	Huge knowledge of the data collected and no control of the data that retailers can (mis)usage for other purposes	Huge knowledge of the data collected and no control of the data that retailers can (mis)usage for other purposes
Expected uses and gratifications in change of personal information	Economic benefits (personalized discounts) and utilitarian benefits (improved service)	Economic benefits (e.g., personalized offers and discount, different and rewarding loyalty programs) and utilitarian (e.g., better products assortment)	Utilitarian benefits (e.g., faster and easier service/payment)	Utilitarian benefits (e.g., faster and easier service/payment and more relevant notifications)

only products that are relevant. Specifically, the usage of the data collected through facial recognition technology and the related association with past purchases would help retailers customize notifications. From consumers' perspective, the intrusiveness of unsolicited notifications by retailers would be reduced; from retailers' perspective, the push of only relevant notifications would result in a better conversion rate.

5 | CONCLUSION

In order to find the underpinning factors of the disclosure of personal information collected by facial recognition technology across generations, this study found that the main difference is in the uses of technology and resulting gratifications (Table 3). Specifically, independently of the knowledge of the type of data and procedures involved in the collection, the four generational cohorts perceive no control over retailers' (mis)usage of the data collected through facial recognition technology, which results in a strong reluctance to disclose personal information to retailers. However, all the cohorts showed that their reluctance to provide consent to data collection might be compensated with specific gratifications. In particular, for baby boomers and Generation X, both economic and utilitarian gratifications emerge. Since the members of these generations would largely support families financially (in Italy), a justification would lay in the need to save money to increase financial support. Similarly, the utilitarian benefits (a more customized support while in the store) would be associated with the need to get more assistance compared to that required for younger generations. Differently, the members of younger generations, such as millennials and Generation Z would mainly expect utilitarian gratifications, since their needs are mainly related to the possibility to save time while shopping, largely emphasized in the suggestion to use this technology to shorten the payment process. Generation Z, which is the one making the most extensive usage of technology, also proposed the usage of facial recognition technology to limit the push notifications to the relevant ones. In

doing so, the technology could be used to make more customized recommendations.

5.1 | Theoretical contributions and practical implications

By conducting this study, we reply to the call for future investigations on the effect of age on the perceived risk of privacy loss (Pantano, Viassone, et al., 2022; Rehman et al., 2020; Willis et al., 2021). While the willingness to disclose personal information is usually related to the control that users have over the collected and used information (Schmidt et al., 2020), our results add new knowledge to the existing literature by confirming that locus of control is neither related to the age of consumers nor to their knowledge of the specific technology used to collect their personal data. Our findings also show that younger generations mainly consider utilitarian benefits, while older generations consider more the economic ones. Moreover, while recent studies demonstrated that age is an influential factor in consumers behavior (Khan et al., 2020; Lissitsa & Kol, 2021), our findings add new evidence specifying that age also drives different consumers' reactions at a cognitive level, in terms of needs and gratifications. Thus, it extends past studies on the changes in attitudes and habits across age (Fernandes & Pereira, 2021; Jai & King, 2016), by showing that the expected gratifications of using a certain technology vary as people grow older.

Our findings also extend recent studies in the UGT (Attie & Meyer-Waarden, 2022; Devadas, 2022; Ibanez-Sanchez et al., 2022; Kim et al., 2021; Lee & Cho, 2020), by showing how technology use and gratifications differ across generations, strengthening the importance of using this theory to evaluate the behavior with cutting edge technology such as biometric ones (and facial recognition systems in particular). In doing so, our findings add further evidence about consumers' acceptance of potential intrusive technologies in change of specific gratifications (utilitarian for the younger generations, and economic for the older ones). Finally, our study reasserts the importance

of gratifications when addressing privacy, which was scarcely addressed in the past literature on consumers' privacy (Aboulnasr et al., 2022; Maseeh et al., 2021; Massara et al., 2021; Scarpi et al., 2022), further specifying the kind of gratifications (benefits) that the consumers of each generational cohort would expect to have in exchange. These gratifications would represent the trade-off to be provided by the retailer for the technology adoption success, as strongly encouraged by recent studies (Chen, Perry, et al., 2022; Chen, Sun, & Liu, 2022; Pizzi et al., 2022).

From a managerial point of view, this research indicates that all generational cohorts are reluctant to share data with retailers through facial recognition technology, and this reluctance is not related to the knowledge of the technology. However, the reluctance can be mitigated with specific retail practices. First, retailers should clearly indicate the typology of information collected and the purpose (indeed, consumers would be more willing to accept the data collection if they are aware of the specific retail purpose). Second, baby boomers and Generation X are more sensitive to sharing information in exchange for economic and utilitarian gratifications, while millennials and Generation Z would expect utilitarian gratifications. Specifically, the economic gratifications should be special discounts and personalized offers; the utilitarian gratifications should be a better service, with emphasis on the welcome service for baby boomers, better product assortment for Generation X, faster and easier payment for both millennials and Generation Z, and more relevant notifications for Generation Z. Thus, retailers should consider different purposes for data collection according to the cohort and communicate the purposes accordingly. In this way, consumers would get support in evaluating the calculus about the sacrifice required (release of personal data) and the benefit received. Therefore, retailers might reduce consumers' privacy threat and reduce they reluctance to the adoption of this kind of technologies (Pantano, Dennis, & Alamanos, 2022), since it possible to limit the privacy threats and differentiate the compensations for each consumer generational cohort.

5.2 | Limitations and future research suggestions

Despite the contributions, our study encounters some limitations. First, the research limits the investigation of gratifications to the differences emerging with the age, while further studies might take into consideration that also the gender that might act as a driver of different gratifications. Also, this study exclusively focuses on facial recognition technologies, however the right functioning of this system is based on the detection of points distributed on the whole human face. The possibility to collect information from only portions of the faces, thus with a more limited number of points, would strongly impact the system's functioning. Hence, environments where the complete points detection is not allowed, for instance, due to the possible obligation of wearing covering masks, would need to adopt different biometric technologies. However, other technologies in this sense (e.g., retina scanning, temperature check and fingerprint scanning) might impact differently on consumers'

privacy perception. Thus, future studies might focus also on what kind of biometric technology would generate the highest consumers' likelihood, while ensuring the data privacy protection. Finally, we tested a hypothetical scenario, and consumers provided possible uses and gratification emerged from the specific technology that is not actually adopted by any retailer. Thus, their willingness might change in a real scenario, or might not be converted in an effective consent to share the data collected via facial recognition technology. To this end, new experiments with the technology actually in use would be encouraged, as well as new metrics to measure the conversion rate between consumers showing a positive attitude towards the technology and the ones effectively providing the consent to collect the data through the technology.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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