Unlocking the shopping myth: Can smartphone dependency relieve shopping anxiety? – A mixed-methods approach in UK Omnichannel retail

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ARTICLE INFO	ABSTRACT
	Digital technologies have enriched various consumer shopping patterns across multiple contexts and channels. Smartphones, as the most daily dependent device, have altered and assisted individual shopping decisions in omnichannel retailing. Drawing on the uses and gratifications theory, this research investigates emerging smartphone uses and consumers' corresponding gratifications in shopping centers. Following a sequential mixed-methods approach, we first conducted semi-structured interviews with forty-three shoppers followed by a targeted survey in the similar fields. The findings allowed us to group nine specific smartphone uses into utilitarian, hedonic and social gratifications; moreover, both utilitarian and hedonic gratifications reduce state anxiety whereas social gratifications do not impact perceived anxiety. Consequently, a reduced level of state anxiety from achieved gratifications will significantly enhance consumer's purchase intentions. We offer insightful theoretical contributions and implications to marketing practitioners.

1. Introduction

Marketing practices indicate that due to the wide acceptance and use of smartphones, the consumer shopping journey has evolved and transformed in the omnichannel retailing era [1]. Consumers increasingly depend on their smartphones to accomplish different types of tasks [2]. In-store smartphone usage indicates that consumers are not only influenced by people or information in-store but also by those not in-store. Unsurprisingly, retailers are conscious of consumer expectations, so they are exploiting mobile applications, contactless technology, and ubiquitous smartphone adoption to facilitate and optimize the in-store experience [3]. Moreover, smartphones enhance information exchange and communication efficiency, while ultimately providing functional applications to solve goal-oriented tasks [4,161]. Given their convenience and accessibility [5], smartphones are consumers' constant companions, with penetration at its highest level in the UK, at 92.07% of the entire population in 2021 [6]. Further, 63% of millennial consumers are reported to complete online purchases via these devices, compared with 48% via laptops [7]. What is more, younger generations, including Generation Z, show the appeal of using smartphones for shopping activities through their frequent exposure to mobile social platforms [7].

Thus, the smartphone usage serves to fulfill users' information, communication, social and purchasing needs and desires [8,9].

Retailers point out that their customers are using smartphones whilst browsing in brick-and-mortar stores [10], indeed 63% browse their smartphones in-store, with 34% comparing product prices, 28% searching for promotional offers, 18% checking product availability, and 16% browsing for product information [11]. Moreover, they are reported to be experiencing higher levels of engagement with peers in-store, in seeking to balance information asymmetries [12]. They frequently communicate with one another to exchange information, share experiences, and adapt their shopping activities [13]. In fact, consumers appear to have become substantially more confident and comfortable in decision-making as a result of their smartphone access during shopping journeys.

This research explores smartphone adoption in shopping center environments, where certain distinct usages trigger more diversified purchasing behaviors. Existing scholars refer to the importance of the shopping center experience [14,15] with such sites now encompassing more complex and dynamic shopping practices. Consumers visiting them seem to largely concentrate on using their phones for various socializing and purchasing activities. There are many complicating factors

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in these scenarios. Shopping centers provide wide complementary facilities such as dining, entertaining, and leisure activities to retain consumers longer, to presumably stimulate purchasing; yet this in itself might pose a threat to retail sales, as consumers may be compromised by facing too many activity options. They may experience a certain degree of anxiety from choice overload, and these relentless experiential distractions are increasingly embedded in shopping environments. This may effectively counter prompt decision-making in purchasing. Also, being confronted by huge ranges of products and brands may undermine their confidence in purchasing decisions which generally rely on clarity in the selection process [16]. Similar feelings may arise from switching to online-based channels for shopping-related information [17], which may overwhelm their information processing performance [18]. Searching and assessing product quality or performance can also be time-consuming and cognitively demanding with specific complications and detailed distinctions among product categories, potentially increasing their psychological burden.

The above facts notwithstanding, consumers tend to pursue a productive shopping pace at the same time [19], so those who do suffer from such shopping stresses, distress, or anxiety may seek approaches to escape from such negative consequences [20]. In particular, it is observed that young consumers are more likely to embrace such practices from time to time due to their heavy dependence on smartphones. Extant scholars largely document mobile device usages in the online shopping contexts [162], yet probing how smartphone influence in-store decision-making remains under-explored. Accordingly, this research is inspired to approach and assess young consumers' usage behavior. Once again, by using their smartphones they may expect to solve immediate information needs and proceed with more efficient purchases in busy shopping environments [21]. Existing research continues to respond to this scenario. It acknowledges the smartphone uses and consumers' psychological cues during the shopping process under different shopping channels [4,22-24]. For instance, some consumers may get distracted and fail to complete planned purchases when smartphones are adopted in-store; furthermore, consumers may not manage their time well and may thus lose their shopping intention while focusing on other mobile device features unrelated to shopping tasks [24]. It also highlights how smartphones can assist purchasing enquiries but may result in unplanned purchases. Marketing scholars have called for research on the impact of mobile technologies on dynamic shopping trends and experiences [25] and push for the integration of mobile apps into the shopping funnel as technological advances offer instant information exchange. Meanwhile, information systems (IS) researchers in the technology-enabled retail experience have noted that consumers can and do apply information technology (IT) at any stage of their shopping journeys [26].

However, there is a lack of in-depth interpretation on how in-store smartphone uses and derived gratifications may influence purchasing performance during an individual shopping journey. Limited mobile device adoption research exists that focuses on specific smartphone uses taking into account the consumer's psychological state [9,24]; for example, how they might experience anxiety in making assured decisions. Marketing managers and retailers would benefit from such new insights into the impact of in-store technology usage during shopping journeys where customers constantly chase for improved experiences [27]. Thus, our research investigates the various ways smartphones are used during shopping journeys in these sites, the associated psychological characteristics of consumers (namely state anxiety), and their subsequent purchase intentions. The few studies mainly explored mobile devices' applications in affecting shopping experience and user engagement consequences [163], while the actual smartphone usages in real shopping setups are neglected. The current study assumes that a consumer's state anxiety is typically a temporary emotion responding to external stimulus. Drawing on uses and gratifications theory (U&G) [28], we examine consumers' motivations and seek gratifications in exploiting their smartphones during shopping journeys. The theory

allows us to investigate in more depth the various smartphone usages and intrinsic gratification goals derived from each usage type.

Having reviewed the abovementioned research in both marketing and IS domains while outlining the research gaps, we believe it is necessary to observe a specific retailing context for disclosing intensive smartphone usages and purchase patterns in real-life shopping scenarios. Hence, this study selects the apparel retail industry in the United Kingdom for suitable context and as research scope for the following reasons. *First*, the UK apparel industry has reached maturity due to omnichannel retailing practices. The last decade has experienced tremendous growth of e-commerce and online transactions. In addition, the past three-year pandemic had a negative impact on brick-and-mortar sales, as the majority of the purchased products online. This has posed significant challenges to retailers who wish to increase store footfalls and attract their customers back into physical stores. *Second*, it is reported that approximately 80% of British consumers purchased clothing items from high street retailers in 2017, with almost 31% from a department store. In fact, 87% continue to shop in-store for fashion brands [29] rather than at home online, probably because they are concerned with the physical experience, seeking and enjoying product displays or trying them on [30]. These indicators support our research premise by investigating in-store purchase behavior. *Third*, apparel product lines in general are perceived as hedonic and experiential [31], requiring effort and time from consumers to evaluate them before making purchasing decisions. *Fourth*, apparel retailers continuously adopt technological innovations in-store to interact with and entice their target audiences [32] and deliver more satisfying shopping experiences, such as smartphone shopping carts or virtual reality alternatives, information on competitive pricing, mobile-based purchasing channels like branded shopping apps, and other user-friendly in-store technologies [33]. Such initiatives and the penetration of smartphone use together encourage us to further understand emerging purchasing patterns in the apparel retail industry [34].

This study aims to understand smartphone uses and gratifications, consumer state anxiety, and purchase intentions under the umbrella of U&G theory. It advances the marketing and IS literature and particularly the theoretical frameworks on smartphone usage in several ways. Moreover, we apply a sequential mixed-methods approach than a mono qualitative or quantitative design to reveal new constructs and examine correlational relationships between our antecedents and consequent variables. We posit that it is critical to interview consumers for gathering new insights that are not present in the existing literature, followed by surveying consumers in real shopping scenarios to investigate our hypotheses. As a result, this is the first study to identify and refine nine smartphone usage and gratification categories, falling into the three dimensions of utilitarian, hedonic, and social. We find that smartphone's utilitarian and hedonic usages ameliorating in-store consumers' state anxiety would be complementary during shopping journeys, while social-driven usages cannot impact the anxiety due to continuous distractions in hectic shopping environments. Second, we confirm the mediating role of consumer state anxiety in realizing smartphone-assisted shopping journeys. Finally, we strengthen the case for highlighting the positive aspects of smartphone adoption to support in-store purchase intentions. Furthermore, the findings also provide for strategy implications for both traditional retailers and shopping centers, who should consistently encourage ubiquitous smartphone use in-store. Through accommodating consumer needs and demands, marketers can attend to their psychology more effectively in optimizing their shopping experience.

2. Theoretical background

This section begins with an overarching summary of various topics of the research. The Uses and Gratifications (U&G) theory is demonstrated as a core theoretical ground to support our empirical work. This is followed by outlining ubiquitous smartphone adoption for various

purposes in-store, along with consumers' potential psychological distress, so-called state anxiety in our research. We also draw insights related to consumers' purchase intention subject to their gratifications and psychological status derived from shopping in-store. A set of specific research questions are presented to close the section.

2.1. Uses and gratifications (U&G) theory

This research adopts the uses and gratifications theory to study consumer gratifications in using smartphones during shopping journeys from a media perspective. We consider the U&G as an appropriate ground to investigate emerging smartphone uses and expected gratification types. Moreover, we position smartphones as specific media and investigate the corresponding gratifications achieved from usage. U&G theory posits that audiences are goal-oriented, choosing their preferred media based on former usage experience to fulfill respective purposes and gratifications [28]. Previously, U&G theory was frequently adopted to investigate and compare consumption behavior under different computer-mediated communication settings [35,36]. Later, marketing researchers extended the theory from web contexts to include mobile and social applications [37] such as mobile social networks [38] and tablet contexts [39]. In a similar vein, we choose the U&G theory to enable an examination of consumer motives around smartphone usage during shopping journeys. We review relevant U&G studies in Table 1 to exhibit patterns of media selection and gratifications within the marketing discipline.

The above table portrays how marketing scholars draw on a variety of gratification dimensions resulting from diversified media usage in different contexts. O'Donohoe [40] first distinguished marketing and nonmarketing uses of mass media advertisements using an exploratory approach, highlighting user gratifications such as information, convenience, added value, and social interactions. Later, since the development of online and virtual platforms, academics have paid more attention to pinpointing consumer engagement motivations. Common uses and gratifications are found to fall into personal and social-driven classifications, such as social initiatives, self-esteem, intrinsic enjoyment, socializing, and other benefits [41–44]. In addition, Whiting and Williams [45] map out ten uses and gratifications within social media usage, namely social interaction, information seeking, passing time, entertainment, relaxation, communicatory utility, expression of opinions, convenience utility, information sharing, surveillance, and the watching of others. More recent research has stressed consumer motivations when using branded mobile apps, identifying that information, entertainment, connectedness, and social gratification are significant drivers for adopting social media [46–49].

To provide a comprehensive literature review, we also examine prior IS literature which applies U&G as a theoretical foundation in utilizing information technology. For instance, Luo and Remus [50] integrated the TAM and U&G models, demonstrating that web-based information searches contributed to deeper website usage and derived user entertainment. Li et al. [51] suggested that hedonic, social, and utilitarian gratifications drove continuous usage of online games, taking into account age and gender variances. In addition, IS scholars further explored tourist motivations in sharing sponsored advertisements on social media platforms, namely altruism, entertainment, socializing, and information seeking gratifications [52]. Therefore, extant IS research also acknowledges the appropriateness of employing U&G theory to understand user adoption of a technology. To that end, our study sets smartphone usage as a new technology and examines users' gratifications.

In sum, both marketing and IS scholarship show that a wide range of users choose mobile devices with a similar focus on achieving utilitarian (information seeking and convenience), hedonic (enjoyment and relaxation), and social (socializing, interaction, self-identity expression, and sharing) gratifications. We therefore began our research by looking at these particular dimensions as a fundamental approach to distinguish among smartphone uses and user motivations. We fill the research gap

Table 1
Uses and gratifications studies in the marketing discipline.

Authors (Year)	Media	Data collection method	Gratification dimensions
O'Donohoe (1994)	Advertising on mass media	Qualitative interviews with 14 groups and 14 individuals, 82 respondents in total	Marketing (information, convenience, quality assurance, consumption stimulation, vicarious consumption, added value) and nonmarketing gratifications (structing time, enjoyment, scanning the environment, social interaction, self-affirmation)
Nambisan and Baron (2007)	Virtual customer environments which provide services ranging from online discussion forums	Web-based questionnaire	Four experiential motives: cognitive, social integrative, personal integrative, and hedonic gratifications
Calder et al. (2009)	Online media websites	Quasi-experiment design using survey	Consumer online engagement motives: personal (stimulation & inspiration, social facilitation, temporal, self-esteem & civic-mindedness, intrinsic enjoyment, utilitarian) and social-interactive (participation & socializing, community) engagement initials
Sultan et al. (2009)	Mobile devices	Survey, two-country comparison	Information provision, sharing content, and accessing content
Eisenbeiss et al. (2012)	Virtual worlds as an unstructured social and technological environment	Study 1: open-ended surveys Study2: online survey through viral networking	Individual motives (socializing, love, creativity, and escape) and social influences (group norms, social identity, including cognitive social identity, affective social identity, and evaluative social identity)
Whiting and Williams (2013)	Social media networks	Exploratory study with 21 in-depth interviews	Ten uses and gratifications found: social interaction, information seeking, passing time, entertainment, relaxation, communicatory utility, expression of opinions, convenience utility, information sharing, surveillance, and watching of others
Alnawas and Aburub (2016)	Branded mobile apps	Self-administered survey	Interaction-based benefits in the context of mobile apps: learning benefits, social integrative benefits,

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Table 1 (*continued*)

Authors (Year)	Media	Data collection method	Gratification dimensions
			personal integrative benefits, and hedonic benefits (among these, only learning and hedonic found to impact purchase intentions)
Dolan et al. (2016)	Social media	Conceptual study proposing a model of social media engagement behavior	Consumer engagement in social media platforms for information content, entertaining content, remunerative content, and relational content (all driving different level of social media uses and participation)
Lim and Kumer (2019)	Branded online social networking (Facebook brand pages)	Self-administrated web-based survey	Findings identified: information, incentives, entertainment, and connectedness as gratifications of participating in branded online social networking
Hollebeek and Macky (2019)	N/A	A conceptual paper redefining DCM based on literature review	Formalized a consumer-based digital content marketing (DCM) based on U&G: informed functional, hedonic, and authenticity-based motives for DCM interactions
Grover and Kar (2020)	'Mobile wallets' on social media (Twitter)	Dataset 1 (mobile wallet firms-generated tweets) and dataset 2 (user generated tweets)	User motivations for adopting mobile wallet: informational content, entertainment content, remuneration, and social content

by exploring the potential gratification dimensions (utilitarian, hedonic, and social) generated from distinct smartphone uses in shopping centers. Therefore, it is first necessary to understand emerging smartphone uses when consumers shop in offline contexts.

2.2. Ubiquitous smartphone uses during shopping journeys in-store

Smartphones are not simply communication tools anymore. Consumers now concentrate on their phones to deal with all aspects of daily life; in shopping environments for example, they may strike up conversations with fellow shoppers or retailers and even conduct shopping activities digitally [4]. Since the introduction of online shopping alternatives in the early 2000s, consumers' purchasing activities have been dramatically transformed in physical retail environments as well [22] as they are increasingly seen to habitually depend on their smartphones in-store. Google [53] reported survey results in which 71% of smartphone users chose to research online while in-store. Similarly, Deloitte revealed that about 60% of US smartphone users admitted to using their devices while visiting offline stores, with their purchasing decisions influenced by this [54]. Consumers may search for online product reviews, check the in-stock items in-store, and even complete their orders electronically [10]. This suggests that consumers still value physical shopping channels [23] perhaps due to the opportunity for immediate

product possession [55] despite their continuous smartphone access. Hence, we consider the smartphone to be an essential in-store technology that influences consumer purchasing [56].

Broadly, smartphone uses are categorized into four spheres: task-centric activities (such as shopping and learning), information-searching (on travel and locations), communication-oriented (dialing, texting, social networking), and recreation tasks (pictures, music, and games) [57]. Various studies have investigated these within our context. Fuentes and Svingstedt [58] explored young adults' mobile phone use in aiding their shopping activities, demonstrating that consumers are enabled to engage in social shopping, and exchange shopping experiences via their smartphones. Eriksson et al. [59] showed how smartphone uses affect in-store purchasing decisions based on different product categories and gender variance, for instance that young adult women tend to seek advice via their smartphones regarding clothing products. Consumers clearly spend increasing amounts of time searching for product information digitally, seeking assistance, and entertainment [60]. We therefore follow this research stream investigating young consumers' behaviors related to smartphone-assisted shopping journeys.

Despite positive support for smartphones' functions and assistance, excessive adoption of a technology may bring some limitations or negative effects especially in terms of anxiety [61] and its corresponding influence on purchasing behavior. On the one hand, smartphone overuse may lead to a growing number of consumers who are anxious and therein hindered from making rational decisions due to degrees of psychological distress [62] and habitual smartphone distraction [63]. On the other hand, consumers admittedly may also feel anxious about the absence of a smartphone, known as '*no mobile phone phobia*' [64, p.124]. Nevertheless, it is clear either way that, in shopping centers where leisure, shopping, and socialization all co-exist within the same space, consumers with digital devices may indeed experience anxiety when faced with such a rich multiplicity of product choice [65] and the crowding issue [66].

The above notwithstanding, consumers currently do demonstrate heavy dependence on smartphones, regardless of the dynamic situations they are in, and they are seen to appreciate the smartphone's instant availability during shopping journeys. They benefit from constant communication connectivity and checking in to their personal and work life [67]. Clearly, smartphones play a key role throughout purchasing procedures and related experiences [68] especially enabling immediate access to information and solving individual enquiries during the shopping journey.

2.3. Consumer's state anxiety

As noted above, overuse of smartphones during shopping journeys may result in consumer's feelings of fear and distress when visiting crowded shopping scenarios. This research recognizes anxiety as a negatively experienced state of distress that occurs as response to a stimulus, leading to a sense of apprehension, tension, or worry [69]. In the literature, anxiety has been broadly categorized into two spheres: state anxiety and trait anxiety [70]. This research focuses on studying consumers' state anxiety, a form of short-lived personal emotional distress in response to a specific external stimulus [71], rather than trait anxiety, occurring in personalities holding constant negative dispositions toward certain external situations.

Extant marketing research often examines a type of state anxiety that impacts consumers' psychological responses toward an external context. For example, Internet and computer anxiety relates to the consumer's momentary response toward online and omnichannel shopping practices [72,73]. These scholars suggest that this anxiety prompts negative responses and attitudes toward an object or marketing practice when an innovation is introduced. Similarly, Sands et al. [74] indicate that increasing complications in consumer journeys have become major obstacles in determining purchasing channels in omnichannel retailing. On the one hand, smartphones have propagated emerging shopping

channels with consumers being supplied with more information and product or brand options than ever before [75]. On the other hand, however, product information overload can lead to consumer apprehension or resignation, whereby in-store consumers feel uncertain or blocked in optimizing their decisions. Further, higher levels of state anxiety can influence in-store engagement and lead to negative judgements [76]. Psychology studies have found various other correlations between individual state anxiety, negative emotional responses, and media usage [77]. Anxiety can clearly undermine satisfaction [78], and consumers might engage in avoidant or coping strategies, including leaving stores without any purchases [79].

In order to combat status anxiety, consumers find approaches to reduce uncertainty in this [80]. Their smartphones, for example, can provide them with communicative and informative guides, product details, and specifications from peers or experienced users, such that they feel more confident and assured in making the right decisions. Indeed, while Kneidinger-Müller [81] reinforced that smartphone unavailability can lead to anxiety and apprehension, she asserts that they can resolve an individual's confusion through immediate online support. Considering the above, we assess the possible role that consumer state anxiety plays in smartphone usage and in consumer purchase intentions, during an individual's shopping journey.

2.4. Consumer purchase intentions

Given that smartphone use may alleviate a consumer's state anxiety during shopping journeys, it might subsequently influence individual purchase intentions. Fishbein and Ajzen [82] offer a simple definition that purchase intention relates to one's objective motivation toward buying a product. Later, Zwass [83, p.65] extended its description to "*the intention of buyers to engage in the exchange relationships at shopping websites, such as sharing information, maintaining business relationships and creating business transactions*". Since the advent of e-commerce, online purchase intention delineates the consumer's cognitive willingness to buy a specific product via online channels from doing so traditionally [84]. Additionally, web-based purchasing intention is explained as individual incentives to conduct purchases via the Internet [85]. More recent marketing scholarship illustrates purchase intention in respect of smartphone settings, such as Hsiao and Chen [86] simplifying it to the consumer's intention to perform purchasing activities via a mobile application, and Martins et al. [67] arguing that consumer purchasing intentions are affected by mobile advertising campaigns via smartphones.

This research aims to understand purchase intention from a consumer psychology perspective, by measuring the extent of purchasing decision-making. The term is used as a proxy for measuring the actual purchases because it implies the degree of satisfaction during a shopping journey [87], and an increased purchase intention directly contributes to more completed transactions [67]. Yet, in-store purchase intention can be challenging to monitor due to the presence of mobile channels. This is because store visitors may spend more time researching on their smartphones than making prompt decisions offline, especially in shopping centers which feature more distractions and cognitive demands from complexity. It may be further compounded as consumers now tend to rely on fellow shoppers' suggestions rather than learning from retail organizations for their purchase decisions, according to Lee and Koo [88]. Indeed, some reliable product recommendations accessed via smartphones may clearly influence other consumers' willingness to buy [89]. Clearly, this unexpected multifarious dependence on smartphones may impede instant purchase decision-making in-store. We expect to discover to what extent smartphone dependency affects purchase intention during shopping journeys in shopping centers.

2.5. Research questions

In light of the above, this research undertaking is driven by the following two research questions:

> RQ1: What role does consumer state anxiety play in smartphone usage and consumer purchase intention, during shopping journeys in shopping centers?
>
> RQ2: To what extent does smartphone dependency affect purchase intention, during shopping journeys in shopping centers?

3. Study 1 – exploring emerging smartphone U&G during a shopping journey

We employed a sequential exploratory research design wherein semi-structured interviews (study 1) were followed by survey distributions (study 2). This is a mixed method design including qualitative and follow-up quantitative strategies for interpreting both sets of data analysis as a holistic view, which allows us to provide convincing and comprehensive answers to the abovementioned research questions. Through exploring the real marketing practices in a specific setting (e.g., shopping centers), this approach follows pragmatism philosophy to observe an actual marketing phenomenon. First, we began by interviewing consumers in shopping centers to achieve first-hand consumer experience relating to smartphone usage during their shopping journeys. Through face-to-face interviews, we addressed the first research question and discovered consumers' motivations toward distinct smartphone uses. Study 1 not only delineates utilitarian, hedonic, and social gratifications, but also indicates that consumer shopping anxiety can be alleviated by smartphone availability and its assistance during shopping journeys. This qualitative finding encouraged us to examine deeper correlational relationships among the three dimensions of gratification, shopping anxiety, and purchase intentions, in the same shopping context to answer the second research question.

3.1. Sample and method

The first study used semi-structured interviews to investigate the emerging differences in how consumers use their smartphones in shopping centers. In developing the instrument, a pre-determined interview guide with ten probing questions was prepared. The research team decided on a purposive sampling technique [90, p.287] to approach prospective target participants observed to be carrying shopping bags and with their smartphones available. These criteria used to select and reach out to these participants were based on the assumption that they were smartphone users able to contribute valuable opinions related to their shopping journeys. For this intercept approach, we sought and acquired permission from the shopping centers' administrative departments, in the interests of research ethics, prior to the data collection commencement. We then spent approximately 30 h over two weeks in shopping centers and malls, observing and interviewing consumers. Furthermore, the research team observed consumers who had shopping bags, who shopped alone or with companions, or who used smartphones in shopping settings. These targets were then approached for face-to-face interviews.

Forty-three consumers aged between 18 and 52 years participated in individual face-to-face interviews in shopping centers of two southern cities in the United Kingdom, namely Southampton and Bournemouth, based on the convenience of accessing participants in the same region. Both are reasonably close to Greater London with its large metropolitan multinational population, and both have large universities with significant international student populations from diverse backgrounds and ethnicities. Moreover, there were 35 young participants, aged between 18 and 34 years, participated; younger generations such as university students are generally more inclined to be 'digital natives,' smartphone-dependent, and keen to adopt new technologies [58].

Data collection was conducted during the afternoons and weekends to increase the chances of approaching sufficient numbers of participants from different demographic backgrounds (namely gender,

occupation, age) and purchasing diversity (namely window shopping or actual buying). We were particularly focused on collecting a broad range of smartphone uses in apparel product lines offered in shopping centers. Each interview lasted approximately 15 min on average and the conversations were recorded. During the interviews, participants' expressions and behavioral changes were also noted when they shared their attitudes toward smartphone-assisted shopping experiences. Ultimately, we aggregated 90 pages of conversation transcripts and participant observations.

3.2. Thematic analysis using NVivo 11

For the coding and analysis, we applied 'qualitative rigor' as described by Gioia et al. [91] and conducted thematic analysis using NVivo 11. The coding approach has also been applied in a recent IS study which ensured reliability and rigor in the analysis process [92]. In line with the study objectives, the results were mainly drawn from interview conversation content. We first screened the first-order nodes by identifying similarities and differences in keywords drawn from the original transcripts; accordingly, we derived various types of smartphone usage during shopping journeys. Second, these nodes were labeled and categorized into second-order themes to reach a narrative concept representing nine classes of smartphone use and gratification. Third, the most rigorous step was to distill the coding to reach a code hierarchy representing the aggregate dimensions [93]. For example, smartphones' functional, informational, and communicative uses indicate consumers' utilitarian gratifications, and we replicated the process to identify hedonic and social gratifications. The data collection and analysis were completed in the winter of 2018, and these immediate insights enabled us to generate exploratory information from mapping a range of smartphone uses and gratifications. Consequently, we showcase the codification process in Table 2. More detailed quotes derived from shopping center consumers will be revealed in the following section.

To ensure the reliability of the codes and themes, we invited experienced qualitative researchers to perform cross-checks of the codes so that subjective interpretations could be minimized. The researchers also scrutinized the trustworthiness of the qualitative data due to the flexibility and inherent subjectivity in the data collection and analysis procedure [94]. Qualitative scholars detail the key criteria of trustworthiness to be credibility, dependability, confirmability, transferability, and authenticity [95]. We critically evaluated each criterion by collecting information from consumers in real shopping contexts, ensuring each interview was conducted independently, providing direct quotes from participants, and rigorously interpreting the results with clear insights. In addition, for research ethics compliance, we assigned pseudonyms (such as Participant 1: P1) to each participant, in the interests of their anonymity and privacy [96, p.52].

3.3. Findings

First, participant demographics were provided before revealing smartphone uses and expected gratifications (see Appendix 1). The majority of participants were purchasing apparel: clothes (77.4%) and shoes (7.0%). Some participants also purchased groceries (4.0%) and other items (11.6%) during their shopping journeys. Younger generations were more approachable and willing to participate in the study. The findings indicate that millennials (aged between 18 and 34) are heavy smartphone users (about 81.4%). Participants came from a variety of occupations, more than half of them being employed (51.2%), and 44.2% being students.

In addition, 67.4% of young participants further admitted to having had purchasing experiences with mobile shopping apps via smartphones, indicating that consumers acknowledge smartphones' potential to assist in purchasing activities. More importantly, our empirical findings revealed a variety of utilitarian, hedonic, and social gratifications pertaining to habitual smartphone use during an individual shopping

Table 2
Codification process.

First-order Nodes (Distinct smartphone uses during shopping journeys in-store)		Second-order codes		Aggregate dimensions
Contacting friends/families through dialing and texting; Making plans; Updating with acquaintances.	→	*Being connected during shopping journey*	→	**Utilitarian Gratification**
Checking emails, online banking accounts, train times, and other functional tools; Performing nonshopping-related tasks.	→	*Multitasking functional services*	→	
Checking new products/ brands, offers; Checking product reviews via branded mobile apps.	→	*Product information seeking via branded mobile apps*	→	
Using Apple/Google Pay service to complete transactions in-store; Transferring money; Making contactless payments via smartphone.	→	*Mobile quick payment*	→	
Texting or calling acquaintances for product suggestions; Checking product recommendations; Checking consumption experience via online brand communities.	→	*Acquiring second opinions*	→	
Watching videos and listening to music; Using mobile gaming services during shopping breaks.	→	*Relaxing shopping pace*	→	**Hedonic Gratifications**
Constant and habitual smartphone checking alongside shopping journey; Using entertainment alternatives via smartphone.	→	*Passing time*	→	
Updating and being updated on mobile social networking apps (Facebook, Instagram, Snapchat, WeChat); Maintaining communications and socializing with virtual communities.	→	*Continuous online socializing*	→	**Social Gratifications**
Sharing product reviews and exchanging information via online brand communities; Seeking suggestions from like-minded people online; Checking product reviews via retailer's online communities before purchasing.	→	*Consumer engagement via online brand community*	→	
Worrying less about other aspects of life apart from shopping; Seeking assurance of extra advice/opinions before making a purchase; Having secured and efficient mobile payment option; Having comfortable and relaxing shopping journeys due to entertaining assistance; Habitual smartphone checking to combat boredom and pass time;	→			**Consumer's state anxiety**

Table 2 (*continued*)

First-order Nodes (Distinct smartphone uses during shopping journeys in-store)	Second-order codes	Aggregate dimensions
Being highly dependent on prompt smartphone access during shopping; Updating immediately on social media; Feeling confident and comfortable in shopping journeys with smartphone available to avoid 'no mobile phone phobia'.		

journey in a shopping center.

3.3.1. Utilitarian gratification—being connected during shopping

Some participants confirmed they had contacted friends or family through dialing or texting, due to immediate communication needs, regardless of whether they were shopping alone or with companions. Deloitte [97] posited that consumers' increased mobile device usage contributes to their being more connected. Participants indicated that they needed to be connected, via texting or calling people, while in-store. One participant who was approached while shopping alone for clothes on the high street illustrates this well:

> "*Of course, I used my phone to check messages, and I also checked upon my nephews if they were alright at home… it means I don't need to worry about things. It also means that I can actually continue to be in touch with my friends while I am shopping.*"
>
> (P37, male, 34)

Similarly, another participant shared her opinions after planning her shopping on the interview day:

> "*Well, I did not use my phone for shopping-related activities today, such as checking the retailers' apps like I always do at home in the evenings. But when I'm shopping alone in shopping centers, I always feel like chatting with my friends over the phone and ask their opinions, so a smartphone helps.*"
>
> (P29, female, 42)

Clearly, consumers internalize communication gratification by being and feeling connected [11], especially those shopping alone, who might have a more constant need to communicate via phone calls and text messages. Moreover, having a smartphone allows them to shop without worrying about other aspects of their lives; it liberates busy consumers from external concerns.

3.3.2. Utilitarian gratification—multitasking function

In-store consumers may be multitasking, browsing their smartphones, and performing shopping-related activities simultaneously. During the shopping process, participants needed smartphone access for checking train times, online banking balances, work emails, and other routine functions. Some participants experienced distraction from browsing products in-store, as they worried about other aspects of their lives that needed to be addressed and could be via smartphone; this is known as 'multitasking functional assistance' enabled by smartphones. For instance, P12 appreciated and reflected on the benefits of his smartphone's multitasking functionality:

> "*A smartphone is just so functional [with] tools that help me sort out everything really… even when I am in shopping malls, I can use it to play games, look at my personal information [in my] Internet Banking when I am buying an item. I also use it to communicate with friends when I feel like it.*"
>
> (P12, male, 36)

Such reports suggest that smartphones can provide consumers with rich forms of functional support during the shopping process, performing the additional role of 'anxiety manager' since this can off-set the pressures of their daily practical concerns. It is noteworthy, however, that they still need to make decisions on, for example, which mobile technology (websites or applications) to adopt [98] to execute these nonshopping functions.

3.3.3. Utilitarian gratification—product information seeking

Product searches were conducted by the majority of participants who needed information about online and offline stock availability, new brands, and product performance, via branded mobile shopping apps on their smartphones. Such apps enable consumers to fulfill their information seeking gratifications without time or location constraints [46]. A suitable illustration is from P10, who was walking with his girlfriend while researching on his mobile phone after finishing browsing at a store:

> "*I use my phone to do some research about the brand that I am going to choose for shampoo. Because it's my first time to try this brand and I am not sure how it works, so I check the shampoo brand's online reviews and decide which one I'd buy.*"
>
> (P10, male, 25)

Emerging consumers report to focus on information acquisition by habitually checking on their smartphones, since accessed information reduces perceived risk from uncertainty when trying new or expensive products, particularly for those with no prior experience of a brand.

3.3.4. Utilitarian gratification—mobile quick payment

Consumers currently consider quick payment by mobile as an efficient aid to shopping. With the rapid growth of payment options, mobile quick pay and contactless payment have enjoyed rapid adoption, and positive performance and feedback [99,100]. When P13 was asked about her phone usage during shopping in a clothing retail shop, she finished her shopping and explained:

> "*I used my phone to pay (Apple Pay)… it's easier and it does not take so much time [as] to take my card out, insert and put in the pin… Mobile quick payment just speeds up my shopping process and I feel comfortable about it.*"
>
> (P13, female, 30)

Smartphone technology enables in-store consumers to obtain enough information and complete transactions efficiently and productively. Transactions are more easily accomplished because their payment details may have been stored previously. Hence, in-store consumers tend to choose these secure payment methods via smartphones during store visits [72].

3.3.5. Utilitarian gratification—acquiring second opinions

Participants also admitted that they sought product advice from fellow shoppers before completing transactions in-store. P28, who was texting her friend while awaiting the bus after shopping for clothes, mentioned that she benefits from a friend's advice before buying:

> "*I talked to my friends while we were shopping together. You can get a second opinion from someone when you shop on your own… just useful. That is like a benefit I guess which is very nice.*"
>
> (P28, female, 21)

When consumers are exposed to various product and brand options in shopping centers, receiving second opinions from peers can decrease the perceived risk of making poor decisions [101]. Smartphone-assisted communications where participants contacted their friends for additional suggestions or second opinions were found to occur in our study, often when shopping alone and often by taking a photograph and sending it to others before completing purchases in-store (for example

P13, P26 and P29). This may be because they become more risk-averse when faced with a multitude of choices and attempt to avoid poor decision-making by sharing the responsibility with others [102]. Furthermore, we found out that participants consulted accompanying shoppers for product suggestions (for example P3, P4, P28 and P30) and checked product reviews from peer buyers or anonymous reviewers before buying (P7, P12, P14, P40 and P42). To sum up, the results indicate that consumers use smartphones to obtain additional suggestions before completing purchases in order to make more assured and confident purchasing decisions.

3.3.6. Hedonic gratification – relaxed shopping pace

Not all consumers predominantly seek communication and information gratifications for shopping-related tasks. Hedonic-oriented consumers may visit shopping centers for leisure, relaxation, and an enjoyable window-shopping experience. Some participants were observed focusing solely on their smartphones in-store, pausing in their shopping to watch shopping-irrelevant videos or listen to music and relax. P35 also emphasized his interest in mobile gaming services during his shopping break:

> *"I have many gaming apps installed on my phone, when I had to wait [for] my girlfriend during shopping, I just relaxed myself and played some games and watched some pre-downloaded videos. A smartphone at least induces [in] me some leisure [rather] than boredom."*
>
> (P35, male, 24)

Thus, hedonic-oriented consumers may find ways to induce feelings of relaxation in-store, to help counter boredom [73]. In fact, Leung [103] argues that hedonic smartphone use is associated with free time boredom, which is why consumers actively engage in pleasure-seeking alternatives on their phones.

3.3.7. Hedonic gratification – passing time

Likewise, consumers today are more likely to enjoy a more leisurely shopping pace, enhancing their entertainment gratification, and smartphones are considered appropriate tools to pass the time. P11 was observed waiting outside a coffee shop after a clothes item purchase when the researcher approached him. He agreed to take part in the interview and explained his smartphone checking habit:

> *"I am always on my phone. Like for today, I did some shopping, but in between, I used my texting apps (WhatsApp and Messenger), I checked my social media stuff… and I listened to the radio pre-recorded while we were having breaks after shopping. I just ordered an Uber and [am] still wait[ing]. I also browsed lots of websites to compare the prices when I am bored at some point of shopping."*
>
> (P11, male, 29)

Indeed, smartphones are considered as intimate tools for consumers to combat boredom, and emerging consumers have developed a habit of continuous checking of these devices during shopping journeys in shopping centers.

3.3.8. Social gratification – continuous online socializing

Social media networking influences shopping journeys while in-store consumers are browsing products. Distinct from conventional communication media, mobile social media enables users to share and interact with others more directly, intensely, and effectively. For instance, a growing number of young people use the 'short story' functions of Instagram and Snapchat [104], providing digital video glimpses of their shopping trips on social platforms to socialize with fellows. P33 had finished her clothes shopping with her husband and was resting on a chair in the high street. She expressed her dependency on social media networking apps:

> *"I just try to get on with my friends and to see where they are through checking out my social apps because we planned to go shopping together.*

> *It's always convenient though to keep updated when planning with my friends on social media because everyone is on there."*
>
> (P33, female, 28)

Consumers' socializing activities are widely recognized as they tend to nurture, or be perceived to nurture, relationships with others via smartphone use [52]. Through frequent checking and updates on mobile social platforms, they can be better informed and connected despite any geographical barriers.

3.3.9. Social gratification – consumer engagement via online brand communities

Retailers have enhanced their online brand communities to enable brand followers to engage with their fellows and access product reviews [105]. Moreover, the extensive reviewing and other content that consumers produce in a brand community is testament to the intensified relationships between firms and consumers [106]. We also learned that in-store consumers are becoming more interactive on virtual platforms to satisfy their need for social gratifications, usually in seeking suggestions from 'like-minded' people. For example, P7 referred to her worries around not having her smartphone with her during her shopping center expeditions. She shared her experience of smartphone uses:

> *"I need my smartphone whenever I go, like today, my smartphone kinda helped me when I decided [on] which products… in terms of reading product reviews, I did check a few on the retailers' website such as Topshop and Amazon. If I bought something, I would leave a review as well. It's a good way to share your stuff and experience that others can check. I think it's a good feature, giving other people insights, so they check it out before buying stuff… you cannot give reviews promptly during your shopping without a smartphone in hand."*
>
> (P7, female, 20)

Proactive consumers nowadays seek platforms such as those of online brand communities to invoke connections with fellow buyers and for checking their reviews, as approaches to maintaining social communication [107]. These consumers appear to value the overall purchasing experience. By embracing diverse communication and socialization channels related to transactions, they can get a sense of interactivity and acknowledgement by both retailers and peers.

3.4. Unexpected finding: using smartphones to reduce consumer state anxiety

Young consumers who habitually check their phones with the purpose of solving multiple enquiries appear to experience a greater dependency on mobile technologies. By interviewing individual consumers, we managed to delineate specific uses and consumers' expected gratifications, while recognizing young consumers' psychological states during their shopping journeys. Participants expressed different degrees of both positive and negative appeal toward smartphone use. We further aggregated these reported feelings and developed Table 3, presenting a step-by-step coding procedure for 'consumer state anxiety.' Attitudinal by nature, it began by documenting their prevailing emotional and psychological dispositions toward a particular smartphone use in shopping centers [108]. Accordingly, we derived keywords representing the perceived pros and cons of smartphone uses, following the same coding procedure [91,93]. Surprisingly, the codes indicate potential links between smartphone U&G and consumer distress.

Despite that we found young consumers treating smartphones as inseparable and essential companions to aid in assuring and maintaining a comfortable and confident shopping journey, greater certainty surrounding new products, more reliably constant stimulation, a more relaxed shopping pace, and more instant connectivity with the external world, there are also apparent negatives. According to Saprikis et al. [109], consumers may suffer psychological hardship, such as anxiety, while using mobile devices in-store. Yet, such negative phenomena are

Table 3
Participants' feelings towards smartphone uses in-store ($N = 43$).

Participants' feelings toward smartphone uses during shopping journeys	Keywords	Aggregate theme
Smartphones provide confident, less risky, and comfortable assistance (P9, P13, P42, P43). I can be less worried about my family members while I am shopping away from home (P19, P37, P40, P42).	Confident Comfortable Less risky Less worried	Smartphone's utilitarian U&G can alleviate consumer anxiety (apprehension, uncertainty, risk, doubt, boredom, worry) during individual shopping journeys in shopping centers.
Mobile quick payment is safe and secure, faster than cash or card payment (P13, P22, P35, P38, P41).	Safe and secure Faster	
Smartphones enable me to enjoy entertainment such as watching videos, mobile gaming, and listening to music. I feel less stressed and relaxed (P7, P8, P18, P20, P35).	Enjoyable Relaxed	Smartphones' hedonic U&G enable a relaxed and less stressed (known as reduced anxiety) shopping experience in shopping centers.
I constantly check my phone when hanging around shops, with nothing to do; I spare some time to browse my phones (P5, P7, P19, P20, P23).	Combat boredom Pass time	
I need to check online reviews when I am buying a new brand or buying something very expensive, then I won't make risky decisions (P17, P19, P20, P34, P36).	Risk averse	Smartphones' social U&G facilitate instant social connection with other people and help make confident purchase decisions, simultaneously lessening status anxiety.
I call someone to ask their opinions before I buy the item, to get more advice and make confident decisions (P21, P16, P34, P43).	Confident decision-making	
I feel safe when I am constantly active on social media, it gives me lots of information and keeps me connected with everyone (P33, P17, P16, P38).	Safe and being connected	

understood as individuals' temporary responses toward challenging external stimuli as may be present in shopping centers [69]. Indeed, we identified positive attitudes attributed to smartphone use countering such negatives, potentially reducing consumers' emotional responses such as distress, anxiety, fear of risk-taking and regret, apprehension, uncertainty, or boredom. Accordingly, we label these collectively as 'consumer state anxiety,' a short-lived negative cognitive and emotional condition arising from exposure to particular external contexts [71]. Table 3 reflects how we derived the construct of 'state anxiety' from participants' transcripts.

Built on the aggregated themes of Table 2 and Table 3, we posit that using a smartphone can reduce consumer state anxiety during shopping journeys. With state anxiety brought about by consumers feeling overwhelmed by external stimulus [110] like excessive product options and other distractions in shopping centers, such psychological difficulty can be ameliorated by consumer smartphone use for various gratifications including utilitarian, hedonic, and social. Our findings also suggest that certain smartphone uses may influence purchase intentions if consumers shift from apprehension toward confidence during shopping journeys. Hence, we became motivated to explore whether and how smartphone U&G may in fact mitigate anxiety in busy and complex shopping environments and ultimately impact in-store purchase intentions.

Our qualitative findings thus far enabled us to observe key constructs of the research problem and then elaborate a nuanced conceptual

framework to examine outcomes in more depth. More specifically, we aggregated independent variables [91] as three types of gratifications and consumer's state anxiety as a consequent variable that resulted from emerging smartphone uses. Regarding consumer's psychological status, we assume that possible relationships exist between a smartphone's uses and gratifications and state anxiety. Hence, study 2 is designed to examine the second research question, testing whether and, if so, the extent to which gratifications may impact state anxiety and, subsequently, purchase intentions. Constructive hypotheses and our conceptual framework follow in the next section.

4. Study 2—Examining relationships between smartphone U&G, state anxiety, and purchase intention

4.1. Conceptual framework and hypotheses development

Recalling the findings of Study 1, young consumers tended to express a certain degree of anxiety from uncertainty, choice overload, smartphone unavailability, and overwhelming distractions typical of shopping centers. Given smartphone's Internet access, consumers feel more secure and confident when completing purchases. This is attributed to achieved gratifications. Therefore, we develop a set of hypotheses proposing that smartphone U&G may reduce consumer state anxiety and subsequently influence purchase intention.

4.1.1. Utilitarian gratifications reduce consumer state anxiety

Utilitarian gratifications can be achieved through the five forms of smartphone use as presented in Study 1. The wide adoption of these devices has enhanced many aspects of interpersonal communication through active online engagement. In particular, the qualitative findings have evidenced that smartphones allow busy consumers to shop with less persistent concern for other aspects of their lives, effectively liberating them. Consumers need immediate smartphone access to keep updated with acquaintances [11] and arrange other shopping-irrelevant tasks simultaneously, through habitual checking on their phones. In such, smartphone connectedness [111] will counterbalance the consumer's state anxiety during shopping journeys. As well as acquiring second opinions from someone they know, consumers search for product-related information via branded shopping apps and other users' experiences. Such apps enable consumers to fulfill their information gratifications without time and location constraints [46]. This reduces their perceived risks around uncertainty when trialing new products; the smartphone's assistance with information is assumed to reduce anxiety during shopping journeys.

Continuous smartphone use is often encouraged due to the cross-fertilization and facilitation advantage of consumers browsing and buying at the same time, particularly when in-store consumers are connected online. Atalay et al. [112] emphasized that consumers able to tolerate stress have a higher preference for multitasking. This infers that smartphone users can be usefully multitasking during shopping journeys, especially those with higher thresholds in handling stress or anxiety. In a similar vein, marketing scholars have recognized the benefits of the mobile payment approach [113], providing consumers with convenience and speed [114] and performing secure information exchange in transactions [115]. This technology has somewhat addressed any anxiety toward loss or danger, with regard to one's confidential information. Hence, we hypothesize that:

H1. *Smartphone utilitarian gratifications will reduce consumer state anxiety during shopping journeys.*

4.1.2. Hedonic gratifications reduce consumer state anxiety

Unlike goal-oriented consumers, hedonic-centric consumers tend to enjoy leisure. Such an atmosphere in shopping centers is thus perceived by them as a key experiential element in their assessment of such offline channels [116]. Similarly, Chiu et al. [117] demonstrate that perceived

enjoyment is also an important indicator influencing their offline purchasing experience. The findings of Study 1 suggest that hedonic gratifications consist of a relaxed shopping pace and the chance to pass the time which can be attributed to smartphone use during a shopping journey.

On the one hand, in-store consumers may spend time listening to music or playing mobile games during their relaxation breaks [41]. Indeed, Alnawas and Aburub [46] report that consumers use mobile apps to stimulate happier moods and seek entertainment at certain low points during the shopping process. They may also find ways to re-establish positive emotional states when negative feelings such as anxiety might be impacting them and their purchasing decision-making [77,118]. Listening to music via smartphones is said to help in-store consumers relax and relieve their anxiety [73] by pausing in their shopping and enjoying what their smartphones offer them.

On the other hand, Whiting and Williams [45] report on how consumers engage with mobile social media to pass the time when they feel bored. Participants in Study 1 likewise shared that they checked their smartphones routinely and frequently, with the device treated as an aid to passing the time, particularly when experiencing boredom or wanting to pause their shopping journeys [119]. According to Lee and Ma [120], users choose specific media to combat a sense of monotony and pass the time, which is corroborated by earlier IS researchers [121]. It appears that the compulsion to habitually check one's smartphone is a way to occupy spare time [122]. Thus, we hypothesize that:

H2. *Smartphone hedonic gratifications will reduce consumer state anxiety during shopping journeys.*

4.1.3. Social gratifications reduce consumer state anxiety

Social media networking via smartphones also influences shopping journeys when consumers are browsing products, as it allows them to be in touch with others in real time on their mobile social apps. The first study implies two forms of social gratifications: continuous online socializing and consumer engagement via online brand communities. The former—social media networking—has penetrated people's daily lives in many respects, as they need to feel constantly integrated with other parties by means of the Internet [123] to achieve belonging and peer support [124]. According to Wang and Zheng [125], mobile apps provide users with social and psychological gratifications wherein usage behaviors of the media are often influenced due to motivational goals. Hence, consumers with social connectedness report feeling the assurance of greater human attachment and less worry over being neglected or excluded. Their continuous socialization activity has been increasingly recognized as significant in developing relationships with others [52], through simultaneously checking their acquaintances and friends' social and projected status and expressing themselves accordingly [126] to win a sense of social approval from peers. Under these circumstances, mobile social media on a smartphone serves as a catalyst to timely relationships between users and their fellows. Gan and Li [119], inter alia, discuss how users attempt to establish connection and resultant communication through online chatting and 'liking' one another's social posts. Along with winning peer acknowledgement may come a rush of confidence or satisfaction, and this may be particularly relevant and powerful to them while shopping for apparel. In sum, smartphones bring consumers together digitally and enhance their engagement in socialization via social media platforms, which may contribute to alleviating status anxiety and boredom during shopping.

The latter—online brand communities—is also important. In addition to the above, consumers also often seek online social support from virtual brand communities before making confident purchasing decisions. Young consumers frequently use smartphones to conduct pre-search activity or to feel part of such communities [127] and therein we witness the facilitation of another form of social gratification on digital platforms [128]. They may then also refer to anonymous online reviews via their device when assessing the expense of a product [1],

online discussions to potentially ease any misgivings or misunderstandings about new products or brands [129], product reviews generated from peer recommendations on a retailer's community page, and other such fora prior to transacting. In sum, the widespread adoption of IT such as smartphones has spurred consumers to enter newly created online communities to evaluate criteria and make decisions using alternatives to the traditional offline approaches, by checking details provided by such communities and reducing doubts for more confident decision-making. In light of the above two aspects, we hypothesize that:

H3. *Smartphone social gratifications will reduce consumer state anxiety during shopping journeys.*

4.1.4. Consumer state anxiety mediates in-store purchase intention

According to Bujisic et al. [116], consumers are more likely to experience higher levels of either enjoyment or anxiety when visiting physical retail shops. The anxiety especially may have a greater impact on a consumer's purchasing decisions as it may generate avoidance behavior toward completing purchases [20]; indeed, we also posit that state anxiety evoked by hectic shopping environments may influence in-store purchase intentions. Conversely, previous research demonstrates consumer anxiety in adopting new technologies or shopping channels, as well [130]. Another study shows that variety-seeking consumers may experience choice overload, affecting their decisions when using online shopping channels [18]. Either way, anxious consumers may be unknowingly driven to seeking alternatives to reduce risk of anxiety when making purchases in an uncertain context such as those detailed above [131].

As seen in Study 1, participants underwent various emotional responses related to their state anxiety (see Table 3). On the one hand, they experienced anxiety when confronted with exceedingly abundant product choices and uncertainty [132] during shopping journeys in shopping centers. On the other hand, they felt confident and assured when browsing their smartphones for various forms of assistance and gratification during store visits. In such, smartphone-assisted shopping journeys are assumed to counterbalance status anxiety and inspire more assured purchasing. Our research evaluates young consumers' perceptions of smartphone-assisted shopping journeys; yet, individual consumers may sustain quite different intensities of the abovementioned anxious feelings in shopping center contexts. Hence, in sum, it is suggested that varying levels of consumer state anxiety may variously affect decision-making in completing purchases in-store. Therefore, we hypothesize that:

H4. *Consumer state anxiety mediates the relationships between smartphone U&G and in-store purchase intention.*

Given the hypothesized relationships above, we propose a visualized conceptual framework as follows (Fig. 1).

4.2. Sample, procedure, and measures

We adopted a self-administered survey, issued through mall-intercept personal interviews, using a convenience sampling technique. Study 2 data were collected, and its analysis completed during the 2019 winter period, in the same research contexts as Study 1, targeting apparel shoppers in shopping centers and malls. The research team performed the same observation tactic as posited in Study 1 and surveyed in-store consumers to answer questionnaires. A pilot test was performed by ten marketing department staff recruited from a local university, who then collaboratively composed the finalized questionnaire. The instrument used 5-point Likert scale questions (1: strongly disagree to 5: strongly agree) to reveal an individual's attitudes toward using smartphones during shopping journeys. To achieve scale validity and reliability, we borrowed measurement scales from existing research and modified them to fit the current research context (see Appendix 2).
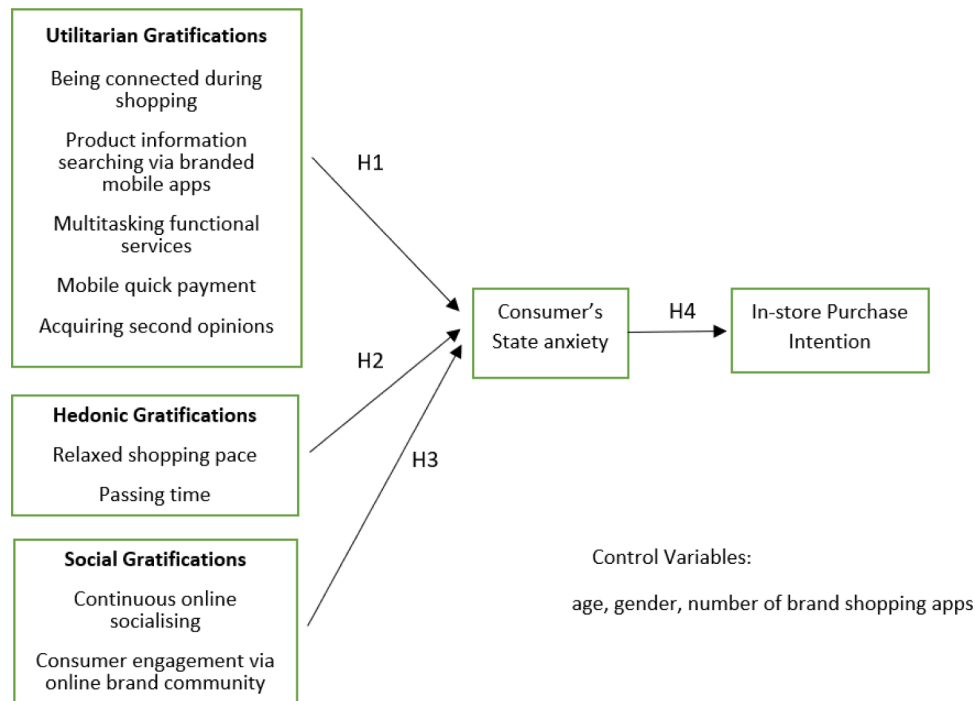
Fig. 1. Conceptual framework.

To ensure questionnaire rigor, we maintained quality controls, such as social desirability bias and attention checks. First, the questionnaire was administered using a traditional approach, allowing participants to answer questions by sharing a favorable image of themselves [133]. Using face-to-face interviewing established rapport with participants, who rightly understood their answers would be kept confidential [134], so that they felt able to provide honest answers, effectively mitigating social desirability bias. Second, to foster participant attention toward deeper unbiased self-reporting, we began by asking straightforward questions to impress on them the research topic. At which point, we mainly framed scales using positive language and connotations, after which we additionally applied the reverse wording for one construct (consumer state anxiety) to direct their attention toward answering it differently and honestly, rather than simply sustaining the momentum of ticking all the positive options as ego-based self-identification [135].

4.3. Results

It took approximately six weeks to receive a sufficient sample of 349 valid responses. We managed to predominantly approach the younger generation aged between 18 and 30 (accounting for 88.6%), who used their smartphones extensively during shopping journeys. We did not have any gender focus. Most respondents had received college or university educations (9.2% diploma level, 49.6% bachelor level, and 28.1% master's degree level).

We particularly investigated the extent to which they used branded mobile shopping apps: about 50.7% of respondents had installed and used mobile shopping apps; nearly 71.7% frequently browsed shopping apps (15.5% as daily browsers, 34.4% browsing two or three times per week, and 21.8% browsing two or three times per month). Ultimately, 78.2% of respondents agreed that they felt more confident and comfortable after using smartphones during their shopping journeys (see Appendix 3).

Regarding control variables, we followed previous research and applied respondents' gender [136] and age [137] as factors controlled for in performing further analysis. In addition, we also introduced 'number of branded mobile apps' as a control variable because it indicated the extent of respondents' usage of mobile shopping apps on their

smartphones. This factor would contribute to analyzing different forms of gratifications and individual anxiety toward mobile technology.

Reliability was tested using Cronbach's Alpha value (α) (see Table 4) with all variables exceeding the threshold of 0.7. Moreover, to avoid common method bias, we employed Harman's one-factor test [138], which reported about 25.2% of variances explained by extracting only one factor, meeting the thumb value within 50% of the variance among all variables. This implies that there was no bias when applying respondents' answers in the same questionnaire for both independent and dependent variables.

A reflective measurement model was inspected by conducting confirmatory factor analysis (CFA) via AMOS 26. Given the adequate sample size of 349 responses, the model fitness indices were as follows: $\chi^2 = 656.355$, degree of freedom (df) = 409, CMIN/DF= 1.605 (<3), $p <$ 0.001, GFI= 0.903 (>0.9), TLI= 0.944 (>0.9), CFI= 0.950 (>0.9), RMSEA= 0.042 (<0.07). Hence, all the GOF indices met acceptable requirements, indicating that the measurement model achieved a good fit. As shown in Table 4, each item (Con1, Con2) and the first-order indicators (CON, OSO) significantly relate to the second-order latent constructs, the so-called utilitarian gratifications. Similarly, satisfying results were achieved with respect to hedonic and social gratifications and consumer state anxiety. In addition, the dependent variable (in-store purchase intention) was measured through a single item by probing the extent to which consumers were willing to purchase products after using their smartphones in-store. Single item has been accepted in existing studies as respondents can easily interpret the question [139,140]. This variable is further examined in the SEM and mediation analysis.

Apart from achieving scale reliability, examining construct validity is suggested to embrace both convergent and discriminant validity tests. Convergent validity is assessed according to three aspects. First, all factor loadings should be statistically significant, with a standardized parameter of 0.5 or higher [141]. According to the output in Table 4, all indicators (CON and OSO) are significantly related to the latent constructs, falling between 0.534 (product information seeking via branded mobile apps) and 0.927 (consumer engagement via online brand communities). Second, the average variance extracted (AVE) is considered as the mean variance extracted for the items loading on a construct and is a

Table 4
CFA factor loadings and reliability test results (*N* = 349).

Latent Variables/ Indicators/Items	CFA factor loadings	Mean (Standard deviation)	Cronbach's Alpha (α)
Utilitarian Gratifications (second-order)		**3.071 (0.499)**	
Being connected during shopping journey (CON)	0.659***	3.908 (0.811)	**0.836**
Con1	0.773***		
Con2	0.851***		
Con3	0.861***		
Obtaining second opinions (OSO)	0.622***	3.176 (0.678)	**0.711**
Oso1	0.686***		
Oso2	0.634***		
Oso3	0.691***		
Information seeking via branded mobile apps (IBMA)	0.534***	2.600 (0.634)	**0.802**
Ibma1	0.752***		
Ibma2	0.860***		
Ibma3	0.675***		
Multi-tasking functional services (MTF)	0.733***	3.416 (0.667)	**0.839**
Mtf1	0.795***		
Mtf2	0.806***		
Mtf3	0.780***		
Mobile quick payment (MQP)	0.564***	2.809 (0.660)	**0.806**
Mqp1	0.807***		
Mqp2	0.876***		
Mqp3	0.763***		
Mqp4	0.624***		
Hedonic Gratifications (second-order)		**2.663 (0.552)**	
Relaxed shopping pace (RSP)	0.743***	2.987 (0.802)	**0.854**
Rsp1	0.777***		
Rsp2	0.855***		
Rsp3	0.791***		
Passing time (PT)	0.818***	3.562 (0.989)	**0.856**
Pt1	0.862***		
Pt2	0.851***		
Pt3	0.736***		
Social Gratifications (second-order)		**3.380 (0.609)**	
Consumer engagement via online brand communities (IOBC)	0.927***	3.447 (0.651)	**0.716**
Iobc1	0.706***		
Iobc2	0.703***		
Iobc3	0.630***		
Continuous online socializing (OS)	0.835***	3.769 (0.767)	**0.757**
Os3	0.621***		
Os4	0.774***		
Os5	0.841***		
Consumer State Anxiety		**2.987 (0.924)**	0.742
Rcsa1(reversed wording items)	0.589***		
Rcsa2	0.680***		
Rcsa3	0.866***		

Note: factor loadings are standardized regression weights and *** indicates a P value less than 0.001.

Table 5
Correlation matrix for latent variables (*N* = 349).

Construct	CR (Composite Reliability)	AVE	Mean	Hedonic	CSA	Utilitarian	Social
Hedonic	0.758	0.611	2.663	**0.781**			
CSA	0.703	0.535	2.987	-0.242***	**0.732**		
Utilitarian	0.761	0.643	3.071	0.694***	-0.274***	**0.802**	
Social	0.875	0.778	3.380	0.637***	-0.225***	0.689***	**0.882**

Note: CSA: consumer state anxiety; ***: *p* < 0.001.

conclusive index of convergence [142], with a suggested adequate convergence of over 0.5. The third attribute evaluates composite reliability (CR), an acceptable value of good reliability, suggested as being higher than 0.7. Table 5 demonstrates the convergent and discriminant validity performance.

As displayed in the above table, the AVE value of each construct reaches a threshold of 0.5, and CR values are above 0.7, so we can confirm that convergent validity is achieved. In addition, discriminant validity identifies whether different variables can be discriminated from one another to represent different concepts, by detecting if the squared root of the AVE (of a construct) is bigger than the correlations between the constructs [143]. Referring to the bold-font figures in Table 5, the values are greater than the correlations within each column; therefore, the discriminant validity meets expectations.

When performing the structural model, smartphones' utilitarian, hedonic, and social gratifications were independent variables, the mediator being named as consumer state anxiety, and purchase intention was the dependent variable. In a similar vein, the model's fitness indices were exhibited first: $\chi^2 = 860.589$, degree of freedom (df) = 532, CMIN/DF= 1.618 (<3), $p < 0.001$, GFI= 0.910 (>0.9), TLI= 0.928 (>0.9), CFI= 0.936 (>0.9), RMSEA= 0.042 (<0.07). These indicators support a valid and reliable structural model leading to hypotheses testing (Table 6).

According to the SEM results, all dimensions of gratification are significantly associated with each other, showing that multiple smartphone uses contribute to consumers' expected gratifications. Moreover, both utilitarian and hedonic gratifications show negative relationships with consumer state anxiety ($\beta_{utilitarian}$= -0.204 and $\beta_{hedonic}$= -0.074, $p < 0.05$), suggesting that consumer anxiety can be reduced by smartphones' utilitarian and hedonic uses during shopping journeys. However, there is a nonsignificant association between social gratifications and state anxiety (β_{social}= -0.024, $p = 0.087$), implying that social gratification achieved from smartphone use will not impact the consumer's state anxiety. Thus, H1 and H2 are accepted, while H3 is rejected.

Mediation analysis was performed to test the fourth hypothesis via

Table 6
Standardized correlation and regression between constructs (*N* = 349).

Construct	Relationship direction	Construct	Correlations & regression
Utilitarian gratifications	↔	Hedonic gratifications	0.694***
Utilitarian gratifications	↔	Social gratifications	0.689***
Hedonic gratifications	↔	Social gratifications	0.637***
Utilitarian gratifications (H1)	→	Consumer state anxiety	-0.204 (*p* = 0.028)
Hedonic gratifications (H2)	→	Consumer state anxiety	-0.074 (*p* = 0.046)
Social gratifications (H3)	→	Consumer state anxiety	-0.024 (*p* = 0.087)
Consumer state anxiety	→	In-store purchase intention	-0.125 (*p* = 0.032)

Hayes' PROCESS Macro [144]. The advantages of conducting mediation analysis beyond SEM are threefold in this study. First, the PROCESS can test moderator and mediator effects in one model and suggest conditional outcomes. Second, SEM inspects the entire model while PROCESS can perform each equation separately [145]. Third, PROCESS incorporates bootstrapping methods that further recommend reliable results by evaluating extra information. Table 7 presents the mediation analysis results, including total, indirect, and direct effects of the models.

First, the direct effects without the mediator show that utilitarian, social, and hedonic gratifications were related to in-store purchase intention ($\beta_{utilitarian}$= 0.348, $\beta_{hedonic}$= 0.254, and β_{social}= 0.243, $p<0.01$). Second, once the mediator was introduced in the model, findings suggest that state anxiety partially mediates the relationship between smartphone gratifications and purchase intention ($\beta_{utilitarian}$= 0.326, $\beta_{hedonic}$= 0.229, and β_{social}= 0.223, $p<0.05$). Compared to the direct relationships without the mediator, the latter coefficients show a drop in values. The third process relates to examining whether the mediating effects are statistically significant. Referring to the bootstrapping results with a 95% confidence interval and 5000 iterations, indirect effects will be supported considering the significance and confidence level (CI) not including zero [146]. Consumers' state anxiety significantly mediates the path of utilitarian gratifications (β= 0.022, $p < 0.01$; CI= 0.012 to 0.032) and hedonic gratifications (β= 0.025, $p < 0.01$; CI= 0.010 to 0.039) on in-store purchase intention. However, the indirect effect of smartphone social gratifications on purchase intention via consumers' state anxiety is not significant (β= 0.011, $p = 0.324$; CI= -0.019 to 0.041), and the confidence level includes zero. To conclude, these figures show that consumer's state anxiety partially mediates the relationship between smartphone's utilitarian, hedonic gratifications, and in-store purchase intention. However, social gratifications cannot indirectly influence the association with purchase intention via the mediator. Thus, H4 is partially accepted given conditional gratification types.

5. Discussion

Following sequential exploratory research, we investigated how the various smartphone uses affect consumer shopping anxiety in lively modern shopping environments. Findings from study 1 revealed that smartphone-assisted shopping journeys ease individual consumer status anxiety in busy shopping centers, especially when seeking utilitarian, hedonic, and social gratifications. Although we exhibited all the important components that influence the state of anxiety, we need to conduct a follow-up study to understand the extent of the effect of each component to anxiety. This follow-up that was complemented with statistical evidence from Study 2, allowed us to draw significant results that we discuss below. Furthermore, we focus on discussing various gratifications along with distinct smartphone usages, simultaneously

Table 7
Mediation effect analysis result ($N = 349$).

Mediation Paths	Direct effect without mediator	Indirect effects [CI]	Direct effect with mediator [CI]	T value
UG→CSA→PI	0.348**	0.022**, CI [0.012, 0.032]	0.326**[0.110, 0.542]	3.303
HG→CSA→PI	0.254**	0.025**, CI [0.010, 0.039]	0.229*[0.033, 0.425]	2.649
SG→CSA→PI	0.243**	0.011ns, CI [-0.019, 0.041]	0.223*[0.047, 0.398]	2.799

Notes: PI: purchase intention; CI []: confidence interval value in the bracket means BootLLCI and BootULCI; the effect values are unstandardized. **: $p < 0.01$, *: $p < 0.05$, ns: no significance.

outlining the connections between smartphones' U&G, consumer state anxiety, and purchase intention from conclusive results of two studies.

First, we find that utilitarian gratifications are predominantly valued by younger consumers deciding on smartphone adoption for shopping [38]; moreover, achieved gratifications can alleviate their state of anxiety in shopping centers. Due to the smartphone's communication, information seeking, and multitasking functional services, in-store consumers can enjoy enhanced personal capability, with interactivity and information on other aspects of life available at any time given their devices' Internet access. With consumers constantly seeking affirming suggestions [11] to build confidence in entering subsequent decision processes [147], the smartphones' assistance enables them to avoid making mistakes and hence reduces anxiety during shopping. Unlike a recent study that emphasizes issues of trust within mobile social commerce context [148], our findings do not detect such issues with smartphone-assisted purchasing. On the contrary, both of our studies attest to consumer's growing awareness of the benefits of security and efficiency in transactions using mobile quick payment services [5]. Young consumers experience greater confidence with mobile payment alternatives during their shopping journey.

Second, both studies verify that in-store consumers tend to pursue a relaxed and comfortable shopping pace through distinct smartphone usages, hence alleviating anxiety and boredom. In line with previous research, hedonic-oriented consumers visit physical stores for enjoyment and interaction [149]; they emphasize the benefit of visiting shopping centers for the experiential element of purchasing products, dining, 'chilling,' and engaging with pop-up marketing events [116]. Smartphones can further contribute to the shopping experience and their entertainment, by allowing them for instance to listen to music or engage in gaming during shopping breaks [41]. Habitual smartphone checking triggers and fosters a shopping pattern where in-store consumers seek alternative pleasures via their devices, to counter boredom and generate or sustain a positive shopping mood. The research confirms that hedonic gratifications result from entertainment featured on smartphones, especially for window shoppers in pursuit of pleasure when visiting a shopping center.

Third, in contrast to the preliminary indications of the qualitative study, Study 2 shows that social gratifications do not reduce the consumer's state anxiety. Before rejecting H3, we confirm that social gratifications can be achieved through two types of smartphone use: continuous online socializing and consumer engagement via online brand communities. We point out that consumers frequently update mobile social media and aim to raise social appeal in real time. The young consumers who participated in the research admitted to strong dependency on checking social apps so as not to miss out and to maintain timely social interactions with acquaintances. Similarly, they also seek social approval from like-minded peers who share opinions and consumption experience via virtual discussion forums on their smartphones [150]. Such discussion forums (online brand communities and retailers' follower pages) also allow consumers to enjoy a sense of belonging to brands and peer support [124]. Undoubtedly, as outlined, in-store consumers concentrate on achieving social gratifications from a variety of social-driven smartphone uses.

On the issue of the association between social gratifications and in-store purchase intention mediated by consumer state anxiety, our findings question elements of the existing literature. Social gratifications alone do not explain reduced state anxiety in the context of shopping centers. The reasoning is fourfold. First, consumers behave differently according to their purchasing purposes and external shopping environment stimuli. In the same vein, existing research highlights that various technology adoption could influence in-store services and behaviors [25] so possible parameters such as context and product diversity could drive different degrees and types of smartphones adoption in shopping. Despite social gratification being achieved during shopping, consumers may still be overwhelmed by information saturation and other factors in complex settings such as shopping centers [151]. Irrelevant information

from mobile social media platforms may give rise to information over-load and the need for accelerated cognitive processing [152] for those consumers who constantly check their smartphones during shopping. For this reason, many consumers may work harder to process information and thus their status anxiety might increase due to access to the device. Third, shopping centers encompass diversified marketing strategies and social-driven activities. They are not simply places to complete transactions; as such, consumers require engagement and concentration to respond to the contexts [153]. Consumers may become more apprehensive and distracted when in shops or malls and participating in-store activities. Fourth, in terms of technology adoption, as Celik [130] suggests, this can accelerate anxiety for consumers, when for instance adopting to new social apps [154]. In our study, consumers had the tendency to become more distracted or overwhelmed from constantly expressing themselves through social networking apps, and their state anxiety may have increased due to the contextual challenge on top of the technology anxiety.

More importantly, our findings support the mediating role that consumer state anxiety plays in the research model, enriching the consumer anxiety literature. Utilitarian and hedonic gratifications emanating from smartphone uses do reduce consumer state anxiety and consequently increase purchase intention during shopping journeys. However, we need to consider two important qualifiers. On the one hand, existing research demonstrates that the use of mobile devices will affect in-store consumer's purchasing decisions [155] because consumers switch channels easily. On the other hand, purchase intention can also be influenced by an individual's psychological state. The findings show that negative psychological conditions such as state anxiety can impede consumers from completing purchases in-store in the context of shopping centers. Consistent with existing marketing research [64,67-68], in-store consumers exhibit continuous smartphone use because they feel anxious without their device's availability to provide information and assistance. Yet, we also did find that utilitarian and hedonic achievement lead to a more satisfying and confident shopping experience, with consumers becoming less anxious and more willing to purchase apparel products. Subsequently, they tend to make more assured purchasing decisions in-store.

6. Conclusions

6.1. Theoretical implications

This research contributes to Information Systems and Marketing (consumer behavior) literature in several ways. We develop a theorization on smartphone usage and gratification goals, which fall into utilitarian usages and motivational triggers [156]. Existing IS research has adopted U&G theory widely to explain a range of technology-driven phenomena and issues [50,52]; however, our findings yield an interdisciplinary overview by pairing U&G with marketing and psychological viewpoints.

This study's main contribution lies in refining the multidimensional constructs of utilitarian, hedonic, and social gratifications through the identification of distinctive smartphone uses in the IS discipline. In line with recent IS insights [164], we further debunk contemporary human-computer interaction practices by specifying individual adoptions and perceptions on smartphone. Our findings trace, specify, and categorize smartphone uses related to achieving utilitarian gratifications during shopping journeys in shopping centers. These are as follows: being connected, seeking product information via branded mobile apps, multitasking with functional services, making mobile quick payments, and obtaining second opinions. Likewise, we expand on the existing registered hedonic gratifications (enjoyment and entertainment) by adding new ones that are directly attributed to smartphone use under the umbrella of marketing literature. The hedonic-driven activities also suggest that smartphones support consumers in taking ownership of their own shopping routes and pace, either through facilitated

purchasing or through pausing their trips. Previous marketing scholars frequently address gratification from socializing when adopting a smartphone [20] or mobile social apps [126]. We extend and enrich social gratifications by identifying and confirming that consumers seek social approval from like-minded anonymous peers and express themselves via online brand communities via their smartphones. Extending previous IS disciplinary thinking, technology adoption creates additional consumer touchpoints in data-driven fields and encourages consumers into newer shopping environments [26,157,165].

Second, we shed light on consumer behavior literature, by focusing on in-store consumers who use smartphones to balance their state anxiety when confronted by abundant product choice and other distractions in shopping centers. Following a mixed-method approach [166] we achieved an in-depth examination of the substantial relationships between gratifications and state anxiety. In the psychology literature, state anxiety is viewed as a person being unsure about their situation and fearing unexpected outcomes [158]. Marketing scholars usually emphasize how consumers may feel apprehensive about shopping via the Internet and e-commerce channels for the first time [18,130], implying that anxiety could be the antecedent factor in technology adoption. In fact, anxiety is a psychological attribute rarely addressed in previous research in retailing. We additionally prove that state anxiety plays a mediating role in the use of smartphones, affecting purchasing intention. In particular, a smartphone's utilitarian and hedonic gratifications can reduce a consumer's state anxiety owing to their increased confidence, assurance, comfort, relaxation, and enjoyment, therein simultaneously encourage purchasing intentions.

Third, our findings contribute, therefore, to understanding purchase intention as an integrated approach in marketing research, whereby in-store it can stimulate when consumers feel less anxious due to smartphone access during their shopping journeys, and it can also provide solace and support when they feel more anxious. Moreover, we investigate in detail the in-store purchasing intention as one of the consequences of smartphone uses and gratifications. On the one hand, such intention is affected when employing smartphones during shopping [10]; on the other, state anxiety, as detailed earlier, negatively affects individual decision-making [116]. The common aversions to smartphones based around anxiety albeit perhaps valid to some degrees are thus countered by its potential to diminish those anxieties, therein contributing toward an augmented facilitation of purchasing intention.

6.2. Practical implications

There are a number of practical implications for retailers, marketers, and shopping center management teams to consider. Omnichannel practices have enabled greater application of data-driven marketing through the proliferation of IT and the Internet of Things, as reflected in innovator consumers' enthusiasm for experiencing distinctive purchasing journeys. Hence, we advocate more smartphone use penetration in actual shopping journey. Traditional shopping channels such as high street retailers have experienced continuous fierce competitive threats from online, mobile and live streaming channels [167], and existing consumers are increasingly seen as 'showroomers' who may browse in-store but complete transactions digitally [10]. Yet, the majority of consumers in many sectors still value physical channels and visit stores to experience products in person. Hence, conventional retailers who only operate offline storefronts should not only extend their business models through mobile media to reach more targets and improve sales but should also introduce innovative technology-assisted experiential events to influence instore sales. For instance, we suggest that in-store retailers should enhance smarter checkout and streamline store operations by introducing augmented reality, NFTs and prompt QR codes. It helps connect in-store consumers and gather useful data when their shopping touchpoints are tracked via their smartphones.

At present, consumer-led shopping journeys have become more complicated than those guided by large companies. On the one hand,

retail technologies have been enriched, leading to diversified shopping journeys [159] that reflect consumers' lifestyle changes, especially under postpandemic conditions where online retail, mobile purchasing, and contactless payment have become the new norm [160]. Not only have the payment systems been updated to reflect in-store technology adoption, but consumers also feel helpful in displaying their digital health code via smartphones when entering stores. On the other hand, in the digitalization era, retailers should no longer solely prioritize the bundling of services but rather consider the entire consumer experience in-store beyond just a sales focus. Taking into account of our findings, with young consumers more inclined to engage with innovative and advanced technologies that are geared toward more seamless productivity and precision, additional staff and training would be useful to roll this out beyond the first movers, and guide and encourage consumers generally to explore the new forms. This is especially true for those with hedonic orientations, seeking relaxation and enjoyment in hectic shopping contexts. These consumers prefer knowing the latest arrivals and apparel trends, hence browsing experience should also be valued as a critical first step to approach the targets. Marketers should not neglect hedonic consumers' expectations across different channels, since they may tend to critically evaluate the overall shopping experience as indicated from our respondents of two studies. They may spend longer periods experimenting with technology-driven marketing activities, cultivating positive moods as essential triggers for completing purchases in-store. For instance, organizing pop-up stores and inviting some influencers would help educate the potential consumers regarding the new technology-assisted shopping process. Followed by encouraging store visitors to comment or initialize social media posts, similar activities can be implemented to target audiences and influence brand awareness. Again, the ultimate purpose is to improve consumer-led shopping experience when visiting physical shops.

Second, our findings demonstrate the impact of state anxiety on consumer outcomes; for instance, reduced anxiety will augment in-store purchase intention. State anxiety is neglected in the retailing scholarship; we reveal that anxiety is intrinsically interwoven throughout smartphone uses and gratifications, while being an antecedent for purchase intention at the same time. According to our results, retailers and shopping center management teams should attend to consumers' state anxiety in shopping environments, because it impedes prompt decision-making and may jeopardize sales volume. Apart from the revealed anxiety, there could be other discouraging psychological drivers to investigate that may impact in-store behavior. Through accommodating individual consumers' psychological needs, shopping centers can constantly update purchasing journey experiences and ensure they are successful.

Third, while consumers constantly use their smartphones during shopping journeys, many shopping centers, especially in the United Kingdom, have tried to restrict mobile phone signal coverage to encourage consumers to focus on browsing or buying items in-store, rather than engaging with their smartphones. They neglect the downside of such a policy. We found that consumers are dissatisfied when are deprived of online access so they may end up leaving the physical stores and avoiding in-store purchasing. Hence, shopping centers should reconsider both the retailers' and consumers' benefits by improving provisions of free Wi-Fi services and other technology-assisted services in-store. To that end, consumers may enjoy easy access in solving utilitarian, hedonic, and social demands digitally. In particular for the young consumers that we interviewed, shopping centers should offer as seamless an experience as possible as they seek high-quality and immediate connections with others in their daily life in spite of undergoing shopping journeys.

Furthermore, shopping centers should promote their image on social media platforms, as individual retailers do, to maximize consumer engagement. We urge shopping centers to derive their own digital identities as well as maintain brand awareness through multiple digital presences. At present, shopping centers tend to invest relatively little on branding malls and their retail spaces, ignoring the potential to enhance consumer satisfaction in their shopping journeys. They should develop and optimize their online presence via social media platforms to facilitate in-time communication with in-store consumers. Communication content can be diversified and not limited to services or purchasing experiences, recommendations, or complaints. Since consumers already check their mobile social apps frequently [119], they could usefully be enabled to invite comment on what they want, like, or dislike about offerings or infrastructures in shopping centers. By understanding consumers' needs and maintaining instant communication with smartphone users in real time, digital platforms will help shed light on shopping centers' performance and reputation and allow for strategic development.

6.3. Limitations and future research direction

This study has certain limitations that imply a need for future research. First, the study emphasizes the positive consequences of smartphone use, having mainly interviewed young consumers who were smartphone dependent and unashamedly used smartphones constantly during shopping journeys. However, the implications emerging from the undertaking may not benefit other consumer segments. For example, consumers not reliant on smartphones or with scant experience of mobile shopping channels were not discussed in the study. They may suffer from different psychological stresses when confronted by the same shopping contexts. Therefore, future research might usefully compare smartphone users and nonusers in retail marketplaces, by developing experimental research designs with comparative treatment among differing smartphone-assisted shopping journeys. Furthermore, it is suggested to include additional parameters such as smartphone 'stickiness' and prior mobile shopping experience as moderating factors, which would provide for a greater understanding of consumer psychological cues. Another restriction relates to methodological determination. We interviewed consumers based in the United Kingdom so the results cannot reflect the entire picture of western societies or beyond. Therefore, a future research call lies in a cross-sectional study between different cultural backgrounds (developed versus developing, globalized versus globalizing, or western versus eastern nations) to contribute more comprehensive knowledge on consumer smartphone adoption in shopping contexts [153].

Author statement

We sincerely thank the journal editor and reviewers for their constructive feedback so that we now provide this final version of the manuscript. In submitting the revised files, we include 'revision response letter,' updated 'Author Bios,' 'Tables' and 'Figures', and 'revised manuscript (text unmarked)' as attached files for your further examination. Each comment has been addressed and accommodated in light of enhancing the manuscript quality, and we hope the revision would meet your expectations for publication acceptance.

Declaration of Competing Interest

There is no conflict of interest between the authors.

Appendix 1: Interview participants profile (Study 1)

Variable (*N* = 43)	Description	Percentage
Gender	Female	69.8%
	Male	30.2%
Age in Years	18–24	34.9%
	25–34	41.9%
	35–44	11.6%
	45–60	11.6%
Occupation	Student	44.2%
	Employed	51.2%
	Retired	2.3%
	Not Applicable*	2.3%
Smartphone Brands	iPhone	65.1%
	Samsung	20.9%
	Other	14.0%
Product Purchased	Accessories or Clothes	77.4%
	Groceries	4.0%
	Shoes	7.0%
	Home Appliances	4.6%
	Other	7.0%
Number of Shopping Apps Installed	None	32.6%
	1–2	34.9%
	3–5	23.2%
	6–10	7.0%
	>10	2.3%

* Respondents refused to disclose their occupations.

Appendix 2: Measurement scales adopted from existing research

	Construct, Scales Adapted From	Statement
1	Being connected during shopping journey (CON) *Gan and Li (2018)*	Using my smartphone enables me to maintain a daily, personal connection with friends and family during shopping. Using my smartphone enables me to connect with friends in my real life during shopping. Using my smartphone enables me to keep in touch with friends in my real life during shopping. I like my smartphone because I can communicate with others immediately during shopping. My smartphone is the easiest, most cost-effective way to communicate during shopping.
2	Obtaining second opinions (OSO) *Chu and Kim (2011)*	I often consult other people to help choose the best available alternative from a product class. If I have little experience with a product, I often ask my friends about the product. I frequently gather information from friends or family about a product before I buy.
3	Information searching via branded mobile apps (IBMA) *Alnawas and Aburub (2016)*	I think branded mobile apps help me to obtain solutions to specific product-usage related problems. I think branded mobile apps provide information that helps me make important decisions. I think branded mobile apps enhance my knowledge about the product and its usage.
4	Multi-tasking functional service (MTF) *Yao and Liao (2011)*	I think my smartphone has the functionality I need during shopping. I think my smartphone has the ability to do what I want it to do during shopping. Overall my smartphone provides the capabilities I need during shopping.
5	Mobile quick payment (MQP) *Oliveira* et al. *(2016)*	I think that using mobile quick payment is useful to carry out my tasks during shopping. I think that using mobile quick payment would enable me to conduct tasks more quickly during shopping. I think that using mobile quick payment would increase my productivity during shopping. I think that using mobile quick payment would improve my performance during shopping.
6	Relaxed shopping pace (RSP) *Nambisan and Baron (2007)*	I use my smartphone to spend some enjoyable and relaxing time during shopping. I use my smartphone to derive fun and pleasure during shopping. I use my smartphone to entertain and stimulate my mood during shopping. I use my smartphone to derive enjoyment from problem-solving, idea generation and so on during shopping.
7	Passing time (PT) *Gan and Li (2018)*	I use my smartphone because it passes the time when I am bored during shopping. I use my smartphone because it is the thing to do to occupy my time during shopping. I use my smartphone when I have nothing better to do during shopping.
8	Continuous online socializing (OS) *Leiner* et al. *(2018)*	I use my smartphone to keep in touch with friends and acquaintances even if they live far away. I use my smartphone to express who I am. I use my smartphone to inform others about my interests. I use my smartphone to look at photos, videos, or status updates of my friends. I use my smartphone to stay up-to-date.
9	Consumer engagement via online brand community (IOBC) *Leiner* et al. *(2018)*	I use my smartphone to learn about information at first hand. I use my smartphone to encounter arguments to different reviews. I use my smartphone to share information that could be relevant for others. I use my smartphone to give good advice based on my experience.
10	Consumer's state anxiety (CSA) *Thatcher* et al. *(2007)*	I feel apprehensive about using smartphone technology for purchase I hesitate to use smartphone technology for fear of making mistakes I cannot correct. It scares me to think that I could lose a lot of information on my smartphone by hitting the wrong key.

Appendix 3: Respondents' demographic information (*N* = 347, Study 2)

Variable ($N = 349$)	Description	Number	Weight
Gender	Female	193	55.3%
	Male	156	44.7%
Age	18–20	85	24.4%
	21–30	224	64.2%
	31–40	35	10.0%
	41–50	5	1.4%
Education Level	Secondary school or	14	4.0%
	lower	32	9.2%
	Certificate/Diploma	173	49.6%
	Bachelor	98	28.1%
	Master	32	9.2%
	Doctoral or higher		
Income (monthly)	£1000/month and	259	74.2%
	below	67	19.2%
	£1001 - £2000	12	3.4%
	£2001 - £3000	11	3.2%
	£3001 and above		
Apparel Products Bought on the Day	Clothes	170	48.7%
	Shoes	91	26.1%
	Accessories	46	13.2%
	Nothing	38	10.9%
	Other	5	1.1%
Number of Branded Mobile Shopping Apps Installed and Used (NBMA)	Less than 2	172	49.3%
	3–5	120	34.4%
	5 and above	57	16.3%
Browsing Frequency of Branded Mobile Shopping Apps	Daily	54	15.5%
	2/3 times in a week	120	34.4%
	2/3 times in a month	76	21.8%
	Seldom	99	28.3%
Average Time Spent on Browsing Mobile Shopping Apps	Less than 30 min	206	59.0%
	31 min–1 h	106	30.4%
	More than $1 < 2$ h	24	6.9%
	2 h and above	13	3.7%
Feel More Confident and Comfortable after Using Smartphone In-store	Yes	273	78.2%
	No	76	21.8%

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