

“Silver” users of marketplaces and the convenience of the mobile interface

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Abstract

This article addresses the enhancement of the appeal of Russian marketplaces for older consumers through mobile interface adaptation. It is noted that the overlooked potential of a substantial demographic of older Russians, presenting an underestimated target audience for marketplaces. The accumulated insights from research and development in mobile design for users aged 50 + are synthesized, incorporating considerations for age-related characteristics in interface adaptation. The article presents findings from empirical research, facilitating the identification of preferences and requirements among Russian consumers aged 50 + regarding the mobile interface of marketplaces. Key elements contributing to respondent satisfaction include addressing the overload of the main application page, ensuring the accessibility of main menu buttons, offering interface personalization options, and optimizing the search system. Proposed modifications aim to broaden the customer base among older demographics while preserving the interface's usability for other customer segments, thereby potentially boosting the profitability of Russian marketplaces.

Keywords

marketplace; silver consumers; older age; users 50+; mobile interface

JEL codes: J14; D12; M31

The evolution of multilateral digital platforms, utilizing digital technologies as an intermediary between the demand and supply sides (O'Sullivan & Shankar 2019; Shankar et al. 2022), has brought about changes in the contemporary Russian market. In the early 2000s, from 2005 to 2008, the B2C e-commerce market in Russia grew steadily by an average of 30-40% (Daviy et al. 2018). The economic crisis of 2008-2009 slowed down the growth rate of the market; nevertheless, the volume of the e-commerce market still continued to increase, although not as fast as in previous years (Fig. 1). At the same time, as experts note, this

market is currently undergoing a transformation into the «Marketplaces + Branded Stores» model (Virin 2023).

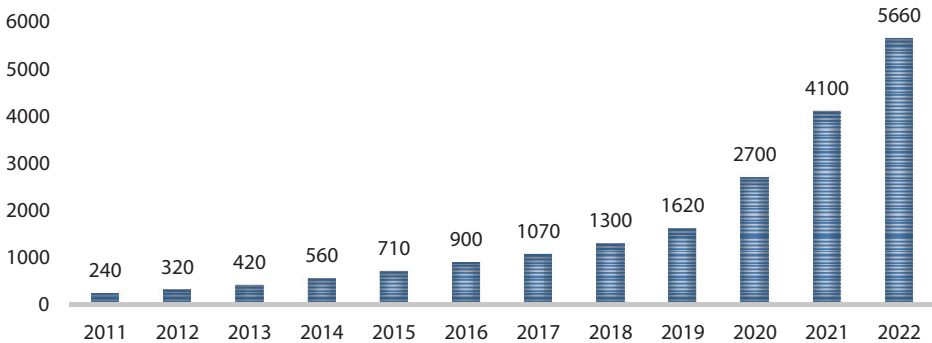


Figure 1. Volume of online sales in Russia from 2011 to 2022, in billion rubles. *Source:* (Data Insight, 2022).

As depicted in Fig. 1, there has been a consistent growth in online sales in Russia over the past decade. In 2011, it stood at 240 billion rubles, and by 2022, it soared to 5660 billion rubles—a remarkable increase of over 20 times during this period. The escalated growth rates in the e-commerce market from 2020 to 2022 can be primarily attributed to the significant shift in consumer behavior brought about by the COVID-19 pandemic, compelling consumers to opt for online purchases (Hashem 2020; Haddadi & Rebiazina 2023).

According to research from Data Insight, Russia led in 2022 among the fastest-growing online retail sales markets, with a growth rate of 38%. Other leading countries, including the Philippines and India (26%), Indonesia (23%), Brazil (22%), Vietnam and Argentina (19%), also contributed to this upward trend (Data Insight 2022). Forecasts suggest that by the end of 2023, the market volume is expected to reach 7 trillion rubles (Data Insight 2023). The user base of Russian marketplaces, such as Wildberries, Ozon, Yandex.Market, AliExpress Russia, and SberMegaMarket¹, has accordingly witnessed a steady increase, with each platform surpassing an annual turnover of 30 billion rubles in 2022 (E-commerce Index... 2022). Consumers are drawn to these marketplaces due to the affordability of goods, attractive discounts, a wide product range, and convenient delivery.

However, despite over a third of Russians falling into the age group over 50 (Rosstat 2023), the primary customer base of Russian marketplaces consists of individuals aged 18 to 45 (Data Insight 2023). In the authors' perspective, one reason the potentially lucrative segment of older paying consumers, often referred to as 'silver consumers' (Sheresheva et al. 2017), is not adequately addressed is the inconvenience of interfaces that do not consider the age-related limitations of this user category.

The user interface plays an important role in modern marketplaces, being a key element that ensures interaction between the user and the platform. According to a number of empirical studies, the usability of the interface is a significant factor influencing the attractive-

¹ "MegaMarket" is the name of the marketplace application, in some cases, the designation "SberMegaMarket" is used.

ness of a mobile application for older users (Pattison & Stedmon 2006; Alshehri & Freeman 2012; Rot et al. 2017). Obstacles caused by an unfamiliar way of shopping and the lack of clarity in the process of searching for the right product online are aggravated for older people by deterioration of vision, memory, and a decrease in the speed of assimilation of new patterns and procedures (Eiguren Munitis et al. 2021; Pereira et al. 2021; Prasad & Srivastava 2021). At the same time, as shown in the study (Haddadi & Rebiazina 2023), in the post-covid era, the ease of online shopping has become even more important, along with factors such as customer satisfaction and the number of reviews.

Given that currently, older Russians are active users of mobile applications (Sheresheva & Berezka 2017; Nazarov et al. 2020), we can assume that adapting the interface with consideration for the age-specific characteristics of this user category could, along with digital promotion tools, provide additional growth in the customer base of Russian marketplaces and, consequently, an increase in the platforms' revenue.

This article showcases the findings of a study focused on uncovering possibilities to improve the convenience and attractiveness of shopping on marketplaces by adjusting mobile interface elements for consumers aged 50 +. It provides an overview of research and development experiences in the realm of mobile design tailored for users aged 50 +, incorporating considerations for age-related characteristics in interface adaptation. The article presents the outcomes of empirical research, enabling the identification of preferences and requests from Russian consumers aged 50 + regarding the mobile interface of marketplaces. Additionally, it suggests modifications to mobile interface elements aimed at enhancing the appeal of Russian marketplaces for older consumers.

Mobile interface for older users

There are three main types of mobile applications: mobile web applications, native applications, and hybrid applications. Each type comes with its own set of advantages and drawbacks.

Mobile web applications operate within a browser and utilize web development technologies like HTML, CSS, and JavaScript. They don't require installation on the user's device, making them accessible on any device with a browser. However, they often have limited access to device functions such as the camera and microphone.

Native applications are tailored for a specific operating system, written in a language specific to that system (e.g., Swift for iOS or Java for Android). They have complete access to all device functions, utilizing them to their full capacity. Nevertheless, developing native applications for each platform is time-consuming and costly, which can be a challenge for small businesses or smaller development teams.

Hybrid applications leverage both web technologies and certain native application features, capable of running on multiple operating systems. They can be developed using popular frameworks¹ like React Native or Ionic, expediting the development process. However, they may encounter performance issues and lack access to some device functions.

Mobile applications offer unique opportunities for companies aiming to enhance communication with customers, create innovative content, and improve product and service

¹ Framework is a template for a software platform, a software environment on the basis of which you can add your own code.

quality (Bozhenko et al. 2023). These applications enable companies to establish new forms of communication, allowing customers to interact with the company and its brands in real-time (Sima et al. 2020). Users can download apps, search for information, receive notifications about new products, make purchases, and have orders delivered to their homes. This not only provides customers with increased freedom and convenience but also offers companies new avenues to enhance their products and services.

Moreover, there exists an additional opportunity to cultivate lasting benefits for customers (Barnett et al. 2019). For instance, apps can grant access to exclusive promotions, discounts, and bonuses that are unavailable on other platforms. This capability empowers companies to fortify their relationships with customers and foster loyalty to their brands.

Consequently, mobile applications have become an integral component of modern marketing. They enable companies to elevate the quality of their services and products, generate innovative content, and improve communication with customers, nurturing enduring relationships. Concurrently, the interface of mobile applications plays a pivotal role in influencing user interaction. A well-designed user interface can significantly enhance the usability and attractiveness of the marketplace, thereby boosting its competitiveness in the market.

An effective interface should be user-friendly and intuitive, enabling users to swiftly locate essential functions and use the application seamlessly. Additionally, it should boast an appealing design that keeps users engaged. However, empirical studies reveal that application designers do not always accurately assess what is most important for users.

A study by Fu et al. (2019) compared the preferences of designers and users regarding eight different user interfaces, uncovering disparities in how designers and users perceive these interfaces. The authors of the study categorized attributes influencing the perception of user interfaces by designers and users into three thematic groups: efficiency, effectiveness, and emotional evaluation. Through the open coding process, 16 categories were identified within these groups, offering insights into key design attributes affecting the overall perception of user interfaces for both users and designers. The findings revealed that designers prioritize emotional evaluation, focusing on the overall visual impression of interfaces, their clear structure, intuitive clarity, and the potential for a lasting impression on users through the combination and presentation of interface elements. Conversely, users prioritize efficiency and effectiveness, emphasizing the availability of functions, an intuitive layout, and overall color. Users also stressed the importance of the interface eliciting a desire to make a purchase, along with the inclusion of buttons and transitions to ensure a seamless purchasing experience. These results underscore the need to balance designer perspectives and emphasize the importance of analyzing user reviews and comments, particularly after launching or updating the interface.

Optimizing the interface of mobile applications becomes especially relevant when considering older generations, a target audience often overlooked by many Russian businesses, including marketplaces. However, the new age cohorts entering the aging period differ significantly from past perceptions of «older people» (Kalmykova et al. 2017; Barysheva et al. 2019), including in terms of media consumption (Centorrino 2011; Hepp et al. 2017). Modern generations of «silver» consumers possess a higher level of human capital in terms of education, skills, and abilities, as well as a better health profile, allowing them to remain active, productive, and useful for much longer (Harper 2014: 588). Moreover, «young» consumers of older ages often experience little to no physical limitations, and their needs align more closely with those of the 40-45+ age cohorts (Stroud & Walker 2013; Sheresheva & Buzulukova 2014; Lassen 2017).

Nevertheless, when examining the preferences of older age groups, particular attention should be given to age-related limitations (Pereira et al. 2021). Individuals aged 50 and above frequently face challenges associated with impaired vision and hearing. The elderly may encounter a decline in reaction speed and cognitive abilities, necessitating more time to perform tasks that were once executed more swiftly in their younger years. Older individuals often grapple with understanding and assimilating patterns and procedures with which they are not familiar (Eiguren Munitis et al. 2021).

The characteristics of all types of memory also deteriorate with age (Ruzhenskaya et al. 2018):

- *short-term memory*, which involves the storage of newly perceived information;
- *working memory*, related to a person's ability to remember certain information while simultaneously performing other tasks;
- *semantic memory*, corresponding to the storage of factual information accumulated throughout a person's life;
- *prospective memory*, relating to a person's ability to remember that something needs to be done in the future.

From the perspective of using mobile interfaces, it is particularly important to consider the following challenges for older age groups:

- *reduced dynamic visual attention*, as finding visual elements in the interface that can be interacted with requires the user's focus;
- *decreased motor control*, leading to an increase in response time due to the loss of muscle strength and endurance;
- *a decline in language comprehension*, an ability that may experience deterioration with age;
- *deterioration of tactile perception*, a crucial capability given the widespread use of touch screens in designing visual interfaces for digital applications for the elderly.

The primary focus of studying the interaction of the older generation with touch screens is on the visual interface and interaction gestures (Genaro Motti et al. 2014). Notably, older individuals often outperform younger participants in online content searches, particularly excelling in content-oriented searches compared to navigation-oriented searches in general (Etcheverry et al. 2012). Consequently, several researchers suggest that a content-oriented design can be a promising direction for the design of mobile applications targeting the elderly (Li & Luximon 2020).

In general, numerous studies indicate that the abilities required for proper and comfortable interaction with graphical interfaces are precisely those that deteriorate the most with age (Pereira et al. 2021).

A. Correia et al. have identified several essential interface characteristics that can accommodate the physical limitations of the older generation (Correia et al. 2014). The hierarchy of the application being developed should be intuitive, making navigation elements easier to use. It is also advisable to replicate main buttons on all pages of the application for quick navigation. For older users, it is beneficial to highlight the «back» button for easy navigation in case of mistakes. Since vision and the sense of touch become less acute with age, a user-friendly interface design is necessary to allow older individuals to manage and use device functions more smoothly (Barnard et al. 2013).

As demonstrated in a study by Genaro Motti et al. (2014), the use of «flipping through» and «scrolling» poses no problems for older users. To enhance the usability of application interfaces, minimizing contact with the keyboard is recommended. It is preferable to use large intervals between elements that require actions, especially on pages that allow scroll-

ing. When placing interactive elements, consider positioning them further from the edge of the screen. The use of both icons and accompanying text helps improve the accessibility and clarity of elements (Genaro Motti et al. 2014).

Studies emphasize the importance of font style, especially its size (Bernard et al. 2001; Darroch et al. 2005; Hou & Hu 2022) and type (Dobres et al. 2016; Huang & Li 2017). Inappropriate font style is a common issue faced by older individuals when reading from mobile devices. The significance of using intervals between objects has already been mentioned, and the interval between letters is no exception. The recommended suitable font size for the elderly ranges from 6 to 12 (Ho & Tzeng 2021), with the most favorable font size for reading being from 12 to 14 (Bernard et al. 2001).

Despite the presence of numerous constraints, many developers appear to intentionally overlook the 50+ age category in their user base. However, we believe this approach is misguided, especially for marketplaces. Understanding a relatively short list of necessary improvements for the convenience of users aged 50 and above could significantly contribute to the growth of the customer base. Let's delve into the results of our empirical research, which focuses on identifying the most crucial enhancements for the interface of mobile applications in Russian marketplaces for older consumers.

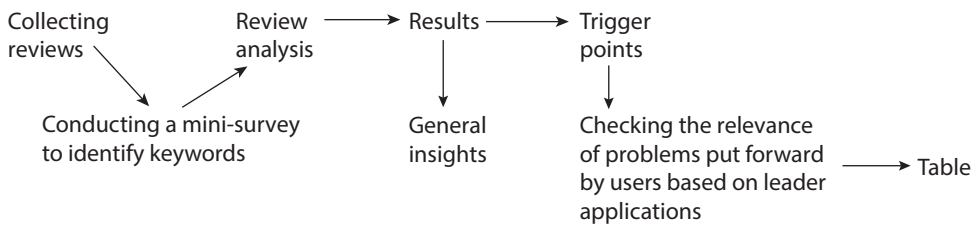


Figure 2. Design of the 1st stage of empirical research. *Source:* compiled by the authors

To gather empirical data, we employed several research methods, including synthesis, induction, deduction, comparative analysis, and both qualitative and quantitative statistical methods.

During the initial phase of the study, we conducted an analysis of user reviews¹ for mobile applications from Russian marketplaces such as Wildberries, Ozon, Yandex.Market, SberMegaMarket, and Aliexpress (Fig. 2). Reviews were sourced from both the AppStore and Google Play platforms, where users provided feedback on installation and app usage. A mini-survey involved 100 respondents who selected words they deemed appropriate to describe a comfortable or uncomfortable mobile interface.

Subsequently, we utilized these keywords to identify negative reviews that could contribute to the characterization of a comfortable or uncomfortable mobile interface. Through the analysis of this feedback, we extracted key insights and trigger points related to interface usability. Following this, we tested the mobile interfaces of leading applications (Ozon and Wildberries) based on the identified user trigger points. This step aimed to validate the existence of problems raised by users.

Upon completing the initial stage, and considering insights from the literature review, we formulated hypotheses regarding the assessment of existing applications' convenience for older consumers:

¹ Appendix 1.

H1: Increasing font sizes and icons enhances the usability of the mobile interface for older users.

H2: Labeling the main buttons' icons¹ improves the usability of the mobile interface for older users.

H3: The incorporation of a voice assistant function, reducing reliance on the keyboard, enhances the usability of the mobile interface for older users.

At the second stage, we conducted an online survey utilizing a structured questionnaire through the Google Forms service to test our hypotheses.

The questionnaire comprised 10 questions, organized into the following sections:

1. Part 1 – Socio-demographic characteristics of respondents
2. Part 2 – Determination of respondents' attitude towards marketplaces
3. Part 3 – Determination of respondents' attitude towards marketplace mobile applications
4. Part 4 – Definition of the respondent's «advancement»²
5. Part 5 – Collecting respondents' reactions to interface designs

All respondents independently completed the questionnaires online.

Sample size

A total of 383 participants took part in the survey, constituting the target sample size. The necessary sample size was determined using the formula:

$$Ss = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right)}$$

where Ss (Sample size) = sample size; N = volume of the population; E = error expressed as a decimal fraction; Z = deviation from the mean; P = percentage value.

According to Rosstat data as of 1.01.2023, the population of men and women aged 50 and over is 52,778,259 people (Rosstat 2023). Considering that 49.7% of people over 55 use the Internet, as per a Mediascope study for February–November 2020 (RBC 2021), we took this as the minimum percentage. Under these conditions, the volume of the target group is 26,525,278 people.

Results of the first stage

39,846 reviews from Google Play and 6,029 reviews from the AppStore were analyzed for the period April – March 2023.³

According to the results of the study, the following general insights were identified:

- Users of marketplaces based on the Android operating system express greater dissatisfaction with the interfaces compared to IOS users. This is confirmed by a higher percentage of negative reviews about the interface among Android users.

¹ Appendix 2, Figure 7.

² “Advancedness” in the meaning of Advanced User in translation into Russian - advanced user.

³ Appendix 3.

- Interest in the appearance and improvement of tablet applications, both on Android and iOS, accounts for a significant proportion of the total number of reviews about the interface. Namely, 21% of users express a desire to have a more user-friendly interface for an Android tablet, and 14% - based on iOS.
- In addition, a significant proportion of users (45%) expressed interest in the possibility of personalizing the application by choosing a dark or light theme.

After studying all the reviews on five marketplace applications, several trigger points of the mobile interface were identified:

1. Overload of the main page
2. Accessibility of the main menu buttons
3. The ability to personalize the interface
4. Search engine optimization

The subsequent stage involved testing to verify the relevance of the issues highlighted by users. The testing process unfolded as follows: utilizing the trigger points (expressed as a percentage of mentions) for Wildberries and Ozon¹ applications, we navigated through the «user path (experience)» for each of the applications on both Android and iOS devices. The outcomes revealed that trigger points were discernible in the applications of the leading marketplaces, signifying areas that also require improvement (Table 1).

Table 1. Results of testing the relevance of problems for users of Wildberries and Ozon mobile applications

	Wildberries	Ozon
1) Overload of the main page	Yes	Yes
2) Accessibility of the main menu buttons	Depending on the phone's theme settings (the buttons are more noticeable on a dark background)	Due to the overload of the lower menu, they do not perform their functionality to its utmost
3) The ability to personalize the interface		
changing the background color in the app	No	Yes
setting the font size in the application	No	No
coordination of deferred items	Yes	Yes
4) Search engine optimization		
voice assistant	Yes, there is an icon in the search bar, but voice dialing is currently executed by dictating text using the phone's keyboard	No
search by photo	Yes	No
barcode search	No	Yes
search filter	Yes, but the sample is minimal	Yes, the sample is sufficient

Source: compiled by the authors

¹ Appendix 4.

Sample characteristics

Figure 3 and Table 2 furnish details about the socio-demographic attributes of the respondents who engaged in the online survey, encompassing gender, age, and field of activity. The dominant age group is 60-64 years, constituting almost half of the respondents, with 48% being retirees. Additionally, the majority of respondents are women, accounting for 67% of the total.

Table 2. Gender (A) and age (B) of respondents, (N=383)

A)		B)	
Gender distribution	Percentage of respondents	Age distribution	Percentage of respondents
Women	67%	50-54 years old	22%
Men	33%	55-59 years old	24%
		60-64 years old	30%
		65-69 years old	23%

Source: compiled by the authors

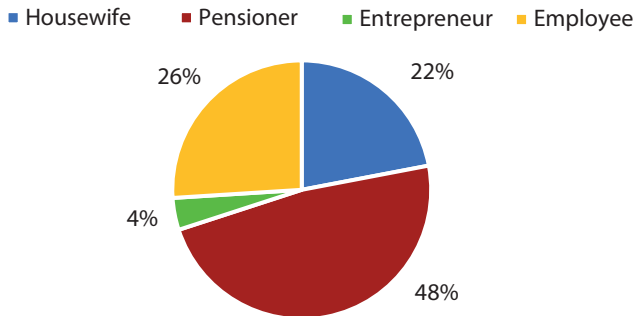


Figure 3. Sphere of employment of respondents, (N=383). Source: compiled by the authors

An essential aspect for further analysis of responses was the inquiry about font size and icons on respondents’ mobile phones. This information proved crucial, as individuals frequently opt for a larger font size due to a decline in vision. It becomes imperative to consider this data during analysis, as individuals accustomed to a larger font may encounter challenges adjusting to applications with a smaller font size. Notably, the majority of respondents (68.4%) fall into the category of users who prefer an enlarged font.

The subsequent section of the article will unveil the primary findings of the quantitative study.

Perception of the mobile interface of marketplaces by Russian consumers 50+

Determining Respondents’ Attitude Toward Purchases on Marketplaces

The majority of respondents are familiar with marketplaces and have experience purchasing goods on such platforms (Figure 4A). However, 28% of respondents indicated a lack of expe-

rience in marketplace purchases. A follow-up question was posed to this group, asking why they haven't made purchases. Among these respondents, 52% stated a preference for offline shopping, 38% expressed a willingness to explore online shopping, and only 10% cited a lack of trust in sharing personal data with marketplaces (see Figure 4B).

For respondents with experience in such platforms, an additional query was introduced: «What device do you use to interact with the marketplace?» (Table 3). This question aimed to ascertain the proportion of mobile app users in the sample, revealing that 80% of respondents utilize mobile apps. While 8% indicated the use of a tablet to access the site, interestingly, there were no respondents using marketplace apps on tablets. This observation prompts further inquiries for future studies: What percentage of older Russians own and use tablets? What factors contribute to the decision not to use marketplace applications on tablets? Is there an interest in the development and enhancement of marketplace applications specifically tailored for tablets?

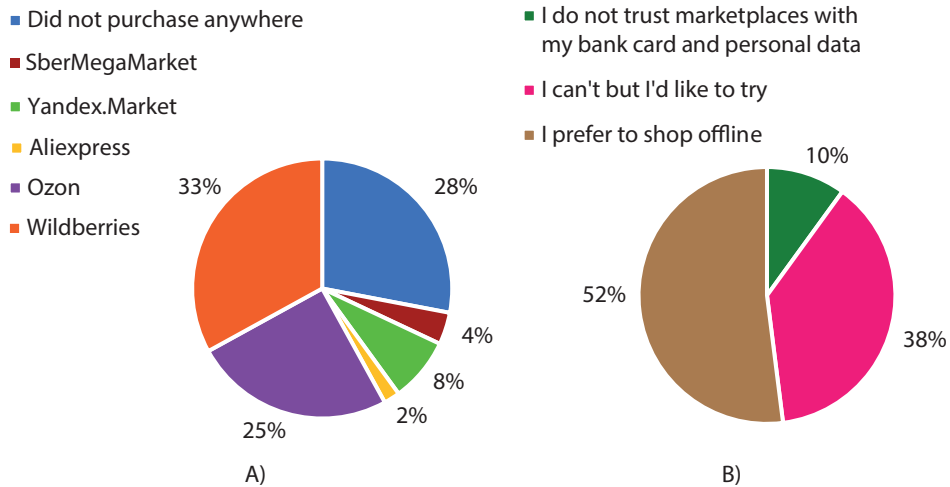


Figure 4. Usage of Marketplaces (A) and Reasons for Declining Purchases on Marketplaces (B): (N=383). *Source:* compiled by the authors

Table 3. Device Usage for Shopping on Marketplaces

Device used	Percentage of respondents (N=383)
Through the app, using a phone	80%
Through the website, using a computer	9%
Via the website, using a tablet	8%
Via the website, using a phone	3%

Source: compiled by the authors

Definition of Respondents' Attitude Towards Marketplace Mobile Applications

Respondents were asked to evaluate the convenience of the marketplace application they use on a scale from 1 to 5, where 1 signifies dissatisfaction, 2 is neutral, 3 is almost satisfied, 4 is satisfied, and 5 is absolutely satisfied (refer to Table 4).

Analyzing the results in Table 4 reveals that the majority of responses from surveyed mobile marketplace users fall within the range of «almost satisfied» to «neutral.» Shifting satisfaction towards higher levels, particularly «almost satisfied» and «satisfied,» aligns with studies on user satisfaction and interface convenience. Such an alignment may lead to increased behavioral loyalty, as evidenced by repeated and frequent purchases (Dawes 2022). Furthermore, there is potential for a future progression to higher levels of loyalty, including emotional loyalty (Amorim & Pratas 2022).

Table 4. Distribution of Answers on Satisfaction with Mobile Application Convenience (N=383)

Degree of satisfaction	Aliexpress	Ozon	Wildberries	SberMegaMarket	Yandex.Market
“absolutely satisfied”	0%	0%	0%	0%	0%
“satisfied”	0%	35%	12%	0%	17%
“almost satisfied”	33%	49%	66%	50%	33%
“neutral”	67%	16%	19%	50%	50%
“not satisfied”	0%	0%	0%	0%	0%

Source: compiled by the authors

Definition of the respondent's «advancedness»

To gauge respondents' inclination toward using technological assistants, questions were posed regarding their experience with Bot assistants and the utilization of voice assistants (e.g., Siri, Alice, or dictation typing). The responses revealed that only 6% of respondents use a voice assistant, and merely 10% have interacted with a Bot assistant. *Consequently, Hypothesis H3, suggesting that adding a voice assistant function minimizes keyboard use and enhances mobile interface usability, was not substantiated in this sample.*

Respondents' assessment of interface design

In the final set of questions accompanied by illustrations (see Figure 5 and Figure 6), all respondents were presented with two photos to ascertain the importance of identified aspects from user reviews for individuals in this age category.

Photo Preference (Figure 5): Respondents were asked to choose between two photos—one with labeled icons (photo 1) and another without labels (photo 2). The results indicated a clear preference, with 72% choosing photo 1 and only 28% opting for photo 2.

Icon Size Preference (Figure 6): Participants were then prompted to select the size of icons they found appealing. Notably, 25% favored «small icons» similar to those used in the Wildberries mobile application, while a significant portion (45%) opted for «medium icons.» Surprisingly, 30% favored «large icons» considerably larger than the standard Wildberries application icons.

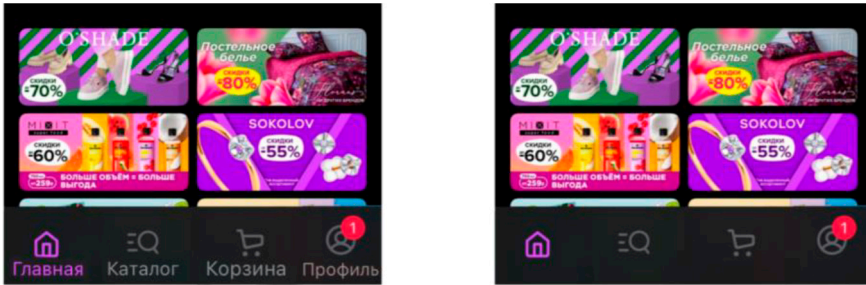
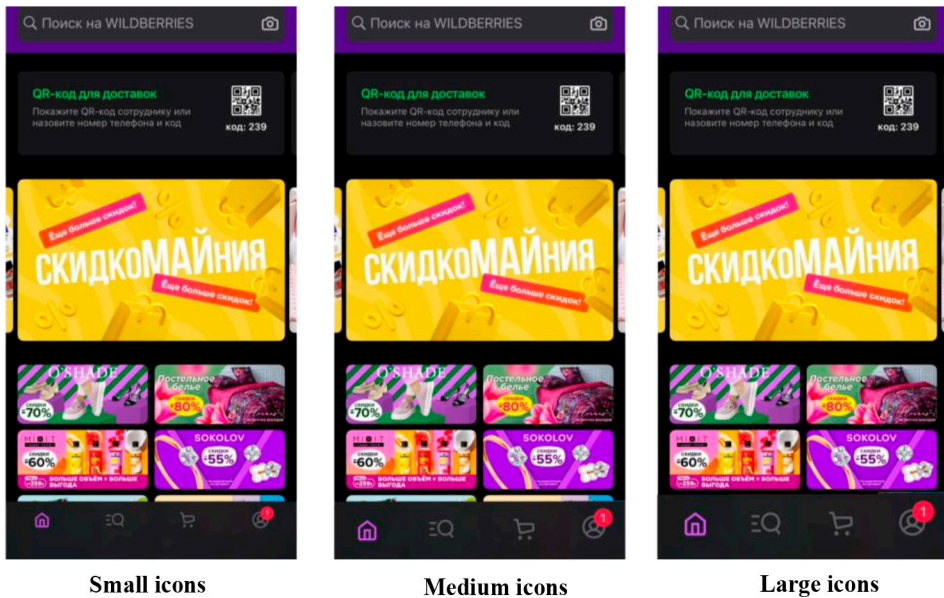


Figure 5.



Small icons

Medium icons

Large icons

Figure 6. Source: <https://www.wildberries.ru/>

The obtained results provide confirmation for *Hypothesis H1*, suggesting that increasing the size of fonts and icons enhances the usability of the mobile interface. Similarly, *Hypothesis H2*, proposing that labeling the main buttons' icons improves the usability of the mobile interface for older users, is also supported.

Final Hypothesis Testing Results (Table 5)

It's noteworthy that the type of interface may differ based on the application's compatibility with the Android or iOS operating system. For instance, on the iOS platform, this characteristic is applicable in the Ozon application, whereas it might not be the case for an Android-based application¹.

Based on the results of our research, we can formulate Key Recommendations for Adapting Mobile Interfaces for 50+ Users in Russian Marketplaces

1. Introduce the capability for users to personalize the application by adjusting font and icon sizes. Accompany this feature with an interactive instruction guide accessible to

¹ Appendix 5.

all users. Additionally, consider incorporating options to customize font style, color, and thickness, catering to diverse visual perception needs. A more flexible array of font settings enhances accessibility and convenience for all users.

2. Icon Labeling: ensure icons for main buttons are labeled throughout the entire application.¹

Table 5. Results of hypothesis testing in the study

№	Hypothesis	Conclusion
H1	Increasing the size of fonts and icons enhances the usability of the mobile interface	Hypothesis confirmed
H2	Labeling the main buttons' icons improves the usability of the mobile interface for older users	Hypothesis confirmed
H3	Adding a voice assistant function minimizes keyboard use and enhances mobile interface usability	The hypothesis was not confirmed due to respondents lacking sufficient experience of interacting with the technology of voice assistants

Source: compiled by the authors

These recommendations, as discussed with developers, are deemed feasible without requiring significant technological efforts. Implementing these enhancements is anticipated to extend user engagement, increase application visitation time, and boost order frequency among older consumers. The cumulative effect is expected to expand the customer base and drive additional revenue growth for marketplaces.

Conclusion

The research presented in this article sheds light on a critical aspect often overlooked by Russian marketplaces—the significance of user interface convenience, especially for the «silver» consumer demographic, comprising approximately one-third of the nation's population. This demographic represents a promising segment, particularly with the emergence of financially capable and tech-savvy individuals from the «baby boomers» generation.

The primary objectives of a marketplace's user interface are to facilitate easy navigation, selection, and purchase of goods or services. Surprisingly, enhancing the mobile application interface for the age-specific needs of Russian «silver» users demands minimal technological overhauls and financial investments. The study underscores the necessity for a relatively straightforward adaptation of the mobile interface, considering the age-related constraints of consumers aged 50 and above. This adaptation involves key measures such as labeling main button icons and allowing users to personalize the application through font and icon size adjustments. Crucially, this adaptation, when coupled with digital promotion strategies, holds the potential to significantly expand the customer base and foster behavioral loyalty in a relatively short period. The envisioned outcome includes heightened revenue growth for

¹ Note that it is necessary to test the user experience of other (especially marginal) categories of customers to make sure that adding labels will not worsen their usability.

marketplaces achieved through the increased engagement and loyalty of the «silver» consumer segment.

While the research presented in this article provides valuable insights, certain limitations should be acknowledged. The study's hypotheses were tested primarily on declarative data, relying on respondents' self-reported information. To enhance the robustness of future research, there is a need for behavioral testing involving diverse interface modifications. Each hypothesis was tested using a limited number of survey questions, which may have constrained the ability to comprehensively assess consumer characteristics related to the interface. Future research endeavors should involve the development of a more detailed questionnaire to capture a broader spectrum of user experiences. Another limitation is the study's sample composition, predominantly featuring women, deviates from the general population's gender composition on Russian marketplaces where male users typically predominate (except for Wildberries). It is essential to highlight that, during the qualitative research and questionnaire testing, respondents aged 50 + emphasized the significance of enhancing the convenience of the mobile application interface. They acknowledged that such improvements could potentially lead to more frequent orders on the marketplace. However, it remains crucial, in subsequent research phases, to investigate the direct impact of interface quality on the purchasing activity within this user category. Moreover, attention must be directed towards understanding how the proposed interface modifications will impact the convenience for those buyer segments that contribute the most substantial revenue to the marketplace. To enhance the internal and external validity of future empirical results, a refinement of the study's methodology and design is imperative. This will facilitate a more in-depth exploration and clarification of the information gathered by the authors regarding the imperative need and potential directions for enhancing the interface of mobile applications on Russian marketplaces, particularly with consideration for the unique characteristics of older consumers.

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Appendix 1

Analysis of reviews and the tasks of its implementation

In our effort to analyze mobile applications, we initially aimed to leverage available data from platforms like App Store, Google Play, and SimilarWeb. However, it became evident during the analysis that the data might not align with the specifics of our study. Consequently, we opted to focus on analyzing user reviews. Below, we elaborate on the reasons leading to this decision.

We initially considered the app's rating on both App Store and Google Play as a primary metric (Table A1). The ranking of an app in these stores is influenced by various factors, including the total number of installations, revenue generated, and the frequency of app

usage. Additionally, the application's rating and the quantity of user reviews contribute to its overall ranking.

It's crucial to note that an app's rating alone may not always provide a clear understanding of the challenges the application is encountering. Nevertheless, when considered alongside other metrics, the rating serves as a valuable indicator, offering insights into the broader landscape of user interest in the application.

Table A1. Ranking of apps in stores

	Google Play	AppStore
General level of installations	+	+
Revenue for payment applications	+	+
Opening the application	+	+
Application opening frequency	+	-
Number of reviews	+	+
Rating	+	+
Search Query Settings	+	+
Recent updates	-	+
Deleting an application	+	-

Table A2 provides insights into both the application usage rating and the store rating on the hosting platform. The usage rating is derived from the SimilarWeb algorithm, considering «Current installations» and «Active users» in the chosen country (Russia) within the category of «Free mobile shopping apps,» along with the rankings of leaders over the past 28 days. On the other hand, the store rating on the hosting platform is based on the app's position in the selected store (either Google Play or AppStore) within the same country and category.

Table A2. Application usage rating and application rating on the placement platform¹

Name of marketplace	Placement platform		
	Google Play		AppStore
	Usage Rating	Store rating	Store rating
Wildberries	2	1	1
Ozon	3	2	2
Aliexpress	4	6	4
Yandex.market	5	7	5
SberMegaMarket	31	4	9

Source: compiled by the author based on data from SimilarWeb (www.similarweb.com)

¹ Unfortunately, due to a lack of data and Apple's privacy policy, the "app usage rating" is only visible for Google Play-based apps.

Wildberries and Ozon claimed the top two spots in the rankings on both Google Play and the AppStore. However, when considering the subsequent distribution, the scenario becomes less straightforward. On the Google platform, the usage rating reveals that “Sber-MegaMarket” holds the 31st position, indicating a notable gap from other applications in this category. Despite this distance, the gap seems justified in the broader context.

Table A3 highlights an average Google Play score of 3.4 points for this application, indicating potential customer dissatisfaction and its impact on the store’s reputation and profits. Despite this, the app claims the fourth spot among top free shopping apps, with an 84.4% increase in downloads among Android users since February 2023 (Table A2). On the AppStore, the application enjoys a significantly higher average score of 4.8 points, possibly owing to a more user-friendly interface, faster performance, and fewer bugs. However, it’s crucial to acknowledge the differing app markets of the AppStore and Google Play, recognizing that success on one platform may not necessarily translate to the other. On the AppStore, the store holds the ninth position in the rating. (Table A2)

Table A3. Evaluation of mobile applications for the period January — March 2023

Device	Application Name	Placement platform			
		Google Play		AppStore	
		Number of ratings, thousand	Average rating	Number of ratings, thousand	Average rating
phones	Wildberries	3000	4.8	3110	4.9
	Ozon	1000	4.8	2 731	4.9
	Aliexpress	264	4.7	618	4.7
	Yandex.market	274	4.4	359	4.8
	Megamarket	16	3.4	264	4.8
tablet	Wildberries	43	4.8	3110	4.9
	Ozon	27	4.7	2 731	4.9
	Aliexpress	31	4	618	4.7
	Yandex.market	7	4	359	4.8
	Megamarket	233	3.4	264	4.8

Source: compiled by the author based on data from the Asomobile service (asomobile.net)

Yandex.Market and Aliexpress consistently alternate positions in the rating, maintaining their presence in the top ranks. Both apps prioritize enhancing user experience through the introduction of new features and streamlined interfaces. Yandex.Market, for instance, introduced a photo-based product selection feature, enabling users to find items easily through images. Aliexpress expanded payment options, now including cash payment upon order receipt, offering increased flexibility and convenience for shoppers.

As noted earlier, the “store rating” and “usage rating” are multifactorial metrics that don’t directly indicate mobile application interface quality. However, the combined analysis of these metrics can shed light on potential issues. Consequently, the examination of user reviews serves as a logical extension of the study.

User reviews

To gain deeper insights, we conducted a deductive analysis of user reviews. Initially, we examined all reviews of the application, and subsequently, we isolated those specifically addressing the user interface.

We analyzed a total of 39,846 reviews from Google Play and 6,029 reviews from the AppStore, covering the period from April to March 2023.

Tables A4 and A5 present the distribution of reviews, organized in ascending order of rating, ranging from negative (1 star) to positive (5 stars) for each of the leading marketplaces.

Table A4. Percentages of reviews from the Google Play platform for the period April — March 2023

Google Play	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
1 star	71,5%	42,7%	59,0%	17,0%	41,3%
2 stars	7,4%	8,4%	11,4%	3,8%	4,6%
3 stars	3,5%	8,0%	7,7%	4,2%	4,8%
4 stars	2,4%	7,6%	5,9%	6,7%	4,9%
5 stars	15,1%	33,2%	16,0%	68,2%	44,4%

Table A5. Percentages of reviews from the AppStore site for the period April — March 2023

App Store	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
1 star	77,0%	52,8%	70,1%	50,3%	69,9%
2 stars	9,4%	6,5%	10,1%	8,0%	5,9%
3 stars	5,4%	10,5%	7,8%	6,8%	6,3%
4 stars	3,1%	7,7%	6,6%	7,7%	4,4%
5 stars	5,1%	22,5%	5,5%	27,2%	13,5%

Data reveals that MegaMarket holds the highest percentage of negative reviews, accounting for 71.5% on Google Play and 77% on the AppStore.

However, the specific reasons for dissatisfaction are not provided by these figures. For instance, in the case of Wildberries, changes in order issuance policies and penalties during the study period led to a notable number of negative reviews.

Mini-survey

Most users provide feedback on marketplaces either due to dissatisfaction with the marketplace services (e.g., price increases, cancellation of free refunds) or issues when using the application (e.g., non-functional buttons, slow loading, redirects).

This can lead to a disruption in the associative series of user feedback, resulting in an inaccurate assessment of the application. Users often leave service-related comments in app reviews, causing a decline in the app's average rating. To address this, we concluded that it is essential to use keywords to distinguish between reviews of the application and reviews of the marketplace.

In this context, we conducted an online survey with 100 respondents, including two questions. The first question: "Have you ever left a review for a mobile application on either the

AppStore or Google Play platforms?” The second question: “Which of the following words, in your opinion, best describe a convenient or inconvenient mobile interface? If there is no suitable word in this list, enter it below.”

The obtained results are as follows: 32% of respondents left reviews for the application, while 68% did not. Regarding the second question:

- Icons
- Font
- Application
- Button
- Interface
- Pictures
- Design
- Tablet
- Filter
- Search
- Catalog

Respondents provided the words “Filter,” “Search,” and “Catalog,” while the rest were suggested options.

Thus, the analysis of reviews based on these keywords provided a comprehensive understanding of the reasons for user satisfaction/dissatisfaction with the MegaMarket, Aliexpress, Wildberries, Yandex.Market, and Ozon applications on both Google Play and the AppStore.

Appendix 2

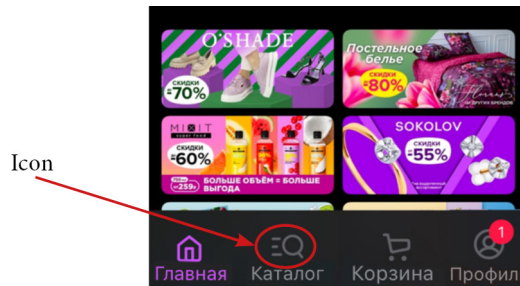


Figure 7.

Appendix 3

Results of the review analysis.

The data is collected and divided into two tables according to the placement platforms “App Store” (Table A5) and “Google Play” (Table A6).

Table A7 and Table A8 show the results of analyzing the app reviews by keywords. The reviews for each application were divided into two groups “total negative reviews” and “negative reviews about the interface” (negative reviews – all reviews with a rating of up to 3 stars inclusively).

Table A5. Data collected from the Google Play using the Asomobile service, period under review April — March 2023

Number of reviews collected from the Google Play platform					
Number of stars	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
1	2 017	906	5 809	1792	6 009
2	209	179	1 124	398	666
3	99	170	757	446	698
4	69	162	576	704	717
5	427	703	1 577	7 172	6 460
Total	2 821	2 120	9 843	10 512	14 550

Table A6. Data collected from the AppStore using the Asomobile service, period under review April — March 2023

Number of reviews collected from the AppStore					
Number of stars	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
1	1 036	317	522	386	1 799
2	126	39	75	61	152
3	73	63	58	52	163
4	42	46	49	59	112
5	68	135	41	209	346
Total	1 345	600	745	767	2 572

Table A7. Data collected from the Google Play using the Asomobile service, period under review April — March 2023

Number of reviews collected from the Google Play platform					
	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
Total negative reviews	2 325	1 255	7 690	2 636	7 373
Negative reviews about the interface	804	114	3 976	801	1580
Percentage of negative reviews about the interface	35%	12%	52%	31%	21%

Table A8. Data collected from the AppStore using the Asomobile service, the period under review April — March 2023

Number of reviews collected from the AppStore					
	Megamarket	Yandex Market	Aliexpress	Ozon	Wildberries
Total negative reviews	1 235	419	655	499	2 114
Negative reviews about the interface	332	103	350	41	403
Percentage of negative reviews about the interface	27%	25%	53%	8%	19%

Appendix 4

Table A9. Percentage of trigger point mentions in AppStore reviews

	Ozon	Wildberries
Overload of the main page	44%	56%
Accessibility of the main menu buttons	32%	40%
Ability to personalize the interface	25%	36%
Search engine optimization	22%	48%

Table A10. Percentage of trigger point mentions in Google Play reviews

	Ozon	Wildberries
Overload of the main page	49%	52%
Accessibility of the main menu buttons	44%	58%
Ability to personalize the interface	36%	45%
Search engine optimization	32%	43%

Reviews were divided according to keywords, for example, “pictures”; “catalog”; “design” were attributed to “overload of the main page”; in most reviews, users used several keywords at the same time, for this reason, percentages are used as metrics in these tables.

Appendix 5

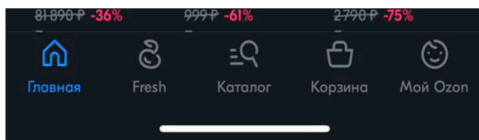


Figure 8. The Ozon app on an iOS mobile device

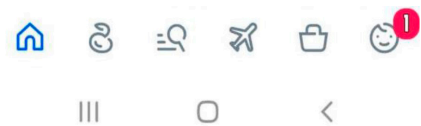


Figure 9. The Ozon app on an Android mobile device

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