# Are smartphones moving toward commoditization? Evidence from the Italian market

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**Abstract**

***Framing of the research:*** *The global smartphone market may be entering a phase of commoditization, where consumers are well-informed, perceive products as (almost) interchangeable, face low switching costs, and make rational choices.*

***Purpose of the paper:*** *This paper investigates whether the Italian smartphone market can be considered commoditized by examining the role of individual characteristics, product attributes, and usage motivations on smartphone customer satisfaction. It also explores how these three dimensions influence the average smartphone lifespan and the number of smartphones owned, which are the main drivers of new sales in saturated markets.*

***Methodology****: We conducted an exploratory analysis on a representative sample of Italian users (N= 816). The items concerning respondents' lifestyles, smartphone features, and usage motivations were reduced through Exploratory Factor Analysis. Hierarchical multiple linear regressions identified the predictors of the three investigated consumption outcomes.*

***Findings****: Customer satisfaction appears to be mainly driven by basic and economic product attributes and pragmatic usage motivations, suggesting a trend towards commoditization. Differently, smartphone substitution/duplication is more likely for heavy social media users (a lifestyle component), driven by symbolic and hedonic motivations. Thus, there is a portion of market demand that remains 'non-commoditized'.*

***Research limitations:*** *The empirical analysis is limited to the Italian context and adults over 18 years, overlooking the younger generations and the differences in socio-cultural contexts.*

***Practical implications:*** *Based on their market strategies, companies might either target customers with specific lifestyles and symbolic-hedonic motivations, focusing on incremental innovations and marketing centered on 'customer intimacy', or emphasize policies based on low prices and widespread distribution, focusing on organizational and productive efficiency and economies of scale.*

***Originality of the paper:*** *We conducted a pioneering study aimed at assessing the potential commoditization of the Italian smartphone market, combining the TAM and UGT to investigate consumption, also incorporating the analysis of the individual variables.*

**Key words:** *smartphone; customer satisfaction; smartphone lifespan; number of smartphones owned; commoditization; lifestyles*

## 1. Introduction

Looking back briefly at the history of the mobile phones market over the past decades, we observe that there was a radical innovation in 2007. In that year, Apple renovated the functionality of mobile phones with its iPhone and App Store, creating a new 'dominant design' of touchscreen smartphones and converting devices into minicomputers connected to platforms (Kushida, 2015).

Data on the number of smartphones sold to end users worldwide from 2007 to 2023 show a significant growth stage from 2007 to 2015, a classic saturation stage from 2015 to 2019, and from 2020 to the present, it appears to be heading inexorably toward a stage of decline[1].

In the Italian market, the spread of smartphones (percentage of ownership among adults) showed stagnation during the transition from 2019 to 2020. There was a slight increase between 2020 and 2021, likely because of the lockdown following the COVID-19 pandemic, but diffusion became constant again in the 2021-2022 period (Deloitte, 2022).

When markets become mature, they may enter a phase of commoditization. An industry is considered commoditized when products are regarded as relatively homogeneous and interchangeable by customers who are predominantly well-informed, price-sensitive, and face low switching costs in changing suppliers (Reimann *et al.*, 2010; Beldona *et al.* 2015; Reimann and Schilke, 2015; Ichikohji, 2019; Coe, 2021; Mathieu, 2022; Wagner *et al.*, 2023).

From a demand perspective, in these types of markets, consumers are knowledgeable about the product (Ichikohji, 2019; Mathieu, 2022) and driven in their choices by rational factors (Reimann and Schilke, 2015). Wagner *et al.* (2023: 3) specify that "consumers may perceive products as (almost) interchangeable even if they possess (objectively) different attributes".

From a supply perspective, in commoditized industries there is great competition among producers: price-based competition predominates, price wars are frequent, and the profitability of firms decreases (Reimann *et al.*, 2010; Ichikohji, 2019; Coe, 2021; Mathieu, 2022; Wagner *et al.*, 2023). Currently, in the smartphone market, it is possible to identify at least two distinct strategic groups. The first strategic group, headed by Apple and Samsung, still bets on brand loyalty and incremental innovation strategies and focuses on a framing effect (Smith, 2020). A second group has started treating smartphones as a commodity, buying white-labeled devices[2] and rebranding them in local markets. They do not focus on innovation and quality but on low prices and a capillary distribution network[3].

[1] https://www.statista.com/statistics/263437/global-smartphone-sales-to-end-users-since-2007. Accessed December 8, 2024.

[2] https://www.counterpointresearch.com/insights/us-white-label-smartphone-opportunity-continues-grow. Accessed December 8, 2024.

[3] In this study, we do not consider companies offering refurbished smartphones, i.e., used phones that have been restored and labeled as renewed to be sold at lower prices, because we cannot properly classify these as new sales. It should be highlighted, however that this market grew by 15% between 2020 and 2021 (https://www.counterpointresearch.com/insights/global-

In this scenario, the aim of this article is to investigate whether, from a demand perspective, the Italian smartphone market can be considered commoditized.

To understand the drivers of smartphone purchases in the current context, it is important to study the variables that influence the *customer satisfaction* of Italian smartphone users. More specifically, the purpose is to examine what the smartphone users seek and what satisfies them, whether hedonistic and/or symbolic meanings are still present, or whether consumers are mainly price-sensitive, only looking for some basic requirements and features, effectively pushing the product toward commoditization.

The literature on the determinants of customer satisfaction in the smartphones market is fragmented and heterogeneous and does not lead to a consolidated research framework. This gap can be appropriately filled by identifying the determinants of customer satisfaction among smartphone users. Systematizing the insights derived from the literature (see Section 2) pinpoints three upstream components:

- Individual characteristics (demographic variables and lifestyles) of smartphone users.
- Smartphone attributes.
- Smartphone usage motivations.

The study of these dimensions can provide significant insights into the potential commoditization of this sector in Italy. As previously mentioned, in a commoditized market, essential and economic attributes should be focal, usage motivations should be basic, and individual lifestyle differences should be of little importance.

Additionally, since in saturated markets purchases are predominantly made by replacement and/or duplication, this investigation also includes *the average lifespan of mobile phones* and *the number of smartphones owned* by Italian smartphone users, considering the latter as indicators of the replacement and/or duplication rate, which are the main drivers of new sales in mature industries. This paper thus examines how the three previously identified dimensions influence the average smartphone lifespan and the number of smartphones owned, and whether these are influenced by the same elements that drive customer satisfaction.

Finally, this research aims to examine whether the brand of smartphones influences satisfaction. In a commoditized market, brands should have little significance.

From a methodological point of view, an explorative approach was adopted: we constructed an *ad hoc* questionnaire, which was administered to a representative sample of the Italian population.

To the best of the authors' knowledge, this is one of the pioneering studies aimed at assessing the potential commoditization of the Italian smartphone market.

refurbished-smartphone-market-2021. Accessed December 8, 2024) and it is expected to grow by approximately 9% between 2023 and 2030 (https://www.researchandmarkets.com/reports/5030325/refurbished-and-used-mobile-phones-global. Accessed December 8, 2024).

This paper is organized as follows. Section 2 presents the theoretical background and rationale of the adopted multidimensional framework. Section 3 illustrates research questions, research design and measures. Section 4 presents the results of the empirical study conducted on the Italian sample. These are discussed in Section 5. Section 6 describes the theoretical and managerial implications of the work. Finally, some concluding remarks are provided in Section 7 together with study limitations, paving the way for future research.

## 2. Literature review

### *2.1 Customer satisfaction in the context of Smartphone Studies*

As highlighted in the introduction, to understand the drivers that influence smartphone users' purchase intentions in the current Italian context, it is first necessary to examine the determinants of customer satisfaction.

Customer satisfaction plays an important role in mature markets, such as smartphones, where companies seek to retain existing customers and attract those dissatisfied with their competitors by trying to create more satisfying products (Haverila, 2011; Kim *et al.*, 2016; Yazdanparast and Tran, 2021).

A theoretical framework commonly adopted to study technological consumption, including the use of mobile phones and related services, is the Technology Acceptance Model (TAM) (Wallace and Sheetz, 2014; Calvo-Porral and Otero-Prada, 2020). It is based on the observation that individuals adopt technologies that they find to be useful and easy to use (Davis, 1989; Musa *et al.*, 2024).

Previous works found that the two main dimensions of the TAM framework, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), exert a positive impact on customers, leading to satisfaction (Widyanto and Ariyani, 2023). In their study, de Oliveira *et al.* (2013) found that the perceived usability of mobile phone services (including efficiency, ease of use, and utility) had a positive impact on customers' satisfaction. Other studies highlighted that the two dimensions have different effects on customer satisfaction with various technological products/services (Zaitul *et al.*, 2018; Widyanto and Ariyani, 2023; Fitria *et al.*, 2024).

Despite its explanatory power, the TAM focuses on the technological perspective and instrumental benefits stemming from the adoption of a specific technology and does not consider users' non-utilitarian reasons that instead can affect the adoption of smartphones (Kim *et al.*, 2007; Joo and Sang, 2013; Calvo-Porral and Otero-Prada, 2020; Castaldi *et al.*, 2022). In addition, it has been observed that while the TAM has consistently contributed to the understanding of users' preferences and acceptance behavior of technological products and services, it cannot explain users' experience with technology, which encompasses the experiential, affective, and cognitive aspects of the individual interaction with an artifact and is not limited to the intention to use it (de Oliveira *et al.*, 2013).

In order to leverage the TAM while overcoming its limitations, some authors have extended the initial formulation of the TAM to other dimensions (Cheong and Park, 2005; Kulviwat *et al.*, 2007; Al-Debei and Al-Lozi, 2014; Rauniar *et al.*, 2014; Agrebi and Jallais, 2015; Munoz-Leiva *et al.*, 2017; Scherer *et al.*, 2019; Wang *et al.*, 2022; Marikyan and Papagiannidis, 2024).

As digital and social media technologies, including smartphones, can be adopted for symbolic and hedonistic reasons (Knobloch, 2003; Stafford *et al.*, 2004; Greenwood, 2008; Roy, 2009; Park *et al.*, 2009; Petruzzellis, 2010; Smock *et al.*, 2011; Joo and Sang, 2013; De Canio *et al.*, 2016; Dhir *et al.*, 2017a, 2017b; Fullwood *et al.*, 2017; Camilleri and Falzon, 2020; Kaur *et al.*, 2020; Castaldi *et al.*, 2022; Abbasi *et al.*, 2024), another theoretical framework, the Uses and Gratifications Theory (UGT), has been frequently used to explain media consumption, focusing on the socio-psychological reasons that explain the use (Katz *et al.*, 1973a, 1973b).

Joo and Sang (2013) and more recently Camilleri and Falzon (2020) integrated TAM and UGT to analyze respectively the usage intention of smartphones and of online streaming services.

With the same aim, in this work we adopt and merge TAM and UGT. This way we simultaneously consider different smartphone *usage motivations*: the instrumental ones identified by the TAM and the personal gratifications outlined by the UGT, the latter emphasizing the social, psychological, and emotional aspects of smartphone usage, which have grown in significance in the digital age (Calahorra-Candao and Martín-de Hoyos, 2024).

Both in a TAM and UGT perspective, some authors also consider *product attributes* to study consumption (Katz *et al.*, 1973b; Wallace and Sheetz, 2014).

Moreover, this research adds *individual variables* to the analysis, based on the observation that both the instrumental (more rational) and non-utilitarian benefits depend on the demographic and socio-psychographic characteristics of consumers. Individual characteristics affect the way people experience products and services, and thus have an impact on their satisfaction (de Oliveira *et al.*, 2013). These variables are often used in the context of market segmentation studies to identify groups of users with common motivations, needs, preferences and thus behaviors (Aroean and Michaelidou, 2014; Nugraha *et al.*, 2022), but not usually incorporated in the TAM nor in the UGT (Calvo-Porral and Otero-Prada, 2020). Nonetheless, they might usefully contribute to explaining consumer choices and behavior (Tomaya and Hayashi, 2022), particularly regarding smartphones (de Oliveira *et al.*, 2013; Ekşi and Candan, 2018; Nugraha *et al.*, 2022).

Thus, the following subsections analyze extant studies based on these three main research dimensions: user individual characteristics, product/service attributes, and usage motivations. It will appear manifest from the analysis that while several studies have explored the issue of customer satisfaction with regard to smartphones, they have adopted different and only partly overlapping research dimensions and have reached results that are diverse or even contrasting but anyway often difficult to compare.

*2.1.1 Consumer individual characteristics*

With a specific focus on smartphones, Rahmati *et al.* (2012) observed that product/service use depends on the socio-economic characteristics of consumers. Castaldi *et al.* (2022) observed that usage motivations and desired product attributes vary according to consumers' generational cohorts, thus individuals' age.

Indeed, in market segmentation studies, it has been found that smartphone consumption depends on individual behavioral, demographic, and psychographic features (Mazzoni *et al.*, 2007; Vanden Abeele *et al.*, 2014; Kim and Lee, 2018; Rashid *et al.*, 2020; Razavi, 2020). This highlights that smartphone usage has a relevant psychographic dimension (Kim and Lee 2018; Razavi, 2020). However, only a few papers have addressed the role of consumer characteristics with a specific focus on customer satisfaction.

Nonetheless, the relationship between individual demo-psychographic profiles and customer satisfaction appears manifest.

Focusing on demographics, several studies have investigated these variables in relation to smartphones, yielding different and sometimes conflicting findings (Park and Lee, 2011; Khayyat and Heshmati, 2012; de Oliveira Malaquias and da Silva Júnior, 2020; Shrestha, 2020; Sondoh Jr. *et al.*, 2020).

Moving on to psychographics, de Oliveira *et al.* (2013) highlighted that personality traits affect user satisfaction with mobile phone services. Chang and Huang (2015) identified three different personality groups of smartphone users and observed that the influence of perceived ease of use on satisfaction varied among them. Hassan *et al.* (2015) found that consumers' e-lifestyle - the "patterns in which people live and spend their time and money through the Internet and electronics" - affects Generation Y's (aged between 18 and 37 years old at the date of the research) satisfaction with mobile service providers.

*2.1.2 Product attributes*

Chen *et al.* (2008) found that perceived mobile phone service characteristics (interactivity, quality, and ease of use) can explain customer satisfaction. Product/service attributes such as functionality, which concerns the functions, activities, and physical performance of smartphones, significantly influence customer satisfaction (Deng *et al.*, 2010; Haverila, 2011; Kim *et al.*, 2015; Kim *et al.*, 2016; Redda and Shezi, 2019; de Oliveira Malaquias and da Silva Júnior, 2020). In particular, Kim *et al.* (2015) found the operating system was relevant, while network quality (i.e., the smartphone capability of guaranteeing real-time interaction) had no effect. Differently, Finley *et al.* (2017), considering it to be a central element for mobile users, in their study specifically focused on user satisfaction with network speed and availability. Another determinant of customer satisfaction is usability, defined as the ease of using, learning, and operating a smartphone (Chang *et al.*, 2009; Gerogiannis *et al.*, 2012; Chang and Huang, 2015; Kim *et al.*, 2016). Focusing on mobile shopping by means of smartphones, Agrebi and Jallais (2015) found that satisfaction

increases when mobile shopping (m-purchasing) is seen as useful and easy to use. According to Haverila (2011), Kim and Cho (2015), Kim *et al.* (2016), Redda and Shezi (2019), and de Oliveira Malaquias and da Silva Júnior (2020), design (expressing the aesthetic qualities of smartphones) and positive brand image positively affect customer satisfaction as well. In particular, Al Masud *et al.* (2024), Ajayi *et al.* (2023) and Hew *et al.* (2017) highlighted the crucial role of consumer satisfaction with mobile phones for brand loyalty. Customer interface was found to have a relevant impact on user satisfaction when playing smartphone-based online games (Rahman *et al.*, 2024).

Focusing on iPhone and Samsung users, Shrestha (2020) observed that brand experience (ease of use, enjoyment, and recommendation to others), product attractiveness (variety of design, color and size, match with personality, and newness), and perceived quality (durability, reliability, offers and after sale service, and quality) were significant predictors of customers satisfaction, with brand experience being the most relevant. Based on online reviews, de Oliveira Malaquias and da Silva Júnior (2020) found that smartphone features related not only to software and sellers' characteristics but also to the product hardware (e.g., durability, display quality, and battery duration) may significantly affect user satisfaction, together with general aspects including cost-benefit among others.

Thus far, price research has had contrasting results. According to Kim *et al.* (2016), price has no effect, whereas Kim and Cho (2015), Redda and Shezi (2019), and Shrestha (2020) found it to be an important antecedent of customer satisfaction.

### *2.1.3 Usage motivations*

Users' motivation also plays a pivotal role in accounting for satisfaction. In a previous study on the satisfaction connected to the use of smartphones, Kim *et al.* (2012) demonstrated the role played by engagement motivations on overall smartphone user satisfaction. Engagement motivations were defined by the authors as user motivations to engage in activities using the smartphone. Engagement motivations were further specified through three subdimensions: utilitarian, hedonic, and social. Study results evidenced that users' hedonic motivation chiefly influenced overall satisfaction. This is in line with Agrebi and Jallais (2015), who observed that enjoyable m-purchasing by means of smartphones increases users' satisfaction. In this same vein, a study on mobile phone services by Chen *et al.* (2008) showed the impact of the hedonic benefits (stemming from fun and playfulness) on satisfaction.

## *2.2 Smartphone lifespan and number of smartphones owned*

As anticipated, as in mature markets purchase is mainly related to replacement and duplication processes, we also need to look at the average lifespan of mobile phones and the number of smartphones owned, considering them as indicators of replacement/duplication.

Companies' continuous release of new mobile phone models with further functions and updates may lead consumers to buy a new phone despite possessing one that still functions (Wilson *et al.*, 2017; Prabhu and Majhi, 2022). Thus, smartphone lifespans tend to decrease over time while the replacement cycle accelerates (Cordella *et al.*, 2021). Smartphones experience rapid technological advancements; they have fast production and short replacement cycles (Proske and Jaeger-Erben, 2019). As a consequence, smartphones are a cause of rapid e-waste growth, mainly due to premature obsolescence especially among young consumers (Oraee *et al.*, 2024).

Useful suggestions can be drawn from studies focusing on factors underlying device replacement or purchase frequency.

Once again, the following subsections analyze extant literature based on three identified research dimensions of user individual characteristics, product/service attributes, and usage motivations.

*2.2.1 Consumer individual characteristics*

Studies on purchase frequency for several products and services demonstrate the role of psychographics (Roy and Goswani, 2007). Martinho *et al.* (2017), focusing on demographics, found several associations between individuals' characteristics and the number of smartphones owned. They observed that women, younger respondents, members of larger families, and more highly educated users own more smartphones. Kasulaitis *et al.* (2021) highlighted that ownership of more technological devices (smartphones, laptops, and tablets) is higher among younger generations, those interested in technology, and those with high incomes. Among the individual characteristics, emotional attachment to the product emerges as one of the main reasons for retaining it (Ting *et al.*, 2019). Romero-Rodriguez *et al.* (2020) revealed an association between personality traits and the number of smartphones owned, finding that possessing many devices is a typical feature of people who have knowledge of smartphones and can even provide information about them to other people.

*2.2.2 Product attributes*

The literature on replacement shows that product attributes, such as technological, functional, and economic obsolescence, push consumers to replace old mobile phones (Watson *et al.*, 2017; Wilson *et al.*, 2017; Tan *et al.*, 2018). Extant research identified physical/technical, social and psychological drivers of premature smartphone replacement, also partly intentionally caused by manufacturers' strategies and policies (from battery deterioration, cracked screens, and software updates to perceived outdated aesthetics, peer pressure, and status motivations) (Oraee *et al.*, 2024).

Gecit (2019) studied smartphone purchase frequency and found that product-related attributes, such as additional services (e.g., warranty, price, payment terms), tend to affiliate consumers with a specific brand, decreasing purchase frequency. In contrast, functional product features

(product design, technological features, usability, etc.) do not significantly affect this aspect.

*2.2.3 Usage motivations*

Usage motivations also often lead to replacing the previous smartphone. Smartphones are being prematurely replaced due to consumer desire to purchase a new model (Martinho *et al.*, 2017; Watson *et al.*, 2017; Cordella *et al.*, 2021) and pursue fashion trends (Liu *et al.*, 2019).

Regarding why consumers do not dispose of their old devices when they buy a new one, thus increasing the number of smartphones owned, privacy worries are often the main reason (Wilson *et al.*, 2017; Inghels and Bahlmann, 2021). Consumers also retain old smartphones as spares (Wilson *et al.*, 2017; Nowakowski, 2019). In a study of Malaysian students, Ting *et al.* (2019) found that devices that still guarantee usefulness and compatibility are retained, even after a new one has been purchased.

## 3. Methods

*3.1 Research questions*

Results and insights from the studies mentioned in Section 2 above suggest that the factors influencing consumer satisfaction, product average lifespan, and number of smartphones owned might depend on three main dimensions: individual characteristics (demographic/organismic variables and individual lifestyles); product attributes; usage motivations.

Therefore, this study investigates the impact of these three dimensions on consumer smartphone satisfaction, the average smartphone lifespan and the number of smartphones owned in the context of the Italian market. Although individual characteristics, product attributes, and usage motivations have emerged in certain studies on customer satisfaction with smartphones, and more generally on the smartphone market, there are no unitary results or well-established measurement scales. Consequently, this paper adopts an exploratory methodological approach to answer the following four research questions (RQs):

RQ1) What is the underlying structure of individual characteristics, product attributes, and usage motivations referring to the smartphone market?

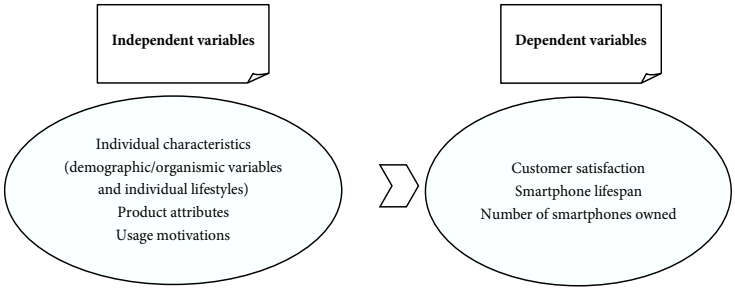
RQ2) To what extent do individual characteristics, product attributes, and usage motivations interact with smartphone user satisfaction?

RQ3) How do individual characteristics, product attributes, and usage motivations influence the main smartphone lifespan?

RQ4) Is the number of smartphones owned linked to individual characteristics, product attributes, and usage motivations?

Figure 1 depicts the research concept map.

*Fig. 1: Research concept map*




Source: Authors' elaboration

*3.2 Research design and measures*

To answer the research questions, we constructed an *ad hoc* questionnaire, which was web-administered to a representative sample of the Italian population aged at least 18 years.

Before administering the questionnaire, a pre-test involving 20 individuals was carried out. The results led to some minor amendments to the questionnaire.

Random probability sampling was used to obtain a representative sample of the Italian population - stratified by gender, age, and geographical area of residence - with a 3.4% margin error at the 95% confidence level. Criteria for sample stratification were considered according to the specific features of smartphone consumption and the characteristics of the investigated country. Gender and generational cohorts were chosen because the literature suggested that they can be associated with different smartphone consumption patterns (Hassan *et al.*, 2015; Martinho *et al.*, 2017). The economic and social differences that characterize the different parts of Italy suggested adopting also the geographical area of residence for the sample stratification. The random extraction of the respondents' selection and the dissemination of the online survey link were carried out by a qualified research service of the Toluna corporation, which uses an online platform for this purpose. This procedure resulted in a sample size of 816 respondents (see Table I, supplemental materials). The data were collected in May 2021.

In line with the exploratory nature of the research, the items were not selected based on specific studies. However, the literature served as a source of inspiration for their formulation, aligning it with the specific purpose of the study.

Demographic characteristics included gender, geographical area, age, education, job status, household composition, and civil status (see Table II, supplemental materials).

The operational definition of individual lifestyles was articulated through social media usage, hobbies, activities, interests, and values (see Table III, supplemental materials).

Social media usage pertains to the frequency of use of the various online platforms. The chosen platforms are different in terms of mode of

use and target audience. The frequency was measured through a Likert-like five-point scale because it allows standardizing the usage experience of the various social media.

Regarding hobbies, activities, and interests, a Cantril Scale ranging from 1 (lowest interest) to 10 (highest interest), was used to measure the interest of respondents for each of the items related to these aspects. The choice was dictated by the need to have a good degree of heterogeneity among respondents' answers since the response categories are numerical values collected on a large scale (1-10). This solution avoids an unequal distribution between negative and positive boxes, preventing the creation of a middle box where respondents do not take a stance on the topic. The choice of items also considered previous works from the literature (Mazzoni *et al.,* 2007; Petruzzellis, 2010; Kim and Lee, 2018; Razavi, 2020)[4].

Instead, values were measured using a solution employed in previous research (Di Franco, 2017; Addeo *et al.*, 2023). It combines a forced choice, useful to detect respondents' opinions on sensitive topics such as values (Marradi, 2007), with an Osgood scale. The Osgood scale allows respondents to graduate their opinion instead of choosing only one sentence, which might not be comfortable for those who have a precise but not extreme opinion on a topic. Respondents were asked to rate a list of sentences, partly inspired by Kim and Lee (2018) and Nugraha *et al.* (2022), on a scale of 1 to 7, with the extremes anchored by two opposing sentences on topics, which are relevant to defining value orientations.

The product attributes section explores various characteristics that people consider when choosing a smartphone; the attributes chosen in this study comprise economic, software, and hardware aspects. The list of attributes, found in Table IV of the supplemental materials, includes both those already investigated in the literature (Kim *et al.*, 2016; Lee and Baek, 2017; Redda and Shezi, 2019; Gecit, 2019) and those that have emerged with recent smartphone innovations. Product attributes were operationalized by asking respondents to rate the importance of each attribute on a Cantril Scale ranging from 1 (lowest importance) to 10 (highest importance).

The usage motivations dimension focuses on the consumer needs that drive the mobile phone choice. The operational definition relies on a list of sentences inspired by Mazzoni *et al.* (2007), Kim *et al.* (2012), and Kim and Lee (2018), expressing different motivations: work, study, security, sociality, entertainment, information, and communication (see Table V, supplemental materials). Usage motivations were operationalized by asking respondents to rate the agreement with each sentence on a Cantril Scale ranging from 1 (lowest agreement) to 10 (highest agreement).

Customer satisfaction addresses the expectations and judgments about personal mobile phones, considering overall satisfaction as well as satisfaction with specific aspects such as value for money (VFM), technical features, user-friendliness, aesthetics, and reliability, some of which stimulated to some extent by the literature (Kim *et al.*, 2015; Kim *et al.*, 2016, Lee and Baek, 2017, Redda and Shezi, 2019). Customer satisfaction was measured by asking respondents how they were satisfied with their

[4] The rationale for adopting this scale is the same as for attributes, usage motivations, and customer satisfaction, which are described below.

own smartphone and specific aspects on a 1-10 Cantril scale (see Table VI, supplemental materials).

Smartphone usage habits were operationalized by asking respondents about two items: the number and brand(s) of smartphones owned - drawing inspiration from Martinho *et al.* (2017) and Romero-Rodriguez *et al.* (2020) - and the average product lifespan, stimulated by the work of Tan *et al.* (2018). The brand of the main smartphone and the number of smartphones owned were asked with open-ended questions, in line with the quantifiable nature of the characteristic surveyed, while the average product lifespan was measured in years (see Table VII, supplemental materials, for the operationalization of these two variables).

## 4. Results

### *4.1 Preliminary analyses*

Straightliners (i.e., respondents choosing systematically extreme or average response options) and three participants who did not answer all the questions were removed to clear the raw data. A final sample size of 773 (from 816) valid cases remained. Subsequently, the items concerning respondents' lifestyles, smartphone features, and motivations to use smartphones were reduced through exploratory factor analyses (EFAs) using the principal component extraction method.

Raw scores were preliminarily transformed into z scores to compare data collected with different point scales. For each analysis, the number of components to be extracted was determined using Kaiser's criterion (1960, eigenvalue >1). The adequacy of the factorial solution was pursued by removing items with low communality scores (<.30), low saturation (<.40), or cross-loading (Hatcher, 1994). For each analysis, we first used an oblique (direct Oblimin) rotation to control whether the correlation between components exceeded .30. Only for the EFA on lifestyle items was the correlation less than .030. Thus, a subsequent orthogonal Varimax rotation was allowed and performed (Barbaranelli, 2003). Finally, parallel analysis (PA) (Horn, 1965) was executed using the SPSS syntax provided by O'Connor (2000). PA allows for controlling whether the components extracted from real data have higher eigenvalues than those from random data with the same sample size and number of variables. If this requirement is not fulfilled, the number of dimensions to be extracted is reduced until their eigenvalues are higher than those found through PA.

The final EFA solutions were as follows:

- Seven components were retained for lifestyle (see Table VIII, supplemental materials), which explained 54.78% of the total variance. The components were as follows: 1) care for well-being, culture, and nature (with items indicating interest in "home care", "well-being and health", "environment and nature", "traveling", "art", etc.); 2) use of new social media (e.g., Snapchat, Twitter, TikTok); 3) *Zoon politikon* (with items indicating interest in "politics", "local news", "economics", etc.); 4) conservatism (with items such as "Immigration is a threat to our country", "The best places must be guaranteed to the most capable",

"The family consists of a man and a woman, a father and a mother"); 5) ethics and progressivism (e.g., "fairness and loyalty always pay off in the end", "too little is done in our country to protect the environment", "today, technological development brings more opportunities than risks"); 6) caution and mistrust (with the two items, "one is never prudent enough in dealing with people" and "I imagine my future full of risk and unknowns"); and 7) use of traditional social media (i.e., WhatsApp and Facebook).

- Two components were retained for smartphone features (see Table IX, supplemental materials), explaining 53.58% of the total variance. The first component included items such as signal reception, data security, audio quality, battery life, ease of use, and economics (price and promotional offers). This component was labeled essential features. The second component includes integration with other technological devices, the presence of recognition systems, and camera features and was labeled additional features.
- Three components were retained for the motivation to use a smartphone (see Table X, supplemental materials), explaining 61.03% of the total variance. The first component, socio-entertainment, loaded items such as: "It allows me to know what people are doing and thinking on social networks", "It helps me overcome boredom", "I can make new acquaintances", "I like playing video games", and "It allows me to watch films or series". The second component, communication and functionality, included items such as: "It allows me to search for information through Internet", "It allows me to communicate with my family", "It allows me to stay up to date on the latest events", and "It can be useful in emergencies". The third component, labeled job and study, loaded three items: "It is useful for my job", "It can help me find a job", and "It is useful for studying".

  The factor scores were saved for subsequent analyses.

*4.2 Main analyses*

The variables of interest in our study were as follows:

- Satisfaction with specific features of participants' single or main smartphone: VFM, technical features, user-friendliness, aesthetic features, reliability.
- Overall satisfaction with their single or main smartphone.
- Average smartphone lifespan (i.e., on average, after how long a smartphone was replaced or joined by another one), measured in years.
- Number of smartphones owned by participants.

The questions on satisfaction specified that they referred only to the participants' main smartphone and not to other smartphones.

To identify the potential predictors of the variables of interest, eight hierarchical multiple linear regressions with the enter method were conducted on the aforementioned variables of interest.

For each analysis, demographic and organismic variables (i.e., gender, age, geographical area, education, job status, civil status, and household composition) were entered in step 1. The characteristics of smartphones

(i.e., essential features and additional features) and motivations to use them (i.e., socio-entertainment; communication and functionality; job and study) were entered in step 2. Lifestyles (care for well-being, culture, and nature; use of new social media; *Zoon politikon*; conservatism; ethics and progressivism; caution and mistrust; use of traditional social media) were entered in step 3. Gender (1 = male; 0 = female), civil status (0 = single; 1 = with a partner), and job status (1 = earned income; 0 = unearned income) were included in the analysis as dummy variables. Geographical area was coded as three dummy variables: northwest, northeast, and south and Islands, with Central Italy as the reference category. Education was coded as the number of years of study. The descriptive statistics of the variables included in each analysis are presented in Table 1.

*Tab. 1: Descriptive statistics of variables entered in hierarchical multiple regression analyses*

| Variables | Mean | Std. deviation | N. |
|---|---|---|---|
| Number of smartphones owned | 1.16 | .372 | 773 |
| Overall smartphone satisfaction | 8.28 | 1.50 | 773 |
| VFM satisfaction | 8.65 | 6.72 | 773 |
| Technical features satisfaction | 8.28 | 3.61 | 773 |
| User-friendliness satisfaction | 8.70 | 4.83 | 773 |
| Aesthetic features satisfaction | 8.65 | 7.49 | 773 |
| Reliability satisfaction | 8.56 | 3.58 | 773 |
| Average smartphone lifespan in years | 2.84 | .987 | 773 |
| Gender | .5 | .5 | 773 |
| Age | 46.67 | 14.1 | 773 |
| Northwest | .28 | .447 | 773 |
| Northeast | .18 | .386 | 773 |
| South and Islands | .34 | .475 | 773 |
| Education | 14.69 | 3.41 | 773 |
| Job status | .74 | .437 | 773 |
| Civil status | .65 | .476 | 773 |
| Household composition | 3.06 | 1.167 | 773 |
| Essential features | -.00221 | 1 | 773 |
| Additional features | -.000901 | 1 | 773 |
| Socio-entertainment | .0004 | 1 | 773 |
| Communication and functionality | -.00066 | 1 | 773 |
| Job and study | -.00129 | 1 | 773 |
| Care for well-being, culture, and nature | .0 | 1 | 773 |
| Use of new social media | .0 | 1 | 773 |
| *Zoon politikon* | .0 | 1 | 773 |
| Conservatism | .0 | 1 | 773 |
| Ethics and progressivism | .0 | 1 | 773 |
| Caution and mistrust | .0 | 1 | 773 |
| Use of traditional social media | .0 | 1 | 773 |

N.B. Gender, geographical area of residence, job status, and civil status were coded as dummy variables. Six hundred and forty-nine participants owned one smartphone, 123 owned two, and one owned three.

Source: Authors' elaboration

Three models were tested in each regression. There was no multicollinearity between the independent variables: the lowest tolerance value was 0.428, and the highest VIF value was 2.338.

Tables XI-XV of the supplemental materials report the model summary and the final model (in step 3) of the five regressions on satisfaction with specific features of smartphones, which did not provide interesting results.

For overall satisfaction with the main smartphone, the regression analysis provided the following results:

- In step 1, age (B = .011, β = .004, t = 2.553, p = .011, VIF = 1.300) and household composition (B = .132, β = .103, t = 2.518, p = .012, VIF = 1.083) affected overall satisfaction, the probability of which increased with higher age and number of household members.
- In step 2, household composition (B = .099, β = .077, t = 2.080, p = .038, VIF = 1.354), essential features of the smartphone (B = .227, β = .151, t = 3.367, p = .001, VIF = 1.981) and communication and functionality motivation to use it (B = .408, β = .272, t = 5.560, p = .000, VIF = 2.338) increased this probability, while age was no longer significant.
- In step 3, household composition, essential features of the smartphone, communication and functionality motivation to use it, and ethics and progressivism lifestyle increased this probability (see Table 2).

*Tab. 2: Hierarchical multiple linear regressions using the enter method on overall satisfaction*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | 0.96 | 0.009 | -0.002 | 3.58 | .009 | .790 | 9 | 763 | .626 |
| Step 2 | .187 | .035 | .017 | 3.55 | .026 | 4.041 | 5 | 758 | .001 |
| Step 3 | .236 | .056 | 0.29 | 3.53 | .021 | 2.346 | 7 | 751 | .022 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | 0.07 | | 0.002 | | 0.059 | | .953 | | 1.345 |
| Age | .006 | | .055 | | 1.319 | | .188 | | 1.701 |
| Northwest | .241 | | 0.72 | | 1.678 | | .094 | | 1.799 |
| Northeast | .008 | | .002 | | .051 | | .960 | | 1.632 |
| South and Islands | -.092 | | -.029 | | -.658 | | .511 | | 1.926 |
| Education | .004 | | .010 | | .278 | | .781 | | 1.214 |
| Job status | .026 | | .008 | | .203 | | .840 | | 1.411 |
| Civil status | -.158 | | -.050 | | -1.349 | | .178 | | 1.345 |
| *Household composition* | *.097* | | *.075* | | *2.013* | | *.044* | | *1.373* |
| *Essential features* | *.226* | | *.150* | | *3.217* | | *.001* | | *2.142* |
| Additional features | .101 | | .068 | | 1.44 | | .150 | | 2.157 |
| Socio-entertainment | .089 | | .059 | | 1.25 | | .212 | | 2.204 |
| *Communication and functionality* | *.408* | | *.272* | | *5.56* | | *.000* | | *2.338* |
| Job and study | -.050 | | -.033 | | -.837 | | .403 | | 1.550 |
| Care for well-being, culture, and nature | .005 | | .003 | | 0.78 | | .938 | | 1.735 |
| Use of new social media | -.058 | | -.038 | | -.972 | | .331 | | 1.529 |
| Zoon politikon | .023 | | .015 | | .411 | | .681 | | 1.331 |
| Conservatism | .042 | | .028 | | .806 | | .421 | | 1.185 |
| *Ethics and progressivism* | *.112* | | *.075* | | *2.227* | | *.026* | | *1.11* |
| Caution and mistrust | -.032 | | -.021 | | -.631 | | .528 | | 1.102 |
| Use of traditional social media | .054 | | .036 | | 1.019 | | .309 | | 1.219 |
| Constant | 7.693 | | | | 20.431 | | .000 | | |

Source: Authors' elaboration

Table 2 presents the model summary and final model (in step 3) of the regression on overall satisfaction with smartphones.

The regression on the average smartphone lifespan showed the following results:

- In step 1, age (B = .007, β = .104, t = 2.595, p = .010, VIF = 1.352) increased the probability of smartphone duration, whereas this probability decreased with an increase in household composition (B = -.137, β = -.163, t = -4.153, p = .000, VIF = 1.300), being male (B = -.211, β = -.107, t = -2.919, p = .004, VIF = 1.138), having earned income (B = -.247, β = -.109, t = -2.751, p = .006, VIF = 1.343), and being single (B = -.255, β = -.163, t = -3.189, p = .001, VIF = 1.265).
- In step 2, the household composition (B = -.089, β = -.106, t = -2.752, p = .006, VIF = 1.354), being male (B = -.234, β = -.119, t = -3.290, p = .001, VIF = 1.196), having earned income (B = -.183, β = -.081, t = -2.081, p = .038, VIF = 1.384), and being single (B = -.205, β = -.099, t = -2.644, p = .008, VIF = 1.281) were significant among the demographic and organismic variables, whereas age and geographical area were not. Among the predictors introduced in step 2, only socio-entertainment motivation to use a smartphone was significant, decreasing the probability of smartphone duration (B = -.212, β = -.215, t = 4.702, p = .000, VIF = 1.911).
- In step 3, after introducing lifestyles, only household composition, being male, and socio-entertainment motivation to use a smartphone remained significant. Among lifestyles, care for well-being, culture, and nature, use of new social media, conservatism, and use of traditional social media decreased the probability of smartphone duration (see Table 3).

Table 3 reports the model summary and the regression's final model (in step 3) on average smartphone lifespan.

*Tab. 3: Hierarchical multiple linear regressions using the enter method on average smartphone lifespan*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .317 | .101 | .090 | .942 | .101 | 9.484 | 9 | 763 | .000 |
| Step 2 | .417 | .174 | .159 | .905 | .073 | 13.457 | 5 | 758 | .000 |
| Step 3 | .490 | .240 | .218 | .873 | .066 | 9.296 | 7 | 751 | .000 |
| Step 3 | B | | β | | t | | p | | VIF |
| *Gender* | *-.190* | | *-.096* | | *-2.609* | | *.009* | | *1.345* |
| Age | .000 | | -.005 | | -.113 | | .910 | | 1.701 |
| Northwest | -.072 | | -.032 | | -.761 | | .447 | | 1.799 |
| Northeast | .106 | | .042 | | 1.026 | | .305 | | 1.632 |
| South and Islands | -.060 | | -.029 | | -.651 | | .515 | | 1.926 |
| Education | .001 | | .004 | | .112 | | .911 | | 1.214 |
| Working condition | -.130 | | -.058 | | -1.522 | | .128 | | 1.411 |
| Civil status | -.139 | | -.067 | | -1.813 | | .070 | | 1.373 |
| *Household composition* | *-.064* | | *-.075* | | *-2.017* | | *.044* | | *1.373* |
| Essential features | -.005 | | -.005 | | -.117 | | .907 | | 2.142 |
| Additional features | -.043 | | -.044 | | -.942 | | .347 | | 2.157 |
| *Socio-entertainment* | *-.094* | | *-.096* | | *-2.022* | | *.043* | | *2.204* |
| Communication and functionality | .007 | | .007 | | .144 | | .885 | | 2.338 |
| Job and study | .013 | | .013 | | .331 | | .740 | | 1.550 |
| *Care for well-being, culture, and nature* | *-.100* | | *-.101* | | *-2.413* | | *.016* | | *1.735* |
| *Use of new social media* | *-.233* | | *-.236* | | *-5.993* | | *.000* | | *1.529* |
| Zoon politikon | -.071 | | -.072 | | -1.954 | | .051 | | 1.331 |
| *Conservatism* | *-.074* | | *-.075* | | *-2.161* | | *.031* | | *1.185* |
| Ethics and progressivism | -.015 | | -.015 | | -.458 | | .647 | | 1.110 |
| Caution and mistrust | .020 | | .020 | | .597 | | .551 | | 1.102 |
| *Use of traditional social media* | *-.186* | | *-.189* | | *-5.377* | | *.000* | | *1.219* |
| Constant | 3.332 | | | | 13.509 | | .000 | | |

Source: Authors' elaboration

Finally, the regression conducted on the number of smartphones owned revealed the following results:

- In step 1, gender (B = .064, β =.086, t = 2.286, p =.023, VIF =1.352), education (B = .009, β = .083, t = 2.200, p = .028, VIF = 1.124), and job status (B = .073, β =.086, t = 2.091, p =.037, VIF = 1.343) significantly increased the probability of having more smartphones. Being male rather than female, having studied for more years, having an income, and having more family members increased such a probability.
- In step 2, after including in the model characteristics of smartphones and motivations to use them, the significant predictors were gender (B = .061, β =.082, t = 2.120, p = .034, VIF = 1.196), education (B = .009, β = .081, t = 2.148, p = .032, VIF = 1.139), and job and study motivation to use a smartphone (B = .044, β = .118, t = 2.754, p = .006, VIF = 1.476). In addition to gender and education, using smartphones mainly for job and study increased the probability of owning more smartphones. Job status was no longer significant.
- In step 3, after including lifestyles in the model, the significant predictors were job and study motivation to use a smartphone and the lifestyle component use of new social media. Table 4 reports the model summary and the regression's final model (in step 3).

*Tab. 4: Hierarchical multiple linear regression with the enter method on the number of smartphones owned*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .202 | .041 | .030 | .366 | .041 | 3.622 | 9 | 763 | .000 |
| Step 2 | .245 | .060 | .043 | .364 | .019 | 3.059 | 5 | 758 | .010 |
| Step 3 | .269 | .073 | .047 | .363 | .013 | 1.462 | 7 | 751 | .178 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | .057 | | .076 | | 1.869 | | .062 | | 1.345 |
| Age | .002 | | .060 | | 1.316 | | .188 | | 1.701 |
| Northwest | .001 | | .002 | | .032 | | .975 | | 1.799 |
| Northeast | .016 | | .016 | | .361 | | .718 | | 1.632 |
| South and Islands | -.054 | | -.069 | | -.1415 | | .157 | | 1.926 |
| Education | .006 | | .059 | | 1.518 | | .129 | | 1.214 |
| Job status | .059 | | .070 | | 1.668 | | .096 | | 1.411 |
| Civil status | .010 | | .012 | | .300 | | .764 | | 1.345 |
| Household composition | .014 | | .045 | | 1.103 | | .271 | | 1.373 |
| Essential features | .032 | | .085 | | 1.656 | | .098 | | 2.142 |
| Additional features | -.014 | | -.038 | | -.736 | | .462 | | 2.157 |
| Socio-entertainment | -.010 | | -.028 | | -.535 | | .593 | | 2.204 |
| Communication and functionality | -.001 | | -.003 | | -.052 | | .959 | | 2.338 |
| *Job and study* | *.034* | | *.092* | | *2.099* | | *.036* | | *1.550* |
| Care for well-being, culture, and nature | .018 | | .049 | | 1.050 | | .294 | | 1.735 |
| *Use of new social media* | *.048* | | *.129* | | *2.978* | | *.003* | | *1.529* |
| Zoon politikon | .013 | | .036 | | .891 | | .373 | | 1.331 |
| Conservatism | .005 | | .013 | | .337 | | .736 | | 1.185 |
| Ethics and progressivism | .001 | | .004 | | .097 | | .923 | | 1.110 |
| Caution and mistrust | -.012 | | -.033 | | -.882 | | .378 | | 1.102 |
| Use of traditional social media | .007 | | .018 | | .455 | | .650 | | 1.219 |
| Constant | .886 | | | | 8.631 | | .000 | | |

Source: Authors' elaboration

Finally, six one-way ANOVAs were performed to check whether the brand of the main smartphone affected overall satisfaction with it and satisfaction with its specific features: VFM, technical features, user-friendliness, aesthetic features, reliability.

Preliminarily, the frequencies of the brands were computed, and only those with a frequency >10 were retained. The remaining brands were included in the "other" category. The results concerning overall satisfaction showed a significant but weak effect of brand ($F_{6,766}$ = 2,246, $p < .05$, $p\eta^2$ = .019). Pairwise comparisons with Bonferroni correction revealed that overall satisfaction increased with Apple smartphones compared with "other" smartphones.

With regard to the results on satisfaction with specific smartphone features, a significant weak effect was found only for aesthetic features ($F_{6,766}$ = 2,223, $p < .05$, $p\eta^2$ = .017). Pairwise comparisons with Bonferroni correction revealed that this type of satisfaction decreased with Samsung smartphones compared with "other" smartphones.

## 5. Discussion

As depicted in the theoretical framework (Figure 1), this study investigated the influence of individual characteristics, product attributes, and usage motivations on customer satisfaction, average smartphone lifespan, and number of smartphones owned in the Italian smartphone market. The analysis of the three investigated outcomes reveals that each is influenced by distinct factors.

Overall, and somewhat surprisingly, product attributes influence only customer satisfaction, whereas factors related to usage motivations and individuals' characteristics influence all the outcomes.

The following sections discuss each consumption outcome separately.

### *5.1 Smartphone customer satisfaction*

First, it should be highlighted that the overall average satisfaction and that with specific features of smartphones always have high averages: from 8.28 to 8.70 on a scale up to 10 (see Table 1)[5].

The results on overall satisfaction show that it is mainly affected by "essential features" (among product attributes) and "communication and functionality" (among usage motivations).

"Essential features" includes basic attributes that provide usefulness and ease of use (signal reception, battery life, resistance, handling, security of personal data, operating system, audio quality) and economic convenience (price and promotional offers). This way, the study confirms the role of basic attributes (Deng *et al.*, 2010; Kim *et al.*, 2016; Redda and Shezi, 2019), including price and promotions (Kim and Cho, 2015; Redda and Shezi, 2019; de Oliveira Malaquias and da Silva Júnior, 2020; Shrestha, 2020), in influencing satisfaction. The finding that items such as "ease of use" and "handling" load on this dimension aligns with studies showing a positive impact of usability on satisfaction (Chang *et al.*, 2009; Gerogiannis *et al.*, 2012; Chang and Huang, 2015; Kim *et al.*, 2016; Rahman *et al.*, 2024).

Our results also show that overall satisfaction is unaffected by "additional features", which include supplementary attributes not strictly necessary for smartphone functioning (such as integration with other devices and the presence of recognition systems, aesthetics, and brand awareness). This is in contrast with previous works highlighting the positive impact of design and brand on customer satisfaction (Kim and Cho, 2015; Kim *et al.*, 2016; Redda and Shezi, 2019; de Oliveira Malaquias and da Silva Júnior, 2020; Shrestha, 2020).

The role played by "essential features" appears to be consistent with the finding that overall satisfaction is affected by the "communication and functionality" dimension that emerged from the EFA on usage motivation, which entails pragmatic needs (such as searching for information, communicating with family, helpfulness in case of emergency, usefulness of additional functions such as calendar, calculator, and alarm). This result

[5] It should also be noted that while overall satisfaction has a low standard deviation, the standard deviation of satisfaction with specific features is much higher, indicating that there is greater heterogeneity in these answers.

recalls Kim *et al.* (2012), who highlighted the important role of utilitarian and communication motivations in building customer satisfaction with smartphones. Differently from previous studies (Chen *et al.*, 2008; Kim *et al.*, 2012; Agrebi and Jallais, 2015), our results do not show the impact of hedonic motivations on customer satisfaction.

Lifestyles and socio-demographic variables are less important. Only "ethics and progressivism" and "household composition" exert some influence, indicating that individuals who care for themselves and others or have larger families are more likely to be satisfied by their smartphones.

Taken together, the regression results seem to depict a fairly congruent picture. The likelihood of being satisfied with one's smartphone increases when the device is used for pragmatic reasons related to communication and functionality, and users appreciate the product's basic and economic features.

If we add the finding that satisfaction is barely affected by the type of brand, with regard to customer satisfaction the idea that the smartphone is moving toward commoditization is strengthened. In fact, as previously mentioned, it is usual in commoditized industries for consumers to consider products interchangeable if they meet basic requirements, and consequently, the choice is primarily based on economic convenience.

*5.2 Average lifespan*

The study shows that the average smartphone lifespan in the Italian market is 2.84 years (see Table 1). This is consistent with the results of several studies in other countries, where the average lifespan is less than three years (Yin *et al.*, 2014; Golev *et al.*, 2016; Martinho *et al.*, 2017; Inghels and Bahlmann, 2021; Cordella *et al.*, 2021).

The average lifespan was mainly predicted by individual aspects such as lifestyle - "use of new social media", "use of traditional social media", and "care for well-being, culture, and nature" - and socio-demographic variables such as gender and household composition. The influence of psychographic and socio-demographic aspects on purchase frequency was already demonstrated in studies by Roy and Goswani (2007) and Boluktepe and Yilmaz (2008). In addition to the extant literature, our study highlights the role of "socio-entertainment motivations", which negatively influence the probability of smartphone longevity.

More in detail, in our study the average lifespan was mainly predicted by "use of new social media" and "use of traditional social media" (among lifestyles), indicating that lifestyles related to the usage of social media, whether new or traditional, decrease the probability of smartphone duration. This is not surprising because developing social media utilities requires a smartphone that is up to the latest standards. Moreover, as the purchase of smartphones is largely influenced by evaluations found on social media (Almutairi and Bennet, 2016), it is plausible that users who are continuously exposed to new information about new smartphone models on social media could be more prone or encouraged to replace their main device. Another lifestyle component that decreases the probability of smartphone longevity, although to a lesser extent, is "care for well-being, culture, and nature". This could be because individuals with several

hobbies, interests, and passions in different fields may be more inclined to novelty and variety and, thus, more prone to replace (or join) their main smartphones with new ones.

Among the socio-demographic variables, being male negatively influences the probability of smartphone duration. This is in line with Martinho *et al.* (2017), who assume that women do not replace their devices as often as men do. In Italy, our result could give rise to a socio-demographic interpretation linked to gender inequality, as there is still a significant gap in employment and pay between men and women. Thus, women might be inclined to change their smartphones less frequently. Obviously, this is only one possible interpretation, and this hypothesis should be investigated empirically.

Product attributes do not exert any impact on product lifespan, although previous studies gave them a relevant role in the replacement decision related to obsolescence (Wilson *et al.*, 2017; Watson *et al.*, 2017; Tan *et al.*, 2018; Oraee *et al.*, 2024).

Finally, "socio-entertainment" usage motivation decreases the probability of smartphone longevity. This is consistent with the shortening of the average smartphone lifespan for social media users. This type of motivation (see Table X in supplemental materials) includes items such as "It allows me to know what people do and what people on social media think", "It helps me overcome boredom", "I can make new acquaintances", "It helps me pause reality", "I use it to distinguish myself", "I like to be fashionable", "It makes me feel part of a community", "It allows me to manage my social media profiles", "I like to play videogames", "It allows me to watch movies or TV series", and "It gives me security". In other words, users may be influenced to buy new updated models more often to distinguish themselves, to better perform some playful activities, have a sense of belonging, or be fashionable. In this way, this work links to studies highlighting the symbolic use of smartphones (Liu *et al.*, 2019; Lou *et al.*, 2022). It shows that those who still attribute a symbolic and hedonistic meaning to the use of smartphones are driven to change their devices more frequently.

Therefore, while the previous analysis of customer satisfaction seemed to confirm a trend towards smartphone commoditization, this result suggests that there is a non-commoditized space related to its average lifespan, as users who extensively use social media and are more driven by symbolic and hedonic motivations tend to replace their smartphones more frequently.

### *5.3 Number of smartphones owned*

The third investigated consumption outcome is the number of smartphones owned. The average number of smartphones owned by the interviewees was 1.16 (see Table 1). This is fewer than those found by Martinho *et al.* (2017) in Portugal, Golev *et al.* (2016) in Australia, and Wilson *et al.* (2017) in the UK, who identified an average of 3.34, 2, and 1.7 smartphones owned, respectively. The possible explanation for this outcome is twofold. First, our research aimed to investigate how many

mobile phones are regularly used by consumers, without including those that are broken or simply hibernated. Second, this result may suggest a tendency of Italian consumers to give away their main smartphones when replaced, rather than retaining them. Although it has not been explored in this study, it would be interesting to investigate if smartphones no longer used in Italy are refurbished and if disposal occurs in an environmentally friendly way, even if this involves a cost. Several studies have been conducted on this topic in other countries (Yin *et al.*, 2014; Martinho *et al.*, 2017; Wilson *et al.*; 2017; Liu *et al.*, 2019; Cordella *et al.*, 2021; Inghels and Bahlmann, 2021).

The probability of owning more smartphones increases with the lifestyle component "use of new social media" and the "job and study" usage motivation. As observed for the average lifespan, product attributes do not affect this consumption outcome. The influence of "use of new social media" suggests that lifestyles oriented toward technology and social media use increase the number of smartphones owned. This result converges with the insights by Romero-Rodriguez *et al.* (2020) and Kasulaitis *et al.* (2021), who found a similar association between individual characteristics and number of devices owned. It may be explained by the same reasons we have previously identified for this lifestyle when considering the shorter lifespan of the smartphone, that is, the need for up-to-date devices to employ social media utilities as well as the influence exerted on these users by the continuous release of information and evaluations about smartphones on social media.

Regarding motivations, pragmatic reasons (e.g., work and study) positively influence this consumption outcome, which could be explained by the user's choice to differentiate private smartphones from those dedicated to work or study activities. This is partly in line with Ting *et al.* (2019), who found that most of their sample, which consisted of students, possessed more than one smartphone.

## 6. Theoretical and managerial implications

Our work contributes to theory in several ways. It shows that the theoretical interpretation of consumer behavior remains a complex and multidimensional phenomenon, even in mature markets. In the context of our analysis examining whether the Italian smartphone market is moving towards commoditization, different theoretical models have been employed, and various consumption outcomes have been studied. From this perspective, the complementary use of theoretical models such as the TAM and UGT has proven useful. To the best of the authors' knowledge, this is one of the pioneering studies that links customer satisfaction, average lifespan, and the number of smartphones owned (consumption outcomes) to users' lifestyles, product attributes, and usage motivations.

Particularly, this work highlights that lifestyle - rarely used in the literature on this topic - has a different impact on the above-mentioned consumption outcomes. This underscores the usefulness of including lifestyle in studies investigating smartphone consumption behavior.

This study has also some interesting managerial implications. Generally, commoditization implies fewer opportunities for manufacturers to apply the "premium price" typically associated with differentiated products, pushing them toward market-sharing policies based primarily on price wars. Commoditization drives the market from oligopolistic forms of competition to near-perfect competition. From a consumer perspective, commoditized products are cheaper than differentiated products, while, from the manufacturers' viewpoint, this results in less revenue and margins and less of a drive on research and development and innovation.

Most firms in these markets try to prioritize efficiency (Coe, 2021), through workforce reductions, organizational restructuring, outsourcing, and business process reengineering (Reimann *et al.*, 2010) or to focus on incremental innovation (Coe, 2021). Moreover, companies might adopt consolidation strategies through mergers and acquisitions to achieve economies of scale, or they may follow outsourcing and offshoring processes for non-core activities (Coe, 2021). According to Reimann *et al.* (2010), in commoditized industries, it could be important to enhance "customer intimacy", in order to improve relationships with experienced and price-sensitive customers.

Commoditization could be a trap (Mathieu, 2022), but in digital technology industries, marketing strategists can leverage insights from academic research to understand how to turn challenges into strategic opportunities for gaining a competitive advantage (Plangger *et al.*, 2022).

Referring to the two strategic groupings mentioned in the introduction (manufacturers that still focus on brand loyalty and sellers of commoditized smartphones), we believe that the results of this study can provide useful suggestions for firms.

In particular, companies in the first strategic group could take into account the results on the duration and number of smartphones owned. They show that the tendency to frequently change smartphones or use more than one depends mainly on lifestyle factors, as well as symbolic-hedonic motivations. Thus, manufacturers interested in accelerating purchase frequency[6] should focus on incremental innovations and marketing centered on "customer intimacy" for users with specific lifestyles, particularly those who consume social media or have several hobbies, interests, and passions, offering them continuous incremental innovations. To this end, cooperation with players in other sectors, such as online entertainment and social media, may create interesting new opportunities. Additionally, as the ownership of more than one smartphone is related to pragmatic reasons of job and study and lifestyles characterized by new social media use, manufacturers could introduce ad hoc features in their smartphones to meet these specific needs.

The other group (sellers of commoditized smartphones) needs to insist on policies based on low prices and widespread distribution, focusing on organizational and productive efficiency and economies of scale.

[6] However, it must be emphasized that shortening the smartphone's useful life is not an environmentally friendly practice, and some authors highlight the opportunity to extend smartphones' service lifetime (Bieser et al., 2022; Wong et al., 2023).

## 7. Conclusion, limitations, and future research

This study starts from the observation that smartphone sales are slowing down and that the market appears to have entered a phase of maturity. When markets mature, they may become commoditized, meaning products are seen as similar and interchangeable by informed, price-sensitive customers with low switching costs. This research aims to determine whether there are signs of commoditization in the Italian smartphone market by analyzing consumption outcomes, such as customer satisfaction, average smartphone lifespan, and the number of smartphones owned. It yields significant results.

Regarding customer satisfaction, our results indicate that only basic device attributes, such as functionality, economic convenience, and usability, have a positive influence on overall smartphone satisfaction. Coherently, the probability of overall satisfaction increases when individuals have a pragmatic usage motivation, focused on communication and functionality. The brand does not appear to influence satisfaction because the most popular brands are largely equivalent. In brief, the likelihood of customer satisfaction does not increase when the mobile phone is conceived as a means to distinguish from others or to belong to a community; rather, satisfaction rises when a smartphone has basic features, a fair price, and is an instrument to address utilitarian or pragmatic needs.

Therefore, this first result confirms the idea that smartphones are moving toward commoditization, where goods appear nearly indistinguishable from one another and, given basic features, competition shifts onto price.

The analysis of the average smartphone lifespan and the number of smartphones owned, which can be considered indicators of the replacement and/or duplication rate (key drivers of sales in mature markets), provides partially different insights. Indeed, the likelihood of a shorter smartphone lifespan is higher for users who make extensive use of social media (a lifestyle component). These individuals are also more likely to own more than one smartphone. Additionally, the likelihood of a shorter average smartphone lifespan is also influenced by symbolic and hedonic motivations. Indeed, the results indicate that users might be motivated to purchase new, updated models more frequently to stand out, enhance their experience with entertainment activities, feel a sense of belonging, or stay trendy. Therefore, there is a segment of market demand that can be described as 'non-commoditized', primarily driven by the replacement or supplementation of older smartphones with newer models.

The study has some limitations.

First, the empirical analysis is limited to the Italian context. It would be interesting to see if similar results are observed in different socio-cultural contexts.

Second, the research refers to the behaviors of adults over the age of 18 years. This excludes some of Generation Z (those who were under 18 years old at the date of data collection) and Generation Alpha (all were under 11 years old at the date of the research)[7], which may be an important

[7] Not all generation classifications are perfectly homogeneous. For more information about Z and Alpha Generations, see https://generationalpha.com/

smartphone user niche, since the average age of owning a smartphone decreased over time. Conducting research on the motivations and attributes preferred by the very young would be a relevant topic (see, among others, Vanden Abeele *et al.*, 2014; Wang, 2016). It should be noted, however, that leveraging adolescents' motivations raises serious ethical concerns, as they often exhibit dangerous signs of addiction to digital technologies.

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## Supplemental materials

*Tab. I: Sample demographics (n=816)*

| | | Count | % |
|---|---|---|---|
| Gender | M | 407 | 49.9 |
| | F | 409 | 50.1 |
| Age | 18–24 | 56 | 6.9 |
| | 25–39 | 222 | 27.2 |
| | 40–54 | 259 | 31.7 |
| | 55+ | 279 | 34.2 |
| Geographical area of residence* | Northwest Italy | 223 | 27.3 |
| | Northeast Italy | 145 | 17.8 |
| | Central Italy | 160 | 19.6 |
| | South Italy and Islands | 288 | 35.3 |

* For the sake of brevity, henceforth the geographical area of residence will be referred to as geographical area and its subdivisions as follows: Northwest, Northeast, Central, and South and Islands.

Source: Authors' elaboration

*Tab. II: Operational definition of the demographic variables*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Gender | What is your gender? | Male<br>Female<br>Other (specify) | Nominal |
| Geographical area | Which Italian area do you live in? | Northwest (Liguria, Lombardia, Piemonte, Valle D'Aosta)<br>Northeast (Emilia-Romagna, Friuli-Venezia Giulia, Trentino-Alto Adige, Veneto)<br>Central (Lazio, Marche, Toscana, Umbria)<br>South and Islands (Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia, Sardegna, Sicilia) | Nominal |
| Age | What is your age? | Open question | Continuous |
| Education | What is the last qualification you obtained? | None<br>Elementary<br>Junior high school<br>High School<br>Degree<br>Postgraduate<br>Other (specify) | Ordinal |
| Job status | What is your job? | Full-time worker<br>Part-time worker<br>Casual worker<br>Student<br>Householder<br>Retired<br>Unemployed<br>Looking for the first job in his/her life<br>Other (specify) | Nominal |
| Household composition | How many people are in your family? | Open question | Continuous |
| Civil status | Currently, you are: | Single<br>Married<br>Cohabitating<br>Divorced<br>Widowed<br>Other (specify) | Nominal |

Source: Authors' elaboration

*Tab. III: Operational definition of the individual lifestyle dimension*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Social media usage | How often do you use the following social networks in your daily life? | Facebook<br>Instagram<br>Snapchat<br>Twitter<br>LinkedIn<br>YouTube<br>Pinterest<br>TikTok<br>Telegram<br>WhatsApp | Likert-like five-point scale from "never" to "very often" |
| Hobbies, interests, and passions | Every person has hobbies, interests, and passions. Could you please indicate how interested you are in the following ones:<br>N.B. For each aspect you should tell us how interested you are using a score from 1 to 10.<br>"1" means "minimum interest"; "10" indicates "maximum interest." | Sport<br>Politics<br>Territory (politics and local news)<br>Economy<br>Art (painting, sculpture, literature)<br>Music<br>Cinema<br>Theatre<br>Technology<br>Fashion<br>Environment and nature<br>Home care (furnishing, design)<br>Travelling<br>Wellness and health<br>Religion<br>Career / work | Cantril Scale from 1 to 10 |
| Values | Here is a list of opposing statements.<br>Use the slider bar to point to the one that you think is closest to your thinking.<br>The closer the slider is to either end, the more it means that the corresponding statement represents your thought.<br>The "middle position" label indicates that you agree with both statements. | Immigration is an asset for Italy VS Immigration is a threat to Italy<br><br>When I think of my future, I see it full of risks and unknowns VS When I think of my future, I see it full of possibilities and surprises<br><br>In life you have to take risks and pursue your dreams VS In life you have to be realistic and choose achievable goals<br><br>It is better to guarantee equal opportunities to all to reduce social inequalities VS It is better to guarantee the best place to the most talented ones<br><br>I am looking for non-committal relationships VS I am looking for a partner for a common life project<br><br>The family consists of a man and a woman, a mother and a father VS The family consists of people connected by bonds of affection; sexual orientations do not matter<br><br>Work is the best way to fulfilment in life VS It does not matter what job you have; what matters is that you bring money home<br><br>Work is the best way to fulfilment in life VS It does not matter which job one has; the important thing is to bring money home<br><br>We should all take an interest in politics if we want things to get better VS Following political events is a waste of time<br><br>Sometimes it is inevitable to perform actions of which one is not proud VS Fairness and loyalty always return in the end<br><br>Most people are trustworthy VS One can never be sufficiently prudent in dealing with people<br><br>Nowadays, technological development entails more risks than opportunities VS Nowadays, technological development entails more opportunities than risks<br><br>In Italy today, the environment is excessively protected VS Too little is done in Italy to protect the environment<br><br>Regardless of what I do, if I am going to get sick, I will get sick VS To keep myself in good health, I am also willing to give up things that I would like to do | Osgood-like scale |

Source: Authors' elaboration

*Tab. IV: Operational definition of the product attributes dimension*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Product attributes | Could you tell us how important these features are when deciding on a smartphone purchase? For each item, you should tell us how important it is to you, using a score from 1 to 10. "1" means "minimum importance"; "10," on the other hand, indicates "maximum importance." Of course, you can use any score in between. | Brand awareness<br>Brand reliability<br>Price<br>Handling<br>Resistance<br>Aesthetics<br>Battery life<br>Screen features<br>Ease of use<br>Signal reception<br>Possibility of replacing parts<br>Promotional offers<br>Operating system<br>Camera features<br>Speed at which applications run<br>Storage<br>Available updates<br>Charging time<br>Useful life of the mobile phone<br>Security of personal data<br>Recognition systems (fingerprint, face, etc.)<br>Integration with other devices<br>Audio quality | Cantril Scale from 1 to 10 |

Source: Authors' elaboration

*Tab. V: Operational definition of the motivations dimension*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Motivations | Here is a list of reasons why a smartphone can be useful; you should kindly rate how much you agree with each sentence, again on a scale of 1 to 10. "1" means "lowest agreement" with the sentence; "10" means "highest agreement." | It allows me to know what people do and what people on social media think<br>It helps me overcome boredom<br>I can make new acquaintances<br>It helps me pause reality<br>I use it to distinguish myself<br>I like to be fashionable<br>It makes me feel part of a community<br>It allows me to manage my social media profiles<br>I like to play videogames<br>It allows me to watch movies or TV series<br>It gives me security<br>It allows me to search for information by accessing the Internet<br>It allows me to communicate with my family<br>It can be useful in an emergency<br>I find the additional functions useful (calendar, calculator, alarm, etc.)<br>It allows me to be updated on the latest events<br>It allows me to share ideas and thoughts with friends<br>I use it to take pictures and make videos<br>I use it as a PC (agenda, file management, etc.)<br>It is useful for my job<br>It allows me to search for or apply for a job<br>It is useful for studying (WhatsApp group, study group, online didactics, etc.) | Cantril Scale from 1 to 10 |

Source: Authors' elaboration

*Tab. VI: Operational definition of the customer satisfaction dimension*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Smartphone satisfaction | Thinking about the smartphone you use most, could you please tell us how satisfied you are, on a scale from 1 to 10, with the following aspects: | VFM<br>technical features<br>user-friendliness<br>aesthetic features<br>reliability | Cantril Scale from 1 to 10 |
| Overall satisfaction | How well does your current mobile phone meet the expectations you had before you bought it? | | Cantril Scale from 1 to 10 |

Source: Authors' elaboration

*Tab. VII: Operational definition of the variables related to smartphone habits*

| Variable | Question | Items | Measure |
|---|---|---|---|
| Number of smartphones owned | How many mobile phones do you use regularly? | Open question | Continuous |
| Brand of the main smartphone owned | What is the brand of your current smartphone?<br>If you have more than one mobile phone, please indicate all brands of smartphones you currently own and use | Open question | Nominal |
| Average smartphone lifespan | On average, after how long do you replace your smartphone or buy a new smartphone alongside your previous one? | Open question: answer in years* | Continuous |

* The lifespan is considered as the time a mobile is used before it is replaced or joined by another one

Source:Authors' elaboration

*Tab. VIII: Effects of EFA on lifestyles: Rotated factor loadings*

| Items | Care for well-being, culture, and nature | Use of new social media | Zoon politikon | Conservatism | Ethics and progressivism | Caution and mistrust | Use of traditional social media |
|---|---|---|---|---|---|---|---|
| Home care (furnishing, design) | **.745** | .080 | -.037 | .203 | .072 | -.030 | .011 |
| Wellness and health | **.728** | -.018 | .063 | .149 | .226 | .044 | .131 |
| Environment and nature | **.702** | -.057 | .130 | .021 | .179 | -.034 | -.002 |
| Theatre | **.674** | .203 | .245 | -.135 | -.077 | -.122 | -.134 |
| Travelling | **.663** | -.009 | .113 | .004 | .069 | -.106 | .277 |
| Fashion | **.658** | .314 | .056 | .055 | .025 | .026 | .135 |
| Cinema | **.655** | .181 | .139 | -.212 | -.079 | .027 | .112 |
| Music | **.639** | .158 | .148 | -.144 | -.001 | .102 | .073 |
| Art (painting, sculpture, literature) | **.618** | .211 | .270 | -.225 | -.102 | -.099 | -.248 |
| Snapchat | .076 | **.805** | .095 | .118 | -.021 | -.034 | -.063 |
| Twitter | .010 | **.776** | .131 | -.089 | .031 | .014 | .093 |
| TikTok | .144 | **.745** | .007 | .054 | -.030 | -.026 | .116 |
| Telegram | .083 | **.687** | -.039 | .009 | -.045 | .030 | .112 |
| LinkedIn | .076 | **.673** | .182 | .016 | .002 | -.072 | .043 |
| Pinterest | .252 | **.649** | -.042 | .002 | -.015 | .008 | -.064 |
| Politics | .116 | .132 | **.878** | -.022 | -.008 | -.039 | .000 |
| Territory (politics and local news) | .219 | .101 | **.822** | .033 | .032 | .032 | .026 |
| Economics | .281 | .129 | **.760** | .204 | .067 | -.026 | -.016 |
| Following political events is a waste of time | -.034 | .227 | **-.556** | .397 | -.060 | .136 | -.165 |
| Sport | .245 | .123 | **.470** | .258 | .148 | -.030 | .191 |
| Immigration is a threat to Italy | -.063 | .054 | -.104 | .645 | -.097 | .409 | .093 |
| The family consists of people connected by bonds of affection; sexual orientation does not matter | .123 | .153 | -.193 | **-.645** | .125 | -.037 | -.083 |
| It is better to guarantee the best place to the most talented ones | .001 | .062 | -.014 | **.574** | -.094 | -.099 | -.130 |
| Religion | .306 | .209 | .185 | **.415** | .135 | -.168 | -.105 |
| Fairness and loyalty always return in the end | .042 | -.072 | -.017 | .056 | **.670** | .029 | .099 |
| To keep myself in good health, I am also willing to give up things that I would like to do | .152 | .084 | .114 | -.019 | **.610** | -.097 | -.209 |
| Too little is done in Italy to protect the environment | .129 | -.150 | .007 | -.291 | **.578** | .319 | -.069 |
| Nowadays, technological development entails more opportunities than risks | -.033 | .007 | .065 | -.176 | **.506** | -.145 | .168 |
| One can never be sufficiently prudent in dealing with people | .049 | .009 | -.158 | .023 | .028 | **.756** | .049 |
| When I think of my future, I see it full of possibilities and surprises | .141 | .083 | -.030 | .171 | .323 | **-.620** | .002 |
| In life you have to be realistic and choose achievable goals | -.034 | .002 | .105 | .289 | .165 | **.450** | -.160 |
| WhatsApp | .138 | .006 | .075 | -.114 | .045 | -.004 | **.710** |
| Facebook | .125 | .276 | .060 | .036 | -.005 | -.028 | **.608** |

Source: Authors' elaboration

*Tab. IX: EFA on smartphone features: Rotated factor loadings*

| Items | Essential features | Additional features |
|---|---|---|
| Signal reception | **.830** | -.011 |
| Battery life | **.767** | .034 |
| Resistance | **.762** | .044 |
| Price | **.751** | -.243 |
| Promotional offers | **.698** | -.108 |
| Ease of use | **.662** | -.001 |
| Handling | **.649** | .157 |
| Security of personal data | **.611** | .241 |
| Operating system | **.562** | .256 |
| Audio quality | **.494** | .381 |
| Brand reliability | **.464** | .354 |
| Integration with other devices | -.057 | **.788** |
| Recognition systems (fingerprint, face, etc.) | -.007 | **.771** |
| Brand awareness | -.058 | **.724** |
| Aesthetics | .075 | **.681** |
| Camera features | .165 | **.659** |

Source: Authors' elaboration

*Tab. X: EFA on motivations to use a smartphone: Rotated factor loadings*

| Items | Socio-entertainment | Communication and functionality | Job and study |
|---|---|---|---|
| It allows me to know what people do and what people on social media think. | **.797** | .077 | .003 |
| It helps me overcome boredom | **.790** | .171 | -.157 |
| I can make new acquaintances | **.780** | -.079 | .110 |
| It helps me to pause reality | **.771** | .089 | -.056 |
| I use it to distinguish myself | **.749** | -.239 | .222 |
| I like to be fashionable | **.730** | -.190 | .216 |
| It makes me feel like part of a community | **.698** | -.071 | .138 |
| It allows me to manage my social media profiles | **.687** | .181 | .040 |
| I like to play videogames | **.681** | -.027 | -.044 |
| It allows me to watch movies or TV series | **.677** | .026 | .056 |
| It gives me security | **.573** | .282 | -.065 |
| It allows me to search for information by accessing the Internet | -.050 | **.835** | .057 |
| It allows me to communicate with my family | -.099 | **.804** | .000 |
| It can be useful in an emergency | -.150 | **.801** | -.037 |
| I find the additional functions useful (calendar, calculator, alarm, etc.). | .062 | **.711** | .083 |
| This allows me to be updated on the latest events. | .160 | **.688** | .108 |
| It allows me to share ideas and thoughts with my friends. | .243 | **.650** | .024 |
| I use it to take pictures and make videos. | .249 | **.582** | .020 |
| I use it as a personal computer (agenda, file management, etc.). | .174 | **.437** | .303 |
| It is useful for my job | -.155 | .152 | **.894** |
| It allows me to search for or apply for a job | .165 | .002 | **.781** |
| It is useful for studying (class WhatsApp group, study group, online didactics, etc.) | .210 | .040 | **.716** |

Source: Authors' elaboration

*Tab. XI: Results of hierarchical multiple linear regressions with enter method on VFM (final model)*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .146 | .021 | .010 | 6.69 | .021 | 1.836 | 9 | 763 | .059 |
| Step 2 | .177 | .031 | .013 | 6.68 | .101 | 1.578 | 5 | 758 | .164 |
| Step 3 | .190 | .036 | .009 | 6.69 | .005 | .540 | 7 | 751 | .805 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | -.039 | | -.003 | | -.070 | | .944 | | 1.345 |
| Age | .041 | | .086 | | 1.838 | | .066 | | 1.701 |
| Northwest | -.709 | | -.047 | | -.981 | | .327 | | 1.799 |
| Northeast | .523 | | .030 | | .656 | | .512 | | 1.632 |
| South and Islands | -.258 | | -.018 | | -.366 | | .714 | | 1.926 |
| Education | 0.27 | | .014 | | .347 | | .729 | | 1.214 |
| Working condition | -1.050 | | -.068 | | -1.603 | | .109 | | 1.411 |
| Civil status | -.230 | | -.016 | | -.391 | | .696 | | 1.345 |
| Household composition | .101 | | .018 | | .419 | | .676 | | 1.373 |
| Essential features | .557 | | .083 | | 1.580 | | .115 | | 2.142 |
| Additional features | .294 | | .044 | | .832 | | .450 | | 2.157 |
| Socio-entertainment | -.527 | | -.078 | | -1.474 | | .141 | | 2.204 |
| Communication and functionality | -.372 | | -.055 | | -1.009 | | .313 | | 2.338 |
| Job and study | .305 | | .045 | | 1.017 | | .309 | | 1.550 |
| Care for well-being, culture, and nature | -.049 | | -.007 | | -.154 | | .878 | | 1.735 |
| Use of new social media | -.133 | | -.020 | | -.448 | | .646 | | 7.529 |
| Zoon politikon | -.020 | | -.003 | | -.070 | | .944 | | 1.331 |
| Conservatism | -.120 | | -.018 | | -.458 | | .647 | | 1.185 |
| Ethics and progressivism | .070 | | .010 | | .276 | | .783 | | 1.110 |
| Caution and mistrust | -.182 | | -.027 | | -.722 | | .471 | | 1.102 |
| Use of traditional social media | -.441 | | -.066 | | -1.657 | | 0.98 | | 1.219 |
| Constant | 7.170 | | | | 3.790 | | .0 | | |

Source: Authors' elaboration

*Tab. XII: Results of hierarchical multiple linear regressions with enter method on technical features (final model)*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .085 | .007 | -.005 | 3.61 | .007 | .614 | 9 | .763 | .786 |
| Step 2 | .181 | .033 | .015 | 3.58 | .026 | 4.001 | 5 | .758 | .001 |
| Step 3 | .233 | .054 | .028 | 3.55 | .021 | 2.435 | 7 | 751 | .018 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | .236 | | .033 | | .795 | | .427 | | 1.345 |
| Age | .013 | | .051 | | 1.095 | | .274 | | 1.701 |
| Northwest | -.652 | | -.081 | | -1.699 | | .090 | | 1.799 |
| Northeast | -.564 | | -.060 | | -1.333 | | .183 | | 1.632 |
| South and Islands | -.646 | | -.085 | | -1.729 | | .084 | | 1.926 |
| Education | -.003 | | -.002 | | -.062 | | .950 | | 1.214 |
| Working condition | .096 | | .012 | | .275 | | .784 | | 1.411 |
| Civil status | -.342 | | -.045 | | -.1098 | | .272 | | 1.345 |
| Household composition | .041 | | .013 | | .319 | | .750 | | 1.373 |
| Essential features | .073 | | .020 | | .392 | | .695 | | 2.142 |
| **Additional features** | **.425** | | **.118** | | **2.263** | | **.024** | | **2.157** |
| Socio-entertainment | .228 | | .063 | | 1.202 | | .230 | | 2.204 |
| **Communication and functionality** | **.469** | | **.130** | | **2.398** | | **.017** | | **2.338** |
| Job and study | .118 | | .033 | | .740 | | .459 | | 1.550 |
| **Care for well-being, culture, and nature** | **-.649** | | **-.180** | | **-3.848** | | **.000** | | **1.735** |
| Use of new social media | -.046 | | -.013 | | -.293 | | .769 | | 1.529 |
| Zoon politikon | -.207 | | -.058 | | -1.405 | | .160 | | 1.331 |
| Conservatism | .096 | | .027 | | .691 | | .490 | | 1.185 |
| Ethics and progressivism | -.048 | | -.013 | | -.356 | | .722 | | 1.110 |
| Caution and mistrust | .014 | | .004 | | .106 | | .916 | | 1.102 |
| Use of traditional social media | -.081 | | -.023 | | -.575 | | .566 | | 1.219 |
| Constant | 8.128 | | | | 8.089 | | .0 | | |

Source: Authors' elaboration

*Tab. XIII: Results of hierarchical multiple linear regressions with enter method on user-friendliness (final model)*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .107 | .011 | .0 | 4.83 | .011 | .983 | 9 | 763 | .452 |
| Step 2 | .115 | .013 | -.005 | 4.84 | .002 | .274 | 5 | 758 | .928 |
| Step 3 | .155 | 0.24 | -.003 | 4.83 | .011 | 1.181 | 7 | 751 | .311 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | -.004 | | .0 | | -.010 | | .992 | | 1.345 |
| Age | .021 | | .062 | | 1.316 | | .188 | | 1.701 |
| Northwest | -.358 | | -.033 | | -.686 | | .493 | | 1.799 |
| Northeast | -.842 | | -.067 | | -1.465 | | .143 | | 1.623 |
| South and Islands | -.617 | | -.061 | | -1.214 | | .225 | | 1.926 |
| Education | -.034 | | -.024 | | -.612 | | .541 | | 1.214 |
| Working condition | -.022 | | -.002 | | -.047 | | .963 | | 1.411 |
| Civil status | -.262 | | -.026 | | -.617 | | .537 | | 1.345 |
| Household composition | -.021 | | -.005 | | -.123 | | .902 | | 1.373 |
| Essential features | .219 | | .045 | | .862 | | .389 | | 2.142 |
| Additional features | .172 | | .036 | | .673 | | .501 | | 2.157 |
| Socio-entertainment | .087 | | .018 | | .336 | | .737 | | 2.204 |
| Communication and functionality | .145 | | .030 | | .547 | | .585 | | 2.338 |
| Job and study | -.142 | | -.029 | | -.655 | | -513 | | 1.550 |
| **Care for well-being, culture, and nature** | **-.513** | | **-.106** | | **-2.237** | | **.026** | | **1.735** |
| Use of new social media | -.058 | | -.012 | | -.268 | | .789 | | 1.529 |
| Zoon politikon | -.179 | | -.037 | | -.891 | | .373 | | 1.331 |
| Conservatism | .278 | | .058 | | 1.469 | | .142 | | 1.185 |
| Ethics and progressivism | -.051 | | -.011 | | -.279 | | .781 | | 1.110 |
| Caution and mistrust | -.025 | | -.005 | | -.135 | | .893 | | 1.102 |
| Use of traditional social media | -.107 | | -.022 | | -.557 | | .557 | | 1.219 |
| Constant | 8.934 | | | | 6.539 | | .0 | | |

Source: Authors' elaboration

*Tab. XIV: Results of hierarchical multiple linear regressions with enter method on aesthetic features (final model)*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .118 | .014 | .002 | 7.48 | .014 | 1.195 | 9 | 763 | .295 |
| Step 2 | .140 | .020 | .002 | 7.48 | .006 | .902 | 5 | 758 | .479 |
| Step 3 | .159 | .025 | -.002 | 7.5 | .006 | .609 | 7 | 751 | .749 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | .042 | | .003 | | .067 | | .946 | | 1.345 |
| Age | .023 | | .044 | | .937 | | .349 | | 1.701 |
| Northwest | -.854 | | -.051 | | -1.055 | | .292 | | 1.799 |
| Northeast | -.578 | | -.030 | | -.648 | | .517 | | 1.632 |
| South and Islands | -.701 | | -.044 | | -.889 | | .374 | | 1.926 |
| Education | -.042 | | -.019 | | -.479 | | .632 | | 1.214 |
| Working condition | .516 | | .030 | | .704 | | .482 | | 1.411 |
| **Civil status** | **-1.837** | | **-.117** | | **-2.794** | | **.005** | | **1.345** |
| Household composition | .222 | | .035 | | .820 | | .412 | | 1.373 |
| Essential features | -.008 | | -.001 | | -.019 | | .985 | | 2.142 |
| Additional features | .635 | | .085 | | 1.606 | | .109 | | 2.157 |
| Socio-entertainment | -.406 | | -.054 | | -1.013 | | .311 | | 2.204 |
| Communication and functionality | -.309 | | -.041 | | -.750 | | .454 | | 2.338 |
| Job and study | -.143 | | -.019 | | -.426 | | .670 | | 1.55 |
| Care for well-being, culture, and nature | .252 | | .034 | | .712 | | .477 | | 1.735 |
| Use of new social media | .039 | | .005 | | .116 | | .908 | | 1.529 |
| Zoon politikon | -.310 | | -.041 | | -.995 | | .320 | | 1.331 |
| Conservatism | -.161 | | -.021 | | -.548 | | .584 | | 1.185 |
| Ethics and progressivism | .139 | | .019 | | .490 | | .624 | | 1.110 |
| Caution and mistrust | -.137 | | -.018 | | -.482 | | .630 | | 1.102 |
| Use of traditional social media | -.354 | | -.047 | | -1.187 | | .235 | | 1.219 |
| Constant | 8.872 | | | | 4.188 | | .0 | | |

Source: Authors' elaboration

*Tab. XV: Results of hierarchical multiple linear regressions with enter method on reliability (final model)*

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate | $R^2$ change | F change | df1 | df2 | Sig. F change |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | .096 | .009 | -.002 | 3.58 | .009 | .790 | 9 | 763 | .626 |
| Step 2 | .187 | .035 | .017 | 3.55 | .026 | 4.041 | 5 | 758 | .001 |
| Step 3 | .236 | .056 | .029 | 3.53 | .021 | 2.346 | 7 | 751 | .022 |
| Step 3 | B | | β | | t | | p | | VIF |
| Gender | .150 | | .021 | | .511 | | .610 | | 1.345 |
| Age | .013 | | .051 | | 1.112 | | .266 | | 1.701 |
| **Northwest** | **-.775** | | **.097** | | **-2.036** | | **.042** | | **1.799** |
| Northeast | -.678 | | -.073 | | -1.617 | | .106 | | 1.632 |
| South and Islands | -.674 | | -.089 | | -1.818 | | .069 | | 1.926 |
| Education | -.008 | | -.008 | | -.200 | | .842 | | 1.214 |
| Working condition | -.156 | | -.019 | | -.452 | | .651 | | 1.411 |
| Civil status | -.281 | | -.037 | | -.910 | | .363 | | 1.345 |
| Household composition | .004 | | .001 | | .034 | | .973 | | 1.373 |
| Essential features | -.020 | | -.006 | | -.109 | | .914 | | 2.142 |
| Additional features | .279 | | .078 | | 1.500 | | .134 | | 2.157 |
| Socio-entertainment | .121 | | .034 | | .640 | | .522 | | 2.204 |
| **Communication and functionality** | **.672** | | **.188** | | **3.464** | | **.001** | | **2.338** |
| Job and study | .034 | | .009 | | .215 | | .830 | | 1.550 |
| **Care for well-being, culture, and nature** | **-.556** | | **-.155** | | **-3.328** | | **.001** | | **1.735** |
| Use of new social media | -.030 | | -.008 | | -.194 | | .847 | | 1.529 |
| Zoon politikon | -.170 | | -.047 | | -1.159 | | .247 | | 1.331 |
| Conservatism | .240 | | .067 | | 1.737 | | .083 | | 1.185 |
| Ethics and progressivism | .021 | | .006 | | .158 | | .874 | | 1.110 |
| Caution and mistrust | .040 | | .011 | | .304 | | .761 | | 1.102 |
| Use of traditional social media | -.090 | | -.025 | | .643 | | .520 | | 1.219 |
| Constant | 8.853 | | | | 8.881 | | .0 | | |

Source: Authors' elaboration

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