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# Consumer Acceptance of Mobile Shopping Apps, From Basic Apps to Ai-Conversational Apps: A Literature Review

## Taoufiq DADOUCH, *(PhD candidate)*

*Laboratoire de Recherche en Management, Information et Gouvernance*
*Faculté des Sciences Juridiques Economiques et Sociales Ain Sebaa,*
*Université Hassan II de Casablanca, Maroc*

## Bouchra BENNANI, *(Professor)*

*Laboratoire de Recherche en Management, Information et Gouvernances*
*Faculté des Sciences Juridiques Economiques et Sociales Ain Sebaa,*
*Université Hassan II de Casablanca, Maroc*

## Malika HAOUCHA, *(Professor)*

*Laboratoire de Recherche en Management, Information et Gouvernances*
*Faculté des Sciences Juridiques Economiques et Sociales Ain Sebaa,*
*Université Hassan II de Casablanca, Maroc*

| | |
|---|---|
| **Correspondence address :** | FSJES Ain Sebaa,<br>Route des Chaux et Ciments Beausite, Casablanca 20254<br>BP: 2634<br>05223-43482<br>univh2c.maH |
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# Consumer Acceptance of Mobile Shopping apps, from basic apps to AI-Conversational apps: A Literature Review

**Abstract:**

The rapid proliferation of Digital marketing, due to recent digital transformation, has been accentuated by the effects of the Covid-19 pandemic. This can be noticed with changes in customer shopping behavior while adopting various digital marketing tools such as social media, E & M-commerce, and very recently AI enablers such as conversational agents/apps (Virtual Assistants & Chatbots). The purpose of this paper is to present some literature findings on consumer behavior toward mobile shopping via AI-Conversational-apps (Virtual Assistants & Chatbots), as compared to Mobile basic apps. Indeed, Mobile Shopping via AI-Conversational apps and their consumer acceptance behavior have become an important research issue worldwide in terms of involved predictors, theories, and methodologies.

In summary, the literature showed that Anthropomorphism Construct (i.e., the degree to which a user perceives AI-Conversational apps to be humanlike) emerged as the primary additional predictor for acceptance of M-Shopping via AI-Conversational apps (AI-CA), in addition to mobile primary apps determinants. These determinants consist of utilitarian, hedonic & social antecedents adapted mainly from the UTAUT2 model (Unified theory of acceptance & use of technology), including mainly; performance expectation & effort expectation, hedonic motivation, social influence, and facilitating conditions.

Literature findings also clarified the lack & importance of multimarket & multicultural research on M-Shopping-apps' acceptance (mainly AI-CA). Indeed, not only developed markets but also developing ones, have seen surging rates of smartphone penetration conditions & mobile internet connectivity, along with changing consumer behaviors and dominating M-Shopping-apps activities. This offers great potential for research on M-Shopping-AI-CA acceptance behaviors in such developing countries, mainly in Morocco.

**Keywords:** Digital Marketing, Consumer behavior, Mobile Shopping, Artificial Intelligence, AI-Conversational apps.
**JEL Classification** : M21,M31,M37,M39
**Paper type:** Theoretical Research

# 1. Introduction:

Along with the increasing sophistication of mobile technology, mobile commerce/shopping has become a prevailing option of e-commerce in the world for its convenience & low effort expectancy, due to mobile ubiquity, interactivity, localization services, and user interface (Rodríguez-Torrico et al., 2019; Kalinić et al., 2021). In another hand, studies on AI tools such as **AI-Conversational Agents (Virtual Assistants & Chatbots)** have also exponentially increased as they are now integrated into various products ranging from smartphones, speakers, and car-navigation systems to other types of household appliances. Big players like Amazon, Google, Apple, Microsoft, and Samsung have already anticipated the development and expansion of their AI- Conversational Agents (including in smartphones) such as Amazon's Alexa, Apple's Siri, Google's Assistant, and Microsoft's Cortana. In addition, Most Firms are trying to offer their versions to deal with their customers, transforming their customer service into interactions between consumers and AI-Conversational Agents (Wagner et al., 2019).

AI-Conversational Agents (ie Virtual assistants & Chatbots) refer to "Artificial Intelligent software applications generated using Intelligent algorithms, which takes the voice (or text) of the user as its input, identifies a command or question, interacts when necessary with other services, and provides a response (McLean & Osei-Frimpong, 2019). They may also mimic human-like characteristics including voice, politeness, real-time answers, and language-based communication abilities (Fernandes & Oliveira, 2021). Note that while Virtual assistants interact with users via both their variants (voice & text-based assistants), they may fall under the Chatbots category which is mostly text-based. These two may also be used interchangeably with Conversational Agents although this term encompasses the two which generally designate different systems. To avoid this terminology inconsistency, we adopted AI-Conversational agents or apps (hereinafter referred to as AI-CA).

In another hand, AI-CAs are more optimized for mobile devices since they are disembodied with only virtual representations, as opposed to standalone embodied social/service robots. Moreover, smartphones are currently recognized as the most popular devices using AI-CA for Shopping (Seaborn et al., 2021). Therefore, AI-CAs represent an opportunity to be integrated into the mobile user experience, interacting with customers at every stage of the purchase process, adding a further layer of humanity to the shopping experience, which can promote Mobile Shopping adoption (de Cosmo et al., 2021; Alrumayh et al., 2021). Accordingly, Mobile shopping apps, mainly AI-CA, and their consumer acceptance have recently emerged as a popular research subject worldwide (Vlačić et al., 2021).

The approach of this Literature Review consists of analyzing the corpus of relevant research articles evoking Digital Marketing fields, along with Consumer behavior patterns. Therefore 'Digital Marketing' and 'Consumer behavior' keywords were chosen with their possible synonyms. Then according to the found research paths, a focus was done on 'Mobile commerce' or 'M-Shopping' Keywords, followed by 'Artificial Intelligence', 'Conversational agent/apps', 'Virtual assistant/agent' & 'Chatbot' along with consumer behavior terms such as 'consumer response', 'acceptance', 'purchase intention', 'adoption' & 'continuance intention'.

The bibliographic data was based on English & French highly cited articles published mainly in Science Direct, followed by Web of Science, Springer, and Scopus. Taking into account chronological order, we opted for articles less than 3 years old (with some exceptions), Journal citations, and ns, Authors…. Then we used the Snowballing process to search for more articles, by using Google Scholar citations; we used both, backward Snowballing to previously out cited articles and forward snowballing to explore more citing ones.

## 2. Mobile as a main digital channel for commerce

### 2.1. From off/online channel to 'mobile first

As entering the Digital era, firms continued to maintain their traditional channels, & tried to successfully develop Multichannel/Omnichannel capabilities, while integrating and optimizing all online and offline channels. As technology advanced, mobile channels became an extremely important aspect of a company's entire marketing strategy. Indeed, the characteristics of smartphones such as ubiquity, instantaneity, interactivity, localization, and personalization, enable consumers to purchase goods and services from anywhere at any time, even in the absence of wired broadband connections. They can take rapid action and searches whenever they want to learn about, find, or purchase things, while having high expectations, such as the desire for rapid information and a short attention span. Desktop searches, on the other hand, are often lengthy and complex, requiring users to fill out a web form and wait for a response. Consumers may spend more time on desktops, but they benefit from reduced prices and more detailed information. Regarding the Store channel, customers need to devote a significant amount of time and money to their searches. They can, however, try products in stores and receive immediate gratification after making a purchase (Shankar et al., 2016; Iftahy et al., 2023). Along with the above discussion, several scholars investigated consumer search behaviors, purchase channel selection, and satisfaction, comparing the new mobile channel to traditional offline and web channels, and discovered that purchases on mobile devices had the greatest degrees of satisfaction since consumers place greater value on the perceived benefits of search channels than the perceived costs of the search itself (Singh & Jang, 2020).

### 2.2. Mobile commerce evolution

#### 2.2.1. Mobile Commerce & Mobile apps

As consumers' usage of the Internet becomes increasingly "mobile first", more researchers have started focusing on the unique marketing value of mobile channel aspects, such as Mobile Commerce transactions. Indeed, Mobile commerce has emerged as an extension/alternative to electronic commerce due to its software Interactivity, convenience, customization, and effectiveness, which are distinctive advantages compared to electronic commerce (and in-store commerce) (Chhonker et al., 2017). However, mobile commerce has also some drawbacks, such as mobile small screens, which limit messaging and information searches, added to memory & processing power limitations which would result in insufficient bandwidth and data transfer capability.

The above mobile commerce evolution was accentuated by the revolution in Mobile Commerce Applications (apps) that have allowed online retailers to provide customized shopping experiences, and prompted more online shoppers to prefer Mobile apps over other online modes) (Shankar et al., 2016). Mobile applications are « mobile operating systems running on smart devices that offer advanced computing capability and a wide range of functions through application software. They include small software programs for calendaring, email, social networking, web surfing, and online gaming, among other applications, that can operate on mobile devices" (Tang, 2019). Social networking platforms (such as Facebook, Facebook Messenger, TikTok, YouTube, and Instagram), as well as Google & Amazon apps, can all be embedded applications in Mobile devices. According to last statistics, 61 percent of UK and 71 percent of US customers spend all of their digital time on smartphones, with 82 percent of UK and 87 percent of US consumers spending all of their smartphone time on mobile applications, which has altered how customers interact with brands (McLean et al., 2020a).

In the context of developing countries like Morocco, there are surging rates of smartphone penetration conditions along with changing consumer behaviors. They have experienced high

penetration of smartphones as well as mobile internet connectivity, and have young consumer populations with different social and ethnic backgrounds (McLean et al., 2020c). NTRA (National Telecom Regulation Agency) reports show that three-quarters of individuals increased their phone use during lockdown in 2020. Indeed, the equipment of Moroccan families with smartphones reached around 90.4% in 2020, against 88.3% in 2019 (ANRT, 2021). This shift in Morocco began with the uptake of online commerce before the development of mobile commerce. During its annual survey in 2018, the e-commerce website Jumia reported that 73% of orders placed on the site in Morocco were placed using a mobile device (Chakor & Moutaouakil, 2020).

### 2.2.2. Emergence of AI Conversational Apps (AI-CAs)

In the same trend of Mobile Commerce increase following the Covid pandemic, consumers are recently more interested in smarter applications/ assistants afforded by Artificial Intelligence such as Virtual Assistants & Chatbots (also called AI Conversational Apps/agents). Indeed, instead of communicating with traditional mobile apps, AI- Conversational Apps (AI-CAs) are becoming additional and, to some extent, alternative marketing assistants when it comes to shopping & customer service. They are becoming universal and common features of smartphones & tablets, or even social messaging platforms (Guzman, 2019; Kaplan & Haenlein, 2020; De Cicco et al., 2020; Fernandes & Oliveira, 2021). They enhance the consumer experience while also increasing online & Mobile sales and, as a result, producing value for all involved parties. They are now integrated into various products ranging from smartphones, speakers, and car-navigation systems to other types of household appliances. Big players like Amazon, Google, Apple, Microsoft, and Samsung have already anticipated the development and expansion of their AI-CAs (including in smartphones) such as Amazon's Alexa, Apple's Siri, Google's Assistant, and Microsoft's Cortana. In addition, Most Firms are trying to offer their versions to deal with their customers, transforming their customer service into interactions between consumers and AI-CAs (Wagner et al., 2019).

Accordingly, AI-CAs and their relation to Consumer behavior are among the most evolving topics of interest to scholars, along with other fields such as technology advancements, ethics, marketing channels, marketing strategy, performance, and STP (segmentation, targeting, positioning) (Vlačić et al., 2021).

Conceptually, AI-CAs can be split into (i) physical (or embodied) conversational agents such as Social & Service Robots, and (ii) virtual assistants (& Chatbots) which are purely disembodied agents (either voice- and/or text-driven), and theses will be our main literature focus since they can be embedded in smartphones (De Keyser et al., 2019). By definition, a Virtual Assistant (VA) is a "software service, referring to AI software applications generated using Intelligent algorithms, which takes the voice (or text) of the user as its input, identifies a command or question, interacts when necessary with other services, and responds. Its technology relies on artificial intelligence, machine learning, and the processing of natural language to give the user the desired information" (McLean & Osei-Frimpong, 2019). With minimal effort, it may learn users' tastes and favorite subjects; the more the user interacts with the virtual assistant, the more customized it gets as it gains more knowledge about them. It may also mimic human-like characteristics including voice, politeness, real-time answers, and language-based communication abilities (Fernandes & Oliveira, 2021).

According to the American Marketing Association and other sources, Mobile-embedded Virtual Assistants (as an AI-CA variant) are the future of marketing, and can even replace traditional M-Shopping-apps because mobile applications have been on the market long enough and customers are seeking innovative technologies for their buying activities (Kasilingam, 2020). Text-based chatbots can also offer several benefits and are widely used when purchasing products online, booking flights, booking hotels, etc. They can mainly be integrated with

messaging apps like Facebook, WhatsApp, and Skype, and create more text-based channels like Messenger & Telegram, simplifying business & customer interactions (Suhaili et al., 2021).

**As for mobile commerce**, AI-CAs have not only changed consumer behavior by offering them platforms for sharing opinions & information and making purchase decisions but also transformed shopping interactions, leading specifically to so-called 'Mobile Shopping' activities (Jiang et al., 2021). Indeed, while M-commerce is a broader field referring to a variety of mobile business models, Mobile Shopping refers only to aspects of the purchasing process, mainly in business-to-consumer and consumer-to-consumer situations, while. Consumers who want to engage in M-Shopping can download the app from their device's app store, and make use of its convenient way to search, order, locate, or transact anywhere and anytime (Ngubelanga & Duffett, 2021).

Such consumer behaviors toward M-Shopping apps will be explored in the next section (with the **'M-Shopping' expression replacing 'Mobile Commerce'**).
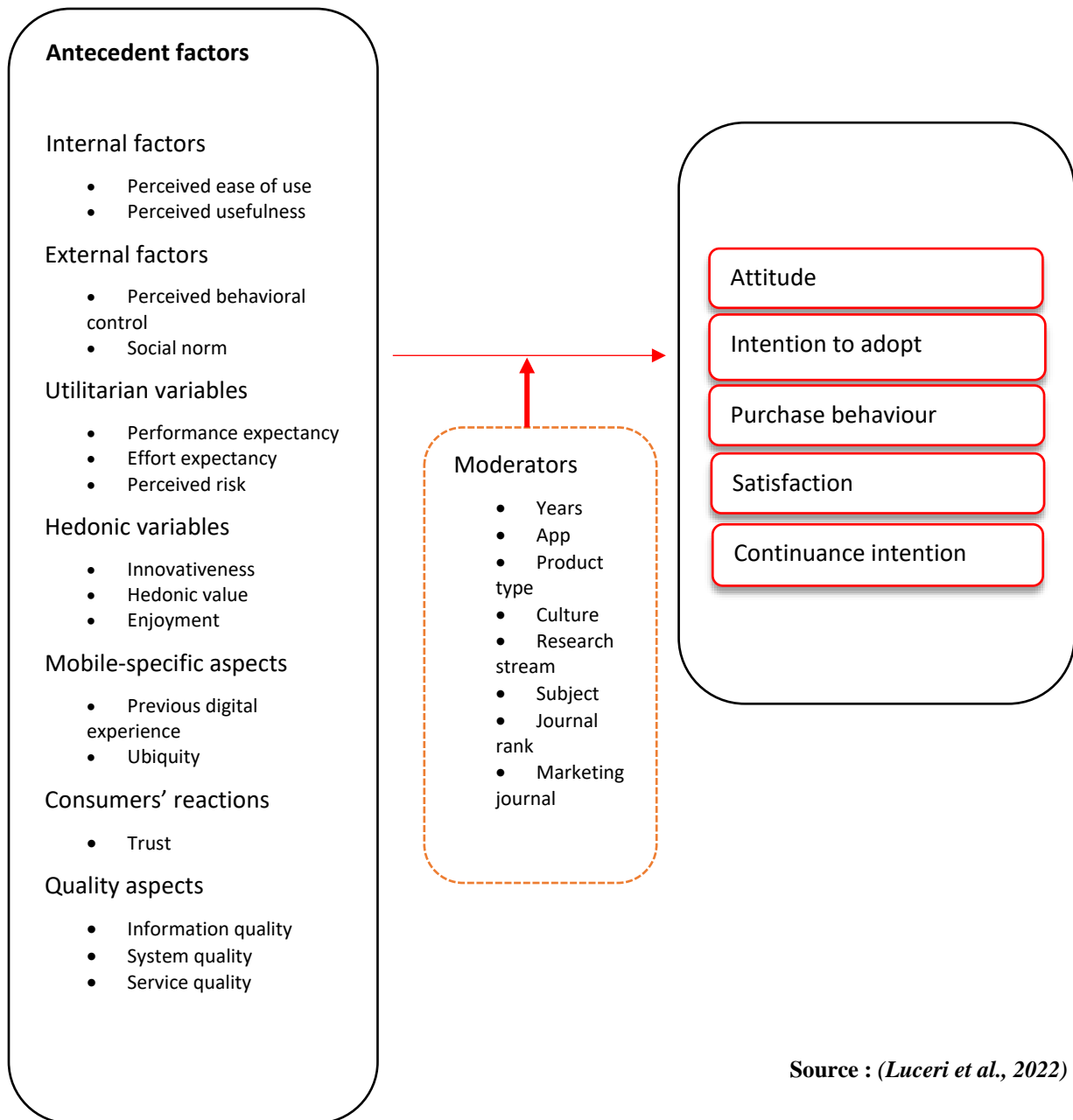
## 3. M-shopping & consumer behavior research

### 3.1. Consumer behavior dimensions

The field of consumer behavior has been traditionally borrowed from the behavioral sciences--particularly cognitive psychology--in developing models of consumer decision processes. However, the dominant models of cognitive psychology do not seem to be enough for explaining all consumer behaviors. The most usually employed approach by marketing scholars is the multidimensional approach, combining cognitive, affective, and behavioral components (Hollebeek, Glynn, and Brodie, 2014). It's a holistic approach that includes utilitarian, hedonistic, and symbolic factors, as well as all aspects of consumer-product or consumer-brand interaction. The cognitive dimension of consumer behavior refers to the mental processes that consumers go through when making purchasing decisions, such as perception, attention, comprehension, and memory. The affective dimension refers to the emotional response of consumers to a product or brand, such as feelings of trust, loyalty, or satisfaction. It is linked to a hedonic motivation for a product or brand (Dwivedi, 2015). Finally, The behavioral dimension refers to the observable actions and activities carried out by the consumer during his/her interaction with the product or brand, mainly decisions made such as purchase decisions, brand loyalty, and post-purchase evaluation (Chakor & Moutaouakil, 2020). Together, these three dimensions provide a comprehensive understanding of consumer behavior.

Accordingly, the traditional (utilitarian) marketing approach has been complemented by the experiential approach since the experiential is not only focused on the hedonic aspects of consumption but also incorporates the functional ones (Figure 1). In another hand, scholars should take into account both conscious (i.e., behavioral intention) and unconscious (i.e., habitual) decision-making in their consumer behavior studies (Ashraf et al., 2021).

*Figure 1: Framework for the antecedents throughout the m-shopping journey*



**Source :** *(Luceri et al., 2022)*

## 3.2.    Aspects of mobile shopping consumer behavior

Since customers' adoption of Mobile shopping apps has increased worldwide (by 45 during the COVID-19 pandemic (Statista 2022)), it became more crucial to understand the effects of such mobile apps on the shopping process. Appropriate Consumer behavior theories are then explored to examine the psychological motivations for Mobile channel adoption & product purchasing, including the consequences of such adoption on a customer's purchasing journey, and the changes in customer cognitive abilities as a result of its use. Scholars have, for instance, raised the following specific questions about customer behavior toward M-Shopping-apps, in pre-purchase, purchase, consummation, and post-purchase stages: What psychological elements have an impact on the product's use? What factors influence when, where, and how customers use mobile applications? What variables impact their use, and how does their

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preference for mobile apps affect their search and shopping habits? What are the differences based on the type of product or service? (Kannan & Li, 2017).

To answer the above questions, a classification of consumer behavior researches literature linked to M-Shopping apps is needed. According to this literature, M-Shopping "acceptance" has emerged as a crucial research stream dealing with most above questions, starting from intention to adoption, and Continuance Intention/Use behavior (Hubert et al., 2017; Gupta & Arora, 2017; Newman et al., 2018; Madan & Yadav, 2018). Some specific studies have also examined the effectiveness of the company's marketing actions using more customer-centric constructs, such as customer satisfaction & loyalty, engagement, brand value, customer experience, customer involvement, and trust (McLean et al., 2020; Y. Kim et al., 2021; Hsina et Haoucha, 2022).

Other behavior perspectives were also explored by scholars, mainly Impulse Buying behavior which identifies the various drivers of impulsiveness and perceived value associated with M-Shopping-apps applying more global theories such as SOR (Stimuli-Organism-Response) (Chopdar & Balakrishnan, 2020; Yang et al., 2021). However, Acceptance behavior, with its determinants, is the most examined in the mobile empirical research, taken from dominant technology acceptance theories, which are psychological & more commonly used in IS. They are dealing mainly with external & motivational factors influencing a person's acceptance of new technology (instead of internal factors explored by cognitive & neuroscience theories like SOR). For instance, (Davis, 1985) posited the acceptance/motivational variables as linking system features (Stimuli) with actual use (Response).

Therefore, the focus will be made on M-Shopping Acceptance behavior, with its drivers & theories.

## 4. Consumer acceptance behavior

### 4.1. M-shopping-apps' acceptance

Acceptance is defined as a "state or an individual's attitude that marks the start of the adoption process; which may finally finish with usage (one-time or ongoing)" (Karahanna et al., 1999). Because humans must be motivated to accept technology or to remain using it over time, acceptance studies frequently intersect with the examination of intentions & motives that customers may have to use such specific technology. It is then important for firms to understand key antecedents & consequences of acceptance behavior, to design suitable marketing strategies. Antecedents (or predictors/determinants/factors/drivers) of a construct define how much different variables influence this construct in M-Shopping, while the consequences of such construct indicate how much customers' intentions to use or continue using the service are influenced by it. Such antecedents can be functional/utilitarian, hedonic, symbolic/social, or financial benefits, as well as any outstanding elements such as users' personalities, attributes, and dispositions encouraging consumers to engage in M-Shopping-apps activities (H. R. Marriott et al., 2017). Although the initial acceptance phase (M-Shopping-apps adoption intention) is essential for initial market expansion and the most studied by literature, the continuance intention/use phase is a better indicator of long-term viability and durability. However, most research focused only on the adoption Intention phase, which is more detailed in this paper (Marriott et al., 2017; Pal et al., 2021; Luceri et al., 2022).

Literature shows that mobile shopping apps' Utilitarian, hedonic & social/symbolic antecedents are mainly adapted from the UTAUT2 model (sometimes from TAM & UTAUT). This includes (see Table1) '**Performance expectancy**/perceived usefulness' which like the other acceptance determinants is inherited from online shopping, but involves superior technical factors of mobile channels like Mobile Ubiquity & instant connectivity, hassle-free, practical, and

localized. (Ubiquity is the degree to which consumers may access smartphone-based m-shopping information and services at any time and from any location). Such ubiquity & connectivity will be even more improved with 5G, involving traffic density, and new business models & performance improvements which are conssidered a **'Facilitating Conditions' determinant** to Mobile Shopping acceptance (Choi, 2018). Moreover, the interface quality of the M-Shopping apps including user-friendly, easy-to-navigate & personalized futures is linked to '**Effort expectancy/**ease of use**' determinant**. These features when added to enjoyment & entertainment features such as good look & feel, and visually pleasing eye-catching icons/ animations, can all fall under **'the Hedonic Motivation'** determinant (Shankar et al., 2016; Sarkar et al., 2020). **'Social Influence determinants**' is linked to the most frequently used social networking applications, improving perceived social value and information value (Jiang et al., 2021).

For the latter acceptance stage of 'Continuance Intention' (which has received scant attention), the best predictors are mostly intrinsic motivation determinants such as **Satisfaction**, **Trust & perceived risk.** Indeed, the satisfaction-trust-continuance triad's three variables are closely interrelated. See more in **Table 1**.

However, for M-Shopping-AI-CA acceptance, the **Anthropomorphism** construct (the degree to which a user perceives AI-CA to be humanlike) has emerged as the primary additional predictor for acceptance of M-Shopping via AI-Conversational apps, in addition to the above mobile essential apps determinants (as detailed in the section below).

### 4.2. M-shopping AI-CA's acceptance

Similar to the M-Shopping-apps literature discussed above, the Utilitarian, hedonic (and also symbolic/social) benefits of M-Shopping-AI-CA were examined by scholars in the same integrated manner. Indeed, utilitarian and hedonic values are similarly composed of UTAUT2 determinants (Table 1ble1). Symbolic & Social presence' Constructs have also been added/applied in the 'human-computer interaction field to describe the adoption meaning & 'perception of humanity' of different technological communication interfaces, including M-Shopping-AI-CA.

#### 4.2.1. Utilitarian & Hedonic Predictors

Utilitarian values are composed of **Performance expectancy/**perceived usefulness **& Effort expectancy**/ ease of use, including Ubiquity, instant connectivity, localized, portability, automation, content quality, user-friendly, easy to navigate & personalized futures)**,** while **Hedonic Motivation** is linked to perceived enjoyment, including enjoyment & entertainment futures such as good look & feel, and visually pleasing eye-catching icons/ animations (Patrizi et al., 2021). Particular attention has been given first to Utilitarian predictors, then to hedonic benefits, illustrating how emotional reactions impact users' attitudes toward Human/AI-CA interactions (Moriuchi, 2019; van et al., 2019; Fernandes & Oliveira, 2021). For instance, to adopt AI-CA and enhance their usage, potential customers must also perceive a higher hedonic value in addition to the device's practical utility (Belanche et al., 2020). Accordingly, Pitardi & Marriott's (2021)'s findings support the previous, showing that perceived usefulness, perceived ease of use, and perceived enjoyment, positively influence users' attitudes toward using AI-CA for shopping, while emphasizing the crucial role that emotional responses play in influencing users' attitudes toward human-AI-CA' interactions. Rese et al. (2020) also found that both utilitarian factors such as "authenticity of conversation" and "perceived usefulness," added to hedonic factors such as "perceived enjoyment", positively have an impact on acceptance.

However, Sohn & Kwon (2020) noticed that, of all the variables, enjoyment has the greatest impact on users' purchase intentions, followed by subjective norms (enjoyment was found even more crucial than usefulness & other predictors, as opposed to most previous studies). In

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another hand, Zaharia (2021) compared acceptance in 3 developed countries (Germany, the U.S., and the U.K.) and found that only performance expectancy has the strongest effect (followed by social influence).

Recently, Gatzioufa & Saprikis (2022) found In their exhaustive literature review that performance expectancy, effort expectancy, social influence, trust, and attitude are the most significant determinants of text-based AI-CA (ie, Chatbots)' acceptance.

In another hand, while the degree of digitalization and Internet access use, along with the innovative technical factors of the mobile channel (like Mobile ubiquity, instant connectivity, hassle-free, localized, and personalized) relate to utilitarian factors, they are considered by some scholars a **'Facilitating conditions'** Construct of Mobile Shopping AI-CA' acceptance (Wagner et al., 2019). Such 'Facilitating conditions' are empowered by the evolution toward **5G** technology improvements (i.e. shorter latency time, faster maximum transfer rate, improved frequency and efficiency) (Shah & Zhongjun, 2021).

### 4.2.2. Social/Symbolic Predictors

Recently, some researchers explored symbolic/social impacts on acceptance, pointing out that Mobile phones serve as communication devices that connect users from various locations while also displaying various combinations of social cues; Users can establish social connections with their phones in addition to maintaining social ties with others via their phones (for example, Mobile AI-CA are readily activated by calling a user's name or tapping the home button). Xu (2020) showed that the social aspects of smartphones, along with users' perceptions, their experiences using mobile media, and the circumstances of their communications can all affect how users interact socially with smartphones embedding AI-CA. Accordingly, Zaharia (2021) previously found that **Social Influence** is an important determinant in the 3 compared countries. This was confirmed by Gatzioufa & Saprikis's (2022)' last exhaustive Review which added social influence (to the utilitarian predictors) as a crucial determinant of acceptance, while Mishra et al. (2021) demonstrated that consumer's intentions to adopt M-Shopping-AI-CA greatly depend on the word-of-mouth (WOM) recommendations received from others.

However, Wagner et al. (2019) found surprisingly that since AI-CA is now an inherent component of smartphones, social influence (together with price and facilitating conditions) is insignificant.

**That being said** on Utilitarian, hedonic, and Social/Symbolic benefits discussed above, scholars have lately begun to focus on more AI-app human variables associated with individual-AI app interaction. AI-app Humanity has been measured with more heterogeneous scales: social presence (Chérif & Lemoine, 2019; Cho, 2019; McLean & Osei-Frimpong, 2019; Fernandes & Oliveira, 2021), human-likeness (Cho, 2019) and perceived humanness (Fernandes & Oliveira, 2021). This led scholars to explore the anthropomorphism concept and mainly anthropomorphic perceptions & acceptance of M-Shopping-AI-CA, as will be detailed in the next section.

### 4.2.3. Anthropomorphism Construct in AI-CA's Acceptance

Anthropomorphism has been studied in information systems, psychology, philosophy, marketing, and neuroscience. It "refers to the degree to which a user perceives AI-CA to be humanlike, and is mainly defined as the tendency to attribute the actual or perceived behavior of non-human actors, human characteristics, intentions, or emotions" (Moussawi et al., 2021). Practically, Visual, verbal, and psychological anthropomorphic qualities are three traits that can cause anthropomorphism. Studies have mainly shown that psychological characteristics, verbal characteristics, such as voice and humanlike language expressions, and visual characteristics, such as humanlike look and emotionality, may all contribute to anthropomorphism.

Several studies confirmed the positive relationships between M-Shopping-AI-CA Anthropomorphism and first-phase acceptance, ie Adoption Intention (intention & adoption)

(Wagner et al., 2019; Moussawi et al., 2021; Sheehan et al., 2020; Melián-González et al., 2021), while others studies suggest a positive relationship between anthropomorphism and Continuance Intention/Use of M-Shopping-AI-CA (Li & Suh, 2021; Moussawi et al., 2022). However, some (but few) studies are still skeptical.

For instance, Li & Suh, (2021)' exhaustive review found that more anthropomorphism in AI-CA increases trust, likeability, warmth, and pleasure perception, all of which have a favorable impact on customer's beliefs and purchase intentions. They also found that perceived innovativeness, along with other standard acceptance constructs such as performance expectancy, social influence, hedonism, & habit, affect positively M-Shopping-AI-CA acceptance.

Other scholars found indirect impacts of anthropomorphism on acceptance; For instance, Fernandes & Oliveira (2021) concluded in their LR that AI-app acceptance is influenced by social presence both directly and indirectly through rapport and trust (Social presence results from perceived interaction, which is related to human-like attributes such as mutual understanding and minimum standards of civility). The degree of anthropomorphism was also found as a significant driver of trust and adoption intention of AI-CA (van et al., 2019; Vimalkumar et al., 2021).

Regarding specific text-based chatbot studies, Han (2021) found that Consumers' enjoyment and sense of social presence are increased by the anthropomorphism of mobile messenger chatbots, and this has a favorable impact on consumers' perceptions and acceptance through chatbot commerce. Similarly, other chatbot studies supported that the higher a consumer's need for human interaction with the text-based chatbot, the stronger the anthropomorphism-acceptance relationship (Sheehan et al., 2020; Ashfaq et al., 2020; Hu et al. (2021)). However, Rzepka et al. (2022) argued that in terms of perceived efficiency, cognitive effort, enjoyment, and satisfaction, voice interactions are seen as superior to text-based interactions. Indeed, Voice AI-CAs can encourage more sensations of humanity and social presence thanks to their anthropomorphic traits and social cues. It was discovered that the ability of these voice AI-CAs to provide joyful or empathetic tones increased user engagement and satisfaction by over 30%. However, unlike the above studies, some scholars provided evidence that anthropomorphism is not universally positive (Fernandes & Oliveira, 2021). These (but few) studies are skeptical, showing a negative or negligible correlation (evoking the uncanny valley effect which consists of the feeling of eeriness and discomfort towards a given medium or technology that frequently appears in various kinds of human–machine interactions) (Blut et al., 2021; Lin et al., 2020).

Having said that, some (but few) scholars provided evidence that anthropomorphism is not universally positive (Fernandes & Oliveira, 2021). These studies are skeptical, showing a negligible or even a negative correlation, and evoking the uncanny valley effect (which consists of the feeling of eeriness and discomfort towards a technology that frequently appears in of human–machine interactions) (Blut et al., 2021; Lin et al., 2020).

### 4.2.4. Main Moderators & impacting Dimensions

- **User Age & Experience**

Most academics investigated how particular human traits affect perception, acceptance, and interaction with M-Shopping-AI-CA, viewing them as complementary to the key studied constructs. They found that different individuals/Customer segments lead to different acceptance aspects of M-Shopping-AI-CA. Characteristics like age and gender, prior usage of AI-CA, the job at hand, and a user's personality all appeared to have a major impact on a customer's perception/acceptance and interaction with AI-CA in various contexts.

However, 'User Age' & 'Experience' appeared as the main characteristics or acceptance of 'Moderators'. Younger adults with extensive experience with M-Shopping apps may even have

a more innovative role in persuading customers to adopt M-Shopping-AI-CA through word-of-mouth  (Kasilingam, 2020). Schroeder and Schroeder (2018) also noticed that younger & male users are more inclined to trust M-Shopping-AI-CA. More specifically, the millennial generation is a tech-savvy, fashion-conscious population that is four times more likely to use AI applications than baby boomers (Fernandes & Oliveira, 2021).

- **User Groups & Cultures**

As previously found by Gatzioufa & Saprikis (2022), the socioeconomic, cultural, and development conditions of each nation, with Individuals' personalities and innovation traits are still another crucial element of distinction. Burbach et al. (2019) also underlined that various M-Shopping-AI-CA appeal to various prospective user groups, while in a more global proposal, Wagner et al. (2019) called for **multicultural research** since the above human traits could be perceived differently. Moreover, several other scholars insisted to take into account each country's particular conditions. For instance, Zaharia (2021) concluded that studies on the consumers' acceptance from one country or market should not be applied readily to another. Therefore, there is a concrete research opportunity to compare the influence of certain user characteristics in various markets and countries on the consumer's acceptance of M-Shopping-AI-CA. Developing countries like **Morocco** are a good example of such an opportunity.

*Table 1: Main construct definitions & citations*

| Acceptance Constructs | Definitions | Mobile Shopping -Basic Apps Citations | Mobile Shopping AI-CA apps Citations |
|---|---|---|---|
| Performance Expectancy (PE)/Perceived Usefulness | The degree to which using technology will benefit consumers in performing certain activities. | (Tang, 2019),  (S. Sohn & Groß, 2020), (Sahu & Deshmukh, 2020), (Natarajan, 2018), (Saprikis et al., 2018), (Tamilmani et al., 2020), (Ghazali et al.,(2018), (Hubert et al., 2017; Gupta & Arora, 2017; Newman et al., 2018 ; Madan & Yadav, 2018) (Luceri et al., 2022) | (McLean & Osei-Frimpong, 2019;  Moriuchi, 2019) (Moriuchi, 2019; van et al., 2019; Fernandes & Oliveira, 2021) Pitardi & Marriott (2021) Baier (2021) |
| Effort Expectancy (EE)/Perceived Ease of Use | The degree of ease associated with consumers' use of technology. | (Tang, 2019),  (S. Sohn & Groß, 2020), (Sahu & Deshmukh, 2020), (Natarajan, 2018), (Saprikis et al., 2018), (Hubert et al., 2017; Gupta & Arora, 2017; Newman et al., 2018; Madan & Yadav, 2018). (Ghazali et al.,(2018). | (McLean & Osei-Frimpong, 2019;  Moriuchi, 2019) (Moriuchi, 2019; van et al., 2019; Fernandes & Oliveira, 2021) Pitardi & Marriott (2021) (Patrizi et al., 2021) Baier (2021) (2021) |
| Hedonic Motivation (HED) | The degree to which individuals experience fun or pleasure when they use technology. | (Tang, 2019), (S. Sohn & Groß, 2020), (Sahu & Deshmukh, 2020), (Natarajan, 2018), (Saprikis et al., 2018), (Tamilmani et al., 2020), Grob2015 (Hubert et al., 2017; Gupta & Arora, 2017; Newman et al., 2018 ; Madan & Yadav, 2018) (Luceri et al., 2022) | (Moriuchi, 2019; van et al., 2019; Fernandes & Oliveira, 2021) (Belanche et al., 2020) (van et al., 2019) Pitardi & Marriott (2021) Sohn & Kwon (2020) (Patrizi et al., 2021) Baier (2021) |

| | | | |
|---|---|---|---|
| Social Influence (SI) | The extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular | (S. Sohn & Groß, 2020), (Tamilmani et al., 2020), (Sahu & Deshmukh, 2020), (Luceri et al., 2022) (Ghazali et al.,(2018). | Sohn & Kwon (2020), Gatzioufa & Saprikis (2022), Xu (2020), Mishra et al. (2021), Zaharia (2021) Baier (2021) |
| Facilitating Conditions (FC) | Consumers' perceptions of the resources and support available to perform a behavior. | (Tang, 2019),(Tamilmani et al., 2020), | (Shah & Zhongjun, 2021) Baier (2021) Gatzioufa & Saprikis (2022) (Kuberkar & Singhal, 2020) (Trapero et al., 2020) |
| Trust (TST) | A belief that a technology's service and results are reliable and trustworthy. | (Tang, 2019),  (S. Sohn & Groß, 2020), (Sahu & Deshmukh, 2020), (Ghazali et al.,(2018). (Saprikis et al., 2018), (Tamilmani et al., 2020), (H. Marriott & Williams, 2018), McLean et al., 2020; Y. Kim et al., 2021), (Luceri et al., 2022) | (Wirtz et al., 2018). Zaharia (2021) (Burbach et al., 2019) Li & Suh, (2021) Pillai & Sivathanu (2020) |
| Satisfaction | a cognitive assessment of the gap between the expectations and the actual performance of an information | (Natarajan, 2018), (Tamilmani et al., 2020) McLean et al., 2020; Y. Kim et al., 2021 | (Vlačić et al., 2021) Nguyen et al. (2021) (Ashfaq et al., 2020) Moussawi et al. (2022) (Pamungkas, 2019) Gatzioufa & Saprikis (2022) |
| Perceived Risk | Consumers' expectation of losses associated with purchasing acts as an inhibitor of purchase behavior. | (S. Sohn & Groß, 2020), (Natarajan, 2018),  Marriott and Williams [58], (Tamilmani et al., 2020) | Pal et al. (2021) Zaharia (2021) McLean & Osei-Frimpong (2019) Moriuchi (2020) |
| Anthropomorphism (ANT) | The process by which individuals attribute human-like characteristics to a non-human entity as chatbots. | | (Wagner et al., 2019; Moussawi et al., 2021; Sheehan et al., 2020; Melián-González et al., 2021) (van et al., 2019; Vimalkumar et al., 2021) Li & Suh, (2021) (Sheehan et al., 2020; Ashfaq et al., 2020; Hu et al. (2021)) Pillai & Sivathanu (2020) Balakrishnan & Dwivedi |
| Dependent Acceptance Variables | | | |
| Use Intention | Represents individual intention to perform an underlying behavior with stronger intentions leading to higher chances of performing the underlying behavior | (S. Sohn & Groß, 2020), (Natarajan, 2018),  (Saprikis et al., 2018), Groß [45], (Tamilmani et al., 2020), (Hubert et al., 2017; Gupta & Arora, 2017; Newman et al., 2018 ; Madan & Yadav, 2018). | (Moriuchi, 2019; McLean & Osei-Frimpong, 2019; van et al., 2019; Fernandes & Oliveira, 2021; Miklosik et al., 2021) (van et al., 2019). Rese et al. (2020) Sohn & Kwon (2020), Gatzioufa & Saprikis (2022) Zaharia (2021) (Wagner et al., 2019; Moussawi et al., 2021; Sheehan et al., 2020; Melián-González et al., 2021) |

| Continuance Intention | consumers in the postpurchase stage, where their consumption experience determines their future behavior | (Tamilmani et al., 2020), Gao, Waechter, and Bai [39], Hung, Yan,g and Hsieh [55], Kang, Hung, Yang, Hsie,h and Tang [56], (Hubert et al., 2017; Gupta & Arora, 2017; ; Madan & Yadav, 2018). | (Li & Suh, 2021; Moussawi et al., 2022) Pal et al. (2021) (Ashfaq et al., 2020) Moussawi et al. (2022) Nguyen et al. (2021) Huang et al. (2022) |
|---|---|---|---|

*Source : Authors*

## 4.3. Applied Theories & Models

The above-discussed variables & constructs were encapsulated in several models that were studied and compared by scholars. As for basic M-Shopping-apps theories, Initial acceptance research was strongly influenced by information systems (IS) literature, focusing mostly on insights from prior, utilitarian-based acceptance models (e.g., TAM (Technology Acceptance Model, UTAUT (Unified Theory of Acceptance & Use of Technology)), then on UTAUT2.

**UTAUT2** Model **i**s now considered the most comprehensive theory in understanding individual technology adoption and use among all acceptance theories based on psychological and sociological aspects, which is consistent since it was initially/ developed concerning mobile utilization. It is then used to examine M-Shopping-apps' acceptance along with various similar technologies in different contexts including, electronic government, mobile health, mobile banking, m-wallet, mobile payment, mobile commerce, smartphone, and blockchain (Tamilmani et al., 2020).

However, and in contrast to basic M-Shopping-apps, UTAUT2 (and less  UTAUT & TAM) was extended by scholars to explain how Anthropomorphism affects consumers' perceptions & acceptance of  M-Shopping-AI-CA (Melián-González et al., 2021; Moriuchi, 2020). Other scholars argue that UTAUT2 may not fully encapsulate the hands-free and voice/text-controlled interactions, along with social-emotional and relational needs. Instead, they propose new models mainly inherited from humanoid service robots, such as SRAM (Service Robot Acceptance Model), VAM (Value-based Adoption Model, and AIDUA (artificially intelligent device use acceptance), and mainly CASA paradigm (Computers Are Social Actors). However, more literature analysis confirmed that these proposed theories still have very few differences with UTAUT2, and were initially drawn for other technology fields or represented general theories of technology (Sidlauskiene, 2021; Fernandes & Oliveira, 2021; Sohn & Kwon, 2020). UTAUT2 was also confirmed by Gatzioufa & Saprikis's (2022)' exhaustive review as the most commonly used approach in the last exclusive text-based Catboats studies.

## 4.4. Approaches/methodologies

Quantitative approaches were the most prevalent in M-Shopping-apps acceptance studies while qualitative and mixed-method approaches are in their nascent stage (Chhonker et al., 2017). The same findings apply to M-Shopping-AI-CA acceptance research. For instance, Li & Suh's (2021a)' exhaustive analysis of AI-CA has found that quantitative approaches dominate this field of research as they were applied in 77% of the studies, while only 9%  employed a qualitative approach, and 14% combined more than one research method. The same results were found in Rapp et al. (2021)'s review in the specific case of human-AI-CA interaction research, where the most common research methods were quantitative (but with less majority: 49.4%), while qualitative studies were reported in 10.8% of the papers, and mixed methods accounted for 39.8%. In addition, data and the hypothesized model are generally analyzed using the partial least squares structural equation modeling (PLS-SEM) approach as an inquiry method.

## 5. Conclusion & practical implications

This paper aimed to give a broad understanding of synthesizing the most evolving digital marketing channels, focusing more on the evolution from traditional online to mobile apps channel as a promising path of research in terms of consumer behavior. Indeed, we were mainly interested in acceptance behavior toward M-Shopping apps, from basic Mobile-apps to Mobile-AI-CA, and surrounding what acceptance predictors & theories have been examined in literature and which are considered the most significant.

It was mainly found that the majority of the literature on mobile shopping apps' acceptance focuses mostly on drivers of Adoption intention, starting from main Utilitarian, hedonic & social antecedents adapted mainly from the UTAUT2 model (and less from TAM & UTAUT), such as **Performance expectation**/perceived usefulness & **Effort expectation**/perceived ease of use; **Social influence**. Such determinants, although inherited from online shopping, include mainly specific technical factors of mobile channels like Mobile instant/constant connectivity, hassle-free, practical, localized, and personalized (considered by some scholars a '**Facilitating conditions**' determinant mainly when added to 5G), and interface quality of the M-Shopping-apps including user-friendly and easy to navigate futures, along with enjoyment & entertainment futures such good look & feel, and visually pleasing eye-catching icons/animations (which can be encapsulated in '**Hedonic Motivation**' determinant).

For the latter acceptance stage of continuance intention/use (which has received scant attention), the best predictors are intrinsic motivation determinants such as **Satisfaction**, **Trust & perceived risk.** Indeed, the satisfaction-trust-continuance triad's three variables are closely interrelated.

However, for M-Shopping-AI-CA acceptance, the **Anthropomorphism** construct (with its antecedents) emerged as the main additional predictor (compared to basic M-Shopping-apps), either in the intention/adoption sage or more interestingly in the (latter) continuance intention/use phase (where satisfaction & trust/perceived risk predictors become more important as well).

*<u>As practical implications</u>*, it is suggested that marketers should keep in mind that usefulness and hedonism are seen as inextricably linked, whereas symbolic/social benefits are seen as distinct. Companies interested in pursuing an anthropomorphizing approach should develop their own M-Shopping-AI-CA and create a custom voice with unique qualities (pitch, accent, quality). Marketers will have to build an interactive experience that is both informative and ludic to address the "useful and pleasurable" cluster (Patrisi et al, 2021). This may arouse a sense of social presence, leading to rapport and trust, which are frequently linked to satisfaction & loyalty (Examples include mimicking speech patterns, attentive listening, conveying warmth, and demonstrating care and understanding for the user) (Vlačić et al., 2021). Marketers should also focus on esthetic, playful experiences, and personalized service to improve users' acceptance and possible WoM recommendations.

Literature findings also clarified the lack & importance of multimarket & multicultural research on M-Shopping-apps acceptance (including AI-CA). Indeed, not only developed markets but also developing ones, have seen surging rates of smartphone penetration conditions & mobile internet connectivity, along with changing consumer behaviors and dominating M-Shopping-apps activities (mainly AI-CA). This offers great potential for research on M-Shopping-AI-CA acceptance behaviors in such developing countries, mainly in Morocco.

**References:**

(1).      Alrumayh, A. S., Lehman, S. M., & Tan, C. C. (2021). Future Emerging mobile apps: Challenges and open problems. CCF Transactions on Pervasive Computing and Interaction, 3(1), 57–75. https://doi.org/10.1007/s42486-020-00055-x

(2).      ANRT-2021.pdf. (n.d.).

(3).      Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. Telematics and Informatics, 54, 101473. https://doi.org/10.1016/j.tele.2020.101473

(4).      Ashraf, A. R., Thongpapanl Tek, N., Anwar, A., Lapa, L., & Venkatesh, V. (2021). Perceived values and motivations influencing m-commerce use: A nine-country comparative study. International Journal of Information Management, 59, 102318. https://doi.org/10.1016/j.ijinfomgt.2021.102318

(5).      Balakrishnan, J., & Dwivedi, Y. K. (2021). Conversational commerce: Entering the next stage of AI-powered digital assistants. Annals of Operations Research. https://doi.org/10.1007/s10479-021-04049-5

(6).      Belanche, D., Casaló, L. V., Flavián, C., & Schepers, J. (2020). Service robot implementation: A theoretical framework and research agenda. The Service Industries Journal, 40(3–4), 203–225. https://doi.org/10.1080/02642069.2019.1672666

(7).      Blut, M., Wang, C., Wünderlich, N. V., & Brock, C. (2021). Understanding anthropomorphism in service provision: A meta-analysis of physical robots, chatbots, and other AI. Journal of the Academy of Marketing Science. https://doi.org/10.1007/s11747-020-00762-y

(8).      Burbach, L., Halbach, P., Plettenberg, N., Nakayama, J., Ziefle, M., & Calero Valdez, A. (2019). "Hey, Siri", "Ok, Google", "Alexa". Acceptance-Relevant Factors of Virtual Voice-Assistants. 2019 IEEE International Professional Communication Conference (ProComm), 101–111. https://doi.org/10.1109/ProComm.2019.00025

(9).      Chakor, A., & Moutaouakil, A. (2020). IMPACT DE LA TAILLE DE L'ECRAN SUR LE NIVEAU D'IMMERSION DANS UNE EXPERIENCE DE SHOPPING MOBILE: ETUDE EXPLORATOIRE. https://doi.org/10.5281/ZENODO.3687892

(10).    Chérif, E., & Lemoine, J.-F. (2019). Anthropomorphic virtual assistants and the reactions of Internet users: An experiment on the assistant's voice. Recherche et Applications En Marketing (English Edition), 34(1), 28–47. https://doi.org/10.1177/2051570719829432

(11).    Chhonker, M. S., Verma, D., & Kar, A. K. (2017). Review of Technology Adoption Frameworks in Mobile Commerce. Procedia Computer Science, 122, 888–895. https://doi.org/10.1016/j.procs.2017.11.451

(12).    Cho, E. (2019). Hey Google, Can I Ask You Something in Private? Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 1–9. https://doi.org/10.1145/3290605.3300488

(13).    Choi, S. (2018). What promotes smartphone-based mobile commerce? Mobile-specific and self-service characteristics. Internet Research, 28(1), 105–122. https://doi.org/10.1108/IntR-10-2016-0287

(14).    Ciupac-Ulici, M., Beju, D.-G., Bresfelean, V. P., & Zanellato, G. (2023). Which Factors Contribute to the Global Expansion of M-Commerce? Electronics, 12(1), Article 1. https://doi.org/10.3390/electronics12010197

(15).    De Cicco, R., Silva, S. C., & Alparone, F. R. (2020). Millennials' attitude toward chatbots: An experimental study in a social relationship perspective. International

Journal of Retail & Distribution Management, 48(11), 1213–1233. https://doi.org/10.1108/IJRDM-12-2019-0406

(16). de Cosmo, L. M., Piper, L., & Di Vittorio, A. (2021). The role of attitude toward chatbots and privacy concern on the relationship between attitude toward mobile advertising and behavioral intent to use chatbots. Italian Journal of Marketing. https://doi.org/10.1007/s43039-021-00020-1

(17). Fernandes, & Oliveira, E. (2021). Understanding consumers' acceptance of automated technologies in service encounters: Drivers of digital voice assistants adoption. Journal of Business Research, 122, 180–191. https://doi.org/10.1016/j.jbusres.2020.08.058

(18). Fernandes, S., Venkatesh, V. G., Panda, R., & Shi, Y. (2021). Measurement of factors influencing online shopper buying decisions: A scale development and validation. Journal of Retailing and Consumer Services, 59, 102394. https://doi.org/10.1016/j.jretconser.2020.102394

(19). Gatzioufa, P., & Saprikis, V. (2022). A literature review on users' behavioral intention toward chatbots' adoption. Applied Computing and Informatics. https://doi.org/10.1108/ACI-01-2022-0021

(20). Gupta, A., & Arora, N. (2017). Understanding determinants and barriers of mobile shopping adoption using behavioral reasoning theory. Journal of Retailing and Consumer Services, 36, 1–7. https://doi.org/10.1016/j.jretconser.2016.12.012

(21). Guzman, A. L. (2019). Voices in and of the machine: Source orientation toward mobile virtual assistants. Computers in Human Behavior, 90, 343–350. https://doi.org/10.1016/j.chb.2018.08.009

(22). Hu, P., Lu, Y., & Gong, Y. (Yale). (2021). Dual humanness and trust in conversational AI: A person-centered approach. Computers in Human Behavior, 119, 106727. https://doi.org/10.1016/j.chb.2021.106727

(23). Huang, R., Kim, M., & Lennon, S. (2022). Trust as a second-order construct: Investigating the relationship between consumers and virtual agents. Telematics and Informatics, 70, 101811. https://doi.org/10.1016/j.tele.2022.101811

(24). Hubert, M., Blut, M., Brock, C., Backhaus, C., & Eberhardt, T. (2017). Acceptance of Smartphone-Based Mobile Shopping: Mobile Benefits, Customer Characteristics, Perceived Risks, and the Impact of Application Context. Psychology & Marketing, 34(2), 175–194. https://doi.org/10.1002/mar.20982

(25). Iftahy, A., Isherwood, T., Marcati, C., & Soni, K. (2023). Excellent McKinsey Digital consumers in the Middle East: Rising adoption and opportunity.

(26). Jiang, L., Zhou, W., Ren, Z., & Yang, Z. (2021). Make the apps stand out: Discoverability and perceived value are vital for adoption. Journal of Research in Interactive Marketing. https://doi.org/10.1108/JRIM-03-2021-0076

(27). Kalinić, Z., Marinković, V., Kalinić, L., & Liébana-Cabanillas, F. (2021). Neural network modeling of consumer satisfaction in mobile commerce: An empirical analysis. Expert Systems with Applications, 175, 114803. https://doi.org/10.1016/j.eswa.2021.114803

(28). Kannan, P. K., & Li, H. "Alice." (2017). Digital marketing: A framework, review, and research agenda. International Journal of Research in Marketing, 34(1), 22–45. https://doi.org/10.1016/j.ijresmar.2016.11.006

(29). Kaplan, A., & Haenlein, M. (2020). Rulers of the world, unite! The challenges and opportunities of artificial intelligence. Business Horizons, 63(1), 37–50. https://doi.org/10.1016/j.bushor.2019.09.003

(30). Kasilingam, D. L. (2020). Understanding the attitude and intention to use smartphone chatbots for shopping. Technology in Society, 62, 101280. https://doi.org/10.1016/j.techsoc.2020.101280

789

(31). Kim, Y., Wang, Q., & Roh, T. (2021). Do information and service quality affect perceived privacy protection, satisfaction, and loyalty? Evidence from a Chinese O2O-based mobile shopping application. Telematics and Informatics, 56, 101483. https://doi.org/10.1016/j.tele.2020.101483

(32). Kuberkar, S., & Singhal, T. K. (2020). Factors Influencing Adoption Intention of AI-Powered Chatbot for Public Transport Services within a Smart City. 11.

(33). Li, M., & Suh, A. (2021). Machinelike or Humanlike? A Literature Review of Anthropomorphism in AI-Enabled Technology. Hawaii International Conference on System Sciences. https://doi.org/10.24251/HICSS.2021.493

(34). Lin, H., Chi, O. H., & Gursoy, D. (2020). Antecedents of customers' acceptance of artificially intelligent robotic device use in hospitality services. Journal of Hospitality Marketing & Management, 29(5), 530–549. https://doi.org/10.1080/19368623.2020.1685053

(35). Luceri, B., (Tammo) Bijmolt, T. H. A., Bellini, S., & Aiolfi, S. (2022). What drives consumers to shop on mobile devices? Insights from a Meta-Analysis. Journal of Retailing, 98(1), 178–196. https://doi.org/10.1016/j.jretai.2022.02.002

(36). Madan, K., & Yadav, R. (2018). Understanding and predicting antecedents of mobile shopping adoption: A developing country perspective. Asia Pacific Journal of Marketing and Logistics, 30(1), 139–162. https://doi.org/10.1108/APJML-02-2017-0023

(37). Marriott, H. R., Williams, M. D., & Dwivedi, Y. K. (2017). What do we know about consumer m-shopping behavior? International Journal of Retail & Distribution Management, 45(6), 568–586. https://doi.org/10.1108/IJRDM-09-2016-0164

(38). Marriott, H., & Williams, M. D. (2018). Exploring consumers perceived risk and trust for mobile shopping: A theoretical framework and empirical study. Journal of Retailing and Consumer Services, 42, 133–146. https://doi.org/10.1016/j.jretconser.2018.01.017

(39). McLean, G., & Osei-Frimpong, K. (2019). Hey Alexa … examine the variables influencing the use of artificially intelligent in-home voice assistants. Computers in Human Behavior, 99, 28–37. https://doi.org/10.1016/j.chb.2019.05.009

(40). McLean, G., Osei-Frimpong, K., Al-Nabhani, K., & Marriott, H. (2020a). Examining consumer attitudes towards retailers' m-commerce mobile applications – An initial adoption vs. Continuous use perspective. Journal of Business Research, 106, 139–157. https://doi.org/10.1016/j.jbusres.2019.08.032

(41). McLean, G., Osei-Frimpong, K., Al-Nabhani, K., & Marriott, H. (2020b). Examining consumer attitudes towards retailers' m-commerce mobile applications – An initial adoption vs. Continuous use perspective. Journal of Business Research, 106, 139–157. https://doi.org/10.1016/j.jbusres.2019.08.032

(42). McLean, G., Osei-Frimpong, K., Al-Nabhani, K., & Marriott, H. (2020c). Examining consumer attitudes towards retailers' m-commerce mobile applications – An initial adoption vs. Continuous use perspective. Journal of Business Research, 106, 139–157. https://doi.org/10.1016/j.jbusres.2019.08.032

(43). Melián-González, S., Gutiérrez-Taño, D., & Bulchand-Gidumal, J. (2021). Predicting the intentions to use chatbots for travel and tourism. Current Issues in Tourism, 24(2), 192–210. https://doi.org/10.1080/13683500.2019.1706457

(44). Miklosik, A., Evans, N., & Qureshi, A. M. A. (2021). The Use of Chatbots in Digital Business Transformation: A Systematic Literature Review. IEEE Access, 9, 106530–106539. https://doi.org/10.1109/ACCESS.2021.3100885

(45). Mishra, A., Shukla, A., & Sharma, S. K. (2021). Psychological determinants of users' adoption and word-of-mouth recommendations of smart voice assistants. International

Journal of Information Management, 102413. https://doi.org/10.1016/j.ijinfomgt.2021.102413

(46).    Moriuchi, E. (2019). Okay, Google!: An empirical study on voice assistants on consumer engagement and loyalty. Psychology & Marketing, 36. https://doi.org/10.1002/mar.21192

(47).    Moriuchi. (2020). An empirical study on anthropomorphism and engagement with disembodied AIs and consumers' re-use behavior. https://doi.org/10.1002/mar.21407

(48).    Moussawi, S., Koufaris, M., & Benbunan-Fich, R. (2021). How perceptions of intelligence and anthropomorphism affect the adoption of personal intelligent agents. Electronic Markets, 31(2), 343–364. https://doi.org/10.1007/s12525-020-00411-w

(49).    Moussawi, S., Koufaris, M., & Benbunan-Fich, R. (2022). The role of user perceptions of intelligence, anthropomorphism, and self-extension on the continuance of use of personal intelligent agents. European Journal of Information Systems, 0(0), 1–22. https://doi.org/10.1080/0960085X.2021.2018365

(50).    Newman, C. L., Wachter, K., & White, A. (2018). Bricks or clicks? Understanding consumer usage of retail mobile apps. Journal of Services Marketing, 32(2), 211–222. https://doi.org/10.1108/JSM-08-2016-0289

(51).    Ngubelanga, A., & Duffett, R. (2021). Modeling Mobile Commerce Applications' Antecedents of Customer Satisfaction among Millennials: An Extended TAM Perspective. Sustainability, 13(11), 5973. https://doi.org/10.3390/su13115973

(52).    NNatarajan, T. (2018). The moderating role of device type and age of users on the intention to use mobile shopping applications. Technology in Society, 12.

(53).    Pal, D., Babakerkhell, M. D., & Zhang, X. (2021). Exploring the Determinants of Users' Continuance Usage Intention of Smart Voice Assistants. IEEE Access, 9, 162259–162275. https://doi.org/10.1109/ACCESS.2021.3132399

(54).    Pamungkas, E. W. (2019). Emotionally-Aware Chatbots: A Survey. ArXiv:1906.09774 [Cs]. http://arxiv.org/abs/1906.09774

(55).    Patrizi, M., Vernuccio, M., & Pastore, A. (2021). Hey, voice assistant How do users perceive you.pdf?

(56).    Pillai, R., & Sivathanu, B. (2020). Adoption of AI-based chatbots for hospitality and tourism. International Journal of Contemporary Hospitality Management, 32(10), 3199–3226. https://doi.org/10.1108/IJCHM-04-2020-0259

(57).    Pitardi, V., & Marriott, H. R. (2021). Alexa, she's not human but… Unveiling the drivers of consumers' trust in voice-based artificial intelligence. Psychology & Marketing, 38(4), Article 4. https://doi.org/10.1002/mar.21457

(58).    Rapp, A., Curti, L., & Boldi, A. (2021). The human side of human-chatbot interaction: A systematic literature review of ten years of research on text-based chatbots. International Journal of Human-Computer Studies, 151, 102630. https://doi.org/10.1016/j.ijhcs.2021.102630

(59).    Rese, A., Ganster, L., & Baier, D. (2020). Chatbots in retailers' customer communication: How to measure their acceptance? Journal of Retailing and Consumer Services, 56, 102176. https://doi.org/10.1016/j.jretconser.2020.102176

(60).    Rodríguez-Torrico, P., San-Martín, S., & San José-Cabezudo, R. (2019). What Drives M-Shoppers to Continue Using Mobile Devices to Buy? Journal of Marketing Theory and Practice, 27(1), 83–102. https://doi.org/10.1080/10696679.2018.1534211

(61).    Rzepka, C., Berger, B., & Hess, T. (2022). Voice Assistant vs. Chatbot – Examining the Fit Between Conversational Agents' Interaction Modalities and Information Search Tasks. Information Systems Frontiers, 24(3), 839–856. https://doi.org/10.1007/s10796-021-10226-5

(62). Sahu, A., & Deshmukh, G. (2020). Good: Mobile Shopping Adoption: Research Insights. Journal of Ravishankar University (PART-A), 26. https://doi.org/10.52228/JRUA.2020-26-1-3

(63). Saprikis, V., Markos, A., Zarmpou, T., & Vlachopoulou, M. (2018). Mobile Shopping Consumers' Behavior: An Exploratory Study and Review. Journal of Theoretical and Applied Electronic Commerce Research, 13(1), Article 1. https://doi.org/10.4067/S0718-18762018000100105

(64). Sarkar, S., Chauhan, S., & Khare, A. (2020). A meta-analysis of antecedents and consequences of trust in mobile commerce. International Journal of Information Management, 50, 286–301. https://doi.org/10.1016/j.ijinfomgt.2019.08.008

(65). Seaborn, K., Miyake, N. P., Pennefather, P., & Otake-Matsuura, M. (2021). Voice in Human–Agent Interaction: A Survey. ACM Computing Surveys, 54(4), 1–43. https://doi.org/10.1145/3386867

(66). Shah, S. K., & Zhongjun, T. (2021). Elaborating on the consumer's intention–behavior gap regarding 5G technology: The moderating role of the product market-creation ability. Technology in Society, 66, 101657. https://doi.org/10.1016/j.techsoc.2021.101657

(67). Shankar, V., Kleijnen, M., Ramanathan, S., Rizley, R., Holland, S., & Morrissey, S. (2016). Mobile Shopper Marketing: Key Issues, Current Insights, and Future Research Avenues. Journal of Interactive Marketing, 34, 37–48. https://doi.org/10.1016/j.intmar.2016.03.002

(68). Sheehan, B., Jin, H. S., & Gottlieb, U. (2020). Customer service chatbots: Anthropomorphism and adoption. Journal of Business Research, 115, 14–24. https://doi.org/10.1016/j.jbusres.2020.04.030

(69). Sidlauskiene, J. (2021). What Drives Consumers' Decisions to Use Intelligent Agent Technologies? A Systematic Review. Journal of Internet Commerce, 0(0), 1–38. https://doi.org/10.1080/15332861.2021.1961192

(70). Singh, S., & Jang, S. (2020). Search, purchase, and satisfaction in a multiple-channel environment: How have mobile devices changed consumer behaviors? Journal of Retailing and Consumer Services, 102200. https://doi.org/10.1016/j.jretconser.2020.102200

(71). Sohn, K., & Kwon, O. (2020). Technology acceptance theories and factors influencing artificial Intelligence-based intelligent products. Telematics and Informatics, 47, 101324. https://doi.org/10.1016/j.tele.2019.101324

(72). Sohn, S., & Groß, M. (2020). To see Understanding the inhibitors to consumer mobile purchasing intentions. Journal of Retailing and Consumer Services, 55, 102129. https://doi.org/10.1016/j.jretconser.2020.102129

(73). Suhaili, M. S., Salim, N., & Jambli, M. N. (2021). Service chatbots: A systematic review. Expert Systems with Applications, 184, 115461. https://doi.org/10.1016/j.eswa.2021.115461

(74). Tamilmani, K., Rana, N. P., Dwivedi, Y. K., & Kizgin, H. (2020). Consumer Mobile Shopping Acceptance Predictors and Linkages: A Systematic Review and Weight Analysis. In M. Hattingh, M. Matthee, H. Smuts, I. Pappas, Y. K. Dwivedi, & M. Mäntymäki (Eds.), Responsible Design, Implementation and Use of Information and Communication Technology (Vol. 12066, pp. 161–175). Springer International Publishing. https://doi.org/10.1007/978-3-030-44999-5_14

(75). Tang, A. K. Y. (2019). A systematic literature review and analysis on mobile apps in m-commerce: Implications for future research. Electronic Commerce Research and Applications, 37, 100885. https://doi.org/10.1016/j.elerap.2019.100885

(76).   Trapero, H., Ilao, J., & Lacaza, R. (2020). An Integrated Theory for Chatbot Use in Air Travel: Questionnaire Development and Validation. 2020 IEEE REGION 10 CONFERENCE (TENCON), 652–657. https://doi.org/10.1109/TENCON50793.2020.9293710

(77).   van, P. M. M. E., Wetzels, R. W. H., Rüger, J., Pluymaekers, M., & Wetzels, M. (2019). Trust in humanoid robots: Implications for services marketing. Journal of Services Marketing, 33(4), 507–518. https://doi.org/10.1108/JSM-01-2018-0045

(78).   Vimalkumar, M., Sharma, S. K., Singh, J. B., & Dwivedi, Y. K. (2021). 'Okay google, what about my privacy?': User's privacy perceptions and acceptance of voice-based digital assistants. Computers in Human Behavior, 120, 106763. https://doi.org/10.1016/j.chb.2021.106763

(79).   Vlačić, B., Corbo, L., Costa e Silva, S., & Dabić, M. (2021). The evolving role of artificial intelligence in marketing: A review and research agenda. Journal of Business Research, 128, 187–203. https://doi.org/10.1016/j.jbusres.2021.01.055

(80).   Wagner, K., Nimmermann, F., & Schramm-Klein, H. (2019). Is It Human? The Role of Anthropomorphism as a Driver for the Successful Acceptance of Digital Voice Assistants. 10.

(81).   Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. Journal of Service Management, 29(5), Article 5. https://doi.org/10.1108/JOSM-04-2018-0119

(82).   Xu, K. (2020). Language, modality, and mobile media use experiences: Social responses to smartphone cues in a task-oriented context. Telematics and Informatics, 48, 101344. https://doi.org/10.1016/j.tele.2020.101344

(83).   Zaharia, S. (2021). Preprint Consumers´ Acceptance of a Voice Commerce Application in FMCG. https://doi.org/10.1007/978-3-030-77750-0_1