

Empirical Paper

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The usefulness of mobile applications in shaping responsible consumption

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Abstract:

The main purpose of the article is to present a catalog of features of a useful mobile application in the context of responsible consumption. To recognize the usefulness of the application, examples of eco-applications were used, and representatives of the Z generation were asked about the features of the optimal application reasons for using them, and for whether they are worth recommending. The article uses the analysis of domestic and foreign literature, as well as the results of own research carried out in the first quarter of 2023, in which 747 respondents participated. The hypotheses confirmed that the most important feature of a useful application from a functionality perspective is the lack of fees for its use; from a technical solutions perspective, speed of operation, and from a security perspective, payment protection. The hypothesis that more promoters of pro-environmental mobile applications are in the group of women was also positively verified.

Keywords: generation Z, mobile application, responsible consumption, usability

JEL Classification: O33, Q01, Q5

1 Introduction

Utility is an important concept in economics because it explains the reasons for choosing a particular good, and the utility function allows us to examine the relationship between different goods [Krugman and Wells, 2012]. Mankiw and Taylor [2009] point to another regularity in consumer behavior, namely the desire to maximize utility, as opposed to managers whose goal is to maximize profit. Such consumers are users of mobile applications, because they use those that best meet their needs in terms of environmentally and socially sustainable behavior, and, it, consequently, leads to responsible consumption. Brodie et al. [2011] also wrote about the relationship between customer involvement in mobile applications, in terms of shopping and sustainable consumption.

The main objective of the study was to present a catalog of features of a useful mobile application in the context of responsible consumption and reasons for using it. The main reason for choosing such a research problem was the popularity of mobile applications among representatives of the Z generation. There is a need to promote sustainable attitudes with the use of this type of tool in the face of the progressive degradation of the natural environment. There are a few articles in the databases that directly deal with the usefulness of pro-environmental mobile applications in shaping responsible consumption, and, thus, an

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attempt was made to fill this research gap. The analysis used examples of mobile applications, identified with environmentally and socially sustainable behavior [Balińska et al., 2021]. The analysis of domestic and foreign literature, as well as the results of own research, were used. The research was carried out in the first quarter of 2023 and involved 747 respondents. The empirical material was subjected to qualitative and quantitative analysis, and the Net Advocacy Index (NPS) was used.

2 Responsible consumption and the usefulness of consumer goods – review of the literature

Nowadays, the world is facing various crises, e.g., in the natural and social environment. One of the reasons is overconsumption, which is recognized as an aspect of unsustainable development, and its self-regulation is crucial in solving these crises [Mancini et al., 2016]. Sustainable consumption and production are defined based on the proposed Sustainable Development Goals of “doing more and better with less,” including increasing net prosperity from economic activity by reducing resource consumption, degradation, and pollution throughout the life cycle, while increasing the quality of life [Datatopics.worldbank, 2017].

Sustainable consumption was defined at the Oslo Symposium [IISD, 1995]: “the use of services and related products that meet basic needs and provide a better quality of life, while minimizing the use of natural resources and toxic materials, as well as waste and pollution emissions throughout the life cycle of a service or product, so as not to jeopardize the needs of future generations.” Such consumption refers to patterns of behavior that are ingrained in society and supported or inhibited by the institutions, norms and infrastructure that shape people’s choices [Craig et al., 2019].

Out of the 17 sustainable development goals included in the 2030 Agenda, the 12th goal refers to sustainable consumption and production patterns. It is recognized that the cause of the global environmental crisis is people’s resource-intensive lifestyles. As one of the most important factors of poor health and environmental degradation in the world, the food system is indicated, wherein, for example, the food sector is responsible for about 30% of the total energy consumption in the world and about 22% of total greenhouse gas emissions [Lema-Blanco et al., 2023]. Therefore, the fight against the environmental and social problems faced by humanity requires, above all, a change in the consumption system and raising consumer awareness, because their purchasing decisions are not only one of the causes for these problems, but also a way to solve them [Palacios-González et al., 2020]. Hence, it becomes crucial to create more responsible demand and intensify environmentally friendly consumer behavior [Vlastelica et al., 2023].

Socially responsible consumption also includes the rejection of mass consumption practices [Palacios-González et al., 2020]. Sustainable consumption was aptly defined by Paliwoda-Matiolańska [2020], noting that it is an ideology and a form of social movement. Its task is to promote sustainable consumption, consumer rights, and obligations. Responsible consumers are primarily people who consider social and environmental aspects to be crucial in the process of making purchasing decisions that have a positive impact on the natural and social environment [Zbucha et al., 2021].

Consumer choices are described as a utility maximization process: decision makers assign a subjective value (utility) to each good, and choose the one with the highest utility. The relationship between consumed goods and achieved satisfaction is relatively well explained in the theory of utility.

Assumptions about economic utility lie at the heart of utilitarianism. The concept of utility was first introduced by Daniel Bernoulli in 1738, presenting the so-called Petersburg paradox. In turn, Jeremy Bentham is considered to be the creator of utilitarianism, along with the developed, so-called account of happiness [Balińska and Jaska, 2022]. The concept of utility in economics makes it possible to explain the reasons for choosing a particular good, and the utility function allows to examine the relationship between different goods [Krugman and Wells, 2012].

A utility good is undoubtedly a good of high quality (value), and its selection is subject to the rules and principles of the theory of rationality, although the practice of maximizing utility is not a feature of every consumer and occurs at different levels [Mankiw and Taylor, 2009; Nogal, 2014]. Such consumers are users

of mobile applications, because they use those that best meet their needs in terms of environmentally and socially sustainable behavior, which consequently leads to responsible consumption.

Purchase and consumption occur more or less simultaneously, but more often the purchase experience takes place before consumption. However, there are examples of consumption without a purchase, e.g., reading news on websites or listening to music on a streaming service. These examples illustrate how purchasing and consumption can be different behaviors—how one can occur without the other and how one can be preceded by the other. The useful features of mobile applications facilitate a high level of customer identification with the mobile application and the brand that makes it available [Calder and Malthouse, 2008; Wang et al., 2015]. This affects shopping behavior [Viswanathan et al., 2017] and, consequently, consumption.

3 Development of hypotheses

Mobile application usability is defined by the International Organization for Standardization (ISO) as “the degree to which a mobile application can be used by specified users to achieve specified goals, with effectiveness, efficiency, and satisfaction in a specified context of use” [Venkatesh and Ramesh, 2006, p. 183]. The authors decided to recognize the usefulness of mobile applications in three areas: functionality, technical solutions and security. This type of division has not been found in the literature, especially in relation to pro-environmental applications. The importance of functionality was discussed by, among others, Aggarwal et al. [2019], and the parameters of optimal pro-environmental applications were analyzed by Typhina [2015], who emphasized the importance of language and programmed functions. Using some applications involves paying fees, which makes the users dissatisfied [Lee and Cho, 2017; Kim and Lee, 2023]. The discussion in scientific publications became the basis for formulating the first hypothesis:

H1. The most important feature of a useful application from the perspective of its functionality is that it is free of charge.

Researchers list several features of useful applications in the area of technical solutions, including aesthetics, graphics, font, subtle animation, and transitions [Bhullar and Gill, 2019], although they do not link them to this category. In turn, Torres-Toukoumidis et al. [2022] draws attention to such components of mobile applications, as smart screens, cloud storage and portability, which facilitate access to information and communication, but combines these areas from a functionality perspective. Wajd and Aljedebi [2022] point to the interface, which, according to them, is one of the most critical elements, facilitating the interaction between users and the application. According to Nguyen’s study [2021], one of the greatest expectations of users for eco-friendly mobile applications is fast and uninterrupted performance. In this context, Kim et al. [2023] emphasize that the application should be easy to open, and subsequent steps in the application should be performed quickly. If transactions cannot be completed quickly and the application keeps crashing, it reduces customer satisfaction. The past considerations in this area led the authors to formulate another hypothesis:

H2. The most important feature of a useful application from the perspective of technical solutions is its speed.

When using mobile applications, users sense of security, in terms of protection of sensitive data and payments, is also important [Hu et al., 2014; Yoo and Kim, 2014; Preibusch et al., 2016; Zarifis and Fu, 2023; Zhu et al., 2023]. Kotsopoulos et al. [2022] also point out the need to ensure the security and protection of personal data in the context of environmentally friendly tourism applications.

Alzhrani et al. [2022], Abdullahi [2018], and Chimuco et al [2023] write about the security of using mobile applications as well, but most studies concern the security of software used to create applications. To ensure the protection of personal data, blockchain technology is becoming a key solution, with significant potential, in the opinion of many researchers [Ahmed et al., 2023; Raghunandan et al., 2023; Rathod et al., 2023]. In the next hypothesis, the authors assumed that

H3. The most important feature of a useful application from a security perspective is secure payment.

Individual dimensions of the application lose their attractiveness quite quickly, which makes it difficult to maintain user satisfaction at a high level [Alamer et al., 2023]. This problem, with emphasis on Generation Z, is also addressed by Cao et al. [2023]. Satisfaction and ease of use are attributes of useful applications identified by Johnson et al. [2022] in health education. However, there are no analyses of preferences in the groups of women and men. The authors, noticing the research gap, covered this area with their considerations and put forward the following hypothesis:

H4. There are more promoters of pro-environmental mobile applications in the group of women.

4 Methodology and organization of research

The main objective of the study was to present a catalog of features of a useful mobile application in the context of responsible consumption and the reasons for using it. The research used examples of mobile applications identified with environmentally and socially sustainable behavior, such as: Zdrowe zakupy, Too Good To Go, Gdzie wyrzucić, Vinted, Veturillo, Bla Bla Car, Foodsi, OLX, and Alegro lokalnie.

The following research questions were formulated:

- what are the features of a useful application from the perspective of its functionality?
- what are the characteristics of a useful application from the perspective of technical solutions?
- what are the features of a useful application from a security perspective?
- what are the reasons why respondents use the application?
- which applications are recommended by the respondents?

The article uses the analysis of domestic and foreign literature, as well as the results of own research questionnaire. A total of 747 respondents participated in the empirical study carried out in the first quarter of 2023. The collected data were subjected to qualitative and quantitative analysis. Among others, Net Advocacy Index (NPS) was applied. The NPS indicator is used to measure customer loyalty, and thus indirectly the level of satisfaction [Michalska-Dudek, 2015; Baquero, 2022]. Student's *t*-test, ANOVA, Mann–Whitney *Z* test were also used.

In the literature on the subject, there is no clear definition of the time frame for generation Z. Most often, those born after 1995 are indicated. This is the generation referred to as “C” – connected, i.e., connected to the network. They are a social group that was the first to grow up in the age of the Internet. Therefore, they have special skills to use the opportunities it brings. They easily search and disseminate information found on the Internet, and quickly make contacts and acquaintances on social media. Representatives of Generation Z consider themselves to be people with extremely divisible attention. The ability to quickly adapt to changes in applications and systems is also worth emphasizing. They value interactive games, joint projects, challenges, and everything in which they can be noticed and appreciated [Grzybowska-Brzezińska et al., 2022; Werenowska and Jaska, 2022]. They spend a significant amount of time on social networking sites and streaming platforms, looking for content that is engaging and funny for them [Wilusz, 2017].

5 Research results

5.1 Socio-demographic characteristics of respondents

About 62% of the research sample were women. The largest group declared the age of 20 years. The youngest are 14 years old, and the oldest, 27 years old. Almost 44% of respondents represented families of 4. One in three came from rural areas and cities over 500,000 residents. Almost 57% of the respondents

lived in single-family houses, 38% lived in blocks of flats, and the rest lived in dormitories. For 56% of the respondents, the main source of income was financial resources from the family, commissioned work (19%), and permanent employment (17%). More than half (53%) had an amount of up to PLN 1,500 a month, and 30% had the amount of PLN 1,500.00 - PLN 3,000.00. There were also respondents (16%) who indicated the amount above PLN 3,000.00. When completing the questionnaire, respondents mainly used mobile devices (71%). These were the mainly such operating systems: Android (36.5%), iPhone OS 1 (35%), and Windows 10 (24%).

Due to the assumption that the element connecting the respondents, apart from age, is socially and environmentally responsible behavior (a filtering question in the questionnaire), the respondents were asked, among others, about activities in the area of sustainable consumption (Table 1).

Activity in the field of sustainable consumption was mainly determined by economic factors, and the respondents first pointed to giving up driving in favor of public transport and using shared transport. An equally important activity was the donation of unused clothes. Such behavior was presented mainly by women, and residents of villages and cities with over 500,000 inhabitants, and respondents with a monthly income of up to PLN 1,500.00.

5.2 Features of a useful mobile application

The research that was conducted determined the features of a useful application from the perspective of its functionality, technical solutions and security.

Out of the 13 functionalities covered by the assessment, the respondents ranked the lack of fees for using the application the highest (4.61). Slightly below was the choice of the delivery method (4.52). They also pointed to filters, enabling positioning of the offer (4.34), compatibility with various systems (4.33), ease of setting up an account (4.32), precise information about the offer (4.3), and intuitiveness (4.3). (Figure 1)

Verification with the Student's *t*-test showed that the following functional features of the application are significantly more important for women than for men: current update ($t = 2.038$, $p = 0.0419$), ability to

Table 1. Sustainable consumption activities undertaken regularly and the socio-demographic characteristics of the respondents [%]

	A	B	C	D	E	F	G	H	I	J
Total	57.3	9.77	13.79	9.91	35.34	49.67	27.74	4.02	57.30	40.43
Sex*										
Woman	63.72	54.79	63.11	56.76	56.23	62.28	77.56	56.67	69.23	59.93
Man	33.72	41.10	33.98	37.48	41.51	29.57	19.51	36.67	28.67	38.41
Place of residence										
Village	35.35	31.51	31.07	20.27	31.07	32.26	30.73	23.33	32.63	33.11
City <50,000	19.07	23.29	22.33	25.68	25.28	22.31	22.44	16.67	24.24	22.85
City of 50,000–500,000	8.60	10.96	14.56	9.46	10.57	8.33	10.24	13.33	10.49	7.95
City >500,000	36.98	34.25	32.04	44.59	32.45	37.10	36.59	46.67	32.63	36.09
Monthly income										
<1,500 PLN	52.56	43.84	52.43	44.59	51.70	56.45	49.76	43.33	52.45	51.32
1,500–3,000 PLN	31.40	26.03	24.27	29.73	26.79	30.11	31.22	23.33	31.93	31.46
>3,000 PLN	16.05	30.14	23.30	25.68	21.51	13.34	19.02	33.33	15.62	17.22

*Population of women and men does not add up to 100% because respondents could not indicate their gender.

A – resignation from driving a car in favor of public transport; B – use of ecological/biodegradable washing and cleaning agents; C – buying clothes and textiles with an ecological certificate; D – buying FAIRE TRADE food; E – cycling; F – use of shared transport; G – reduction of meat consumption; H – donation and/or collection of items from food sharing units; I – donating unused clothes; J – buying products from domestic manufacturers.

Source: own study results.

choose the method of delivery ($t = 4.902, p = 0.0001$), ability to add recommendations ($t = 2.657, p = 0.0080$), ease of creating an account ($t = 3.831, p = 0.0001$), ability to use location ($t = 2.741, p = 0.0063$), private chat option ($t = 2.9109, p = 0.0037$), product notifications ($t = 4.04084, p = 0.00006$), precise information about the offer ($t = 2.3996, p = 0.0167$), and number of language versions ($t = 2.834, p = 0.0047$). The feature “precise information about the offer” was significantly more important for respondents living in single-family houses, than those living in apartment blocks ($t = 1.9822, p = 0.048$). In turn, verification with the ANOVA test showed that only in the case of the “free application” feature was there a statistically significant difference, depending on the number of people in the family ($F = 3.5146, p = 0.0303$). Sources of income were a differentiating variable for two features, including “number of language versions” ($F = 5.803, p = 0.0006$) and “filters enabling the positioning of the offer” ($F = 5.6502, p = 0.0008$). However, the monthly amount of money available was a differentiating variable in the case of the feature “number of language versions” ($F = 9.4941, p = 0.0001$).

In the catalog of 11 features of a useful application from the point of view of technical solutions, speed of operation was rated the highest (4.61). Low advertising intensity (4.48) and transparency (4.46) also turned out to be important. Aesthetics (4.11) and the ability to use without logging in (4.11) were rated in the same way. Similar research results were presented in other studies [Hoehle and Venkatesh, 2015; Hoehle et al., 2016]. The detailed distribution of responses is presented in Figure 2.

Verification with the Student's t -test showed that the following technical features of the application are significantly more important for women than for men: ability to use the application without logging in ($t = 2.3929, p = 0.01698$), uniform color palette ($t = 2.5593, p = 0.0107$), font size adjustment ($t = 4.14271, p = 0.00004$), facilities for people with disabilities ($t = 5.1895, p = 0.00001$) and ability to link to a social media profile ($t = 3.6357, p = 0.0003$). “the ability to use the application without logging in” was significantly more important for respondents living in single-family houses, than for respondents living in apartment blocks ($t = 2.4775, p = 0.0135$). However, after verification with the ANOVA test, it was found that there were statistically significant differences, depending on the monthly amount of money available, in the case of such features as: low advertising intensity ($F = 4.3226, p = 0.0136$), transparency ($F = 5.6843, p = 0.0036$), ability to use the application without logging in ($F = 3.1709, p = 0.0426$), and facilities for people with disabilities ($F = 3.758, p = 0.0326$).

As can be seen from the data presented in Figure 3, out of the seven features of the application from the security perspective, two had the most indications: secure payment (4.73) and personal data protection (4.69). Equally important for the respondents were: ease of removing applications and personal data from the system (4.44), anti-virus protection (4.38) and information on not sharing data with third parties (4.37).

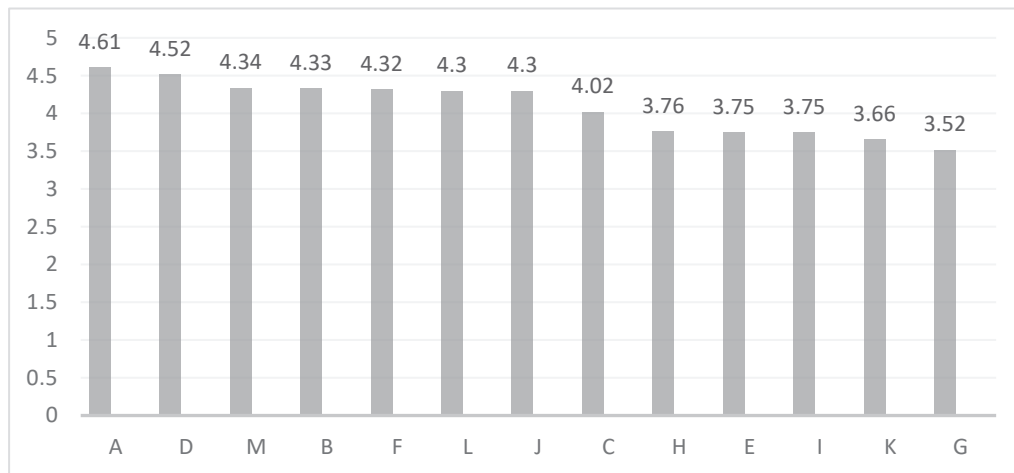


Figure 1. Features of a useful application – functionality perspective. A – free application, D – choice of delivery method, M – filters for positioning the offer, B – compatibility with various systems, F – ease of setting up an account, L – intuitiveness, J – precise information about the offer, C – current update, H – private chat option, E – option to add recommendations, I – product notifications, K – number of language versions, and G – the ability to use location.

Source: own study results.

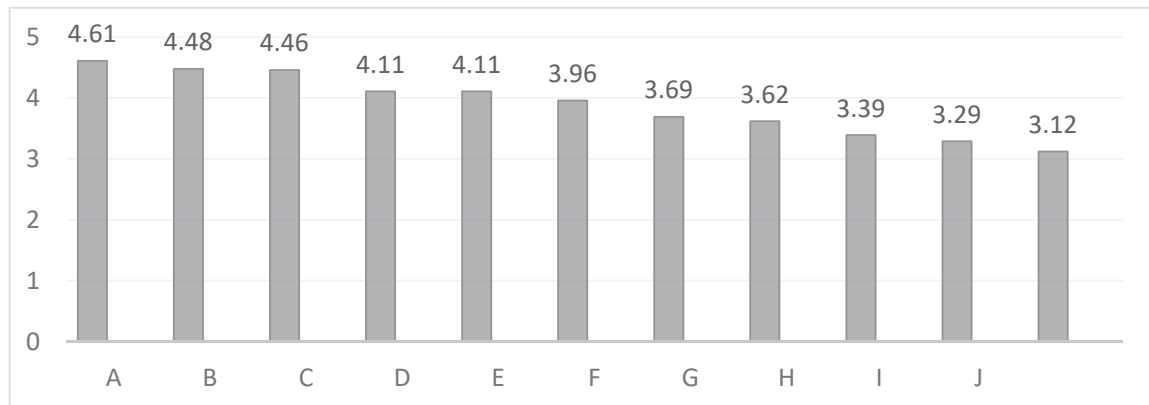


Figure 2. Features of a useful application – technical perspective *Source:* own research results. A – application speed, B – low ad intensity, C – transparency, D – aesthetics, E – ability to use without logging in, F – one-handed navigation, G – facilitation for people with disabilities, H – small number of tabs, I – uniform color palette, J – ability to link to a profile in social media, K – font size adjustment.

Source: own study results.

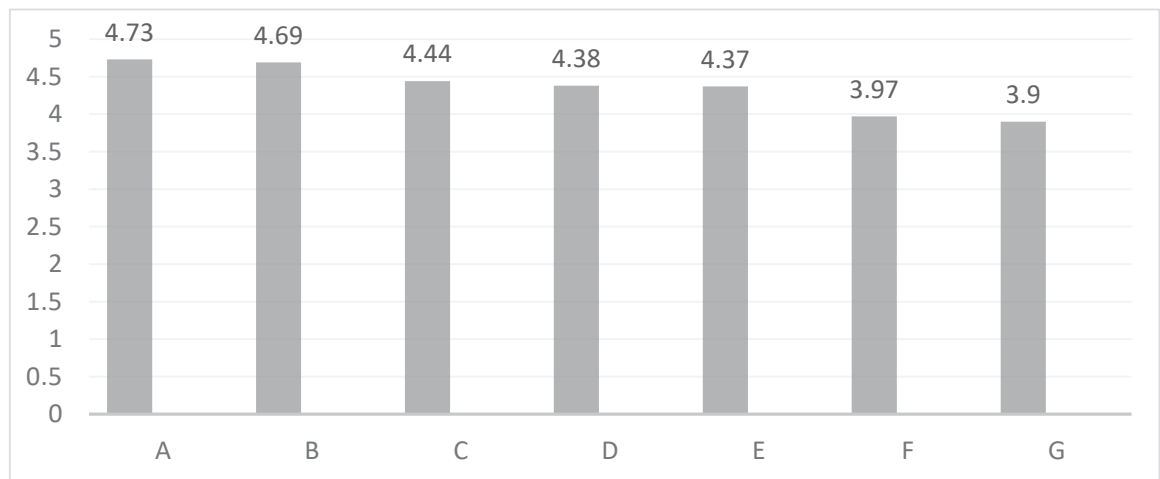


Figure 3. Features of a useful application - security perspective.

Source: own study results. A – safe payment, B – protection of personal data, C – ease of removing applications and personal data from the system, D – antivirus protection, E – information on not sharing data with third parties, F – limiting user rights to the minimum necessary and G – receiving confirmation of opting out of the application.

Verification with the Student's *t*-test showed that the following features of the application are significantly more important for women compared to men: limiting user rights to the minimum necessary ($t = 3.3986$, $p = 0.0007$), receiving confirmation of resignation from the application ($t = 3.3917$, $p = 0.0007$) and antivirus protection ($t = 2.3293$, $p = 0.021$). The monthly amount of money available was a differentiating variable in relation to the feature “antivirus protection” (ANOVA test $F = 5.321$, $p = 0.0051$) and “secure payment” (ANOVA test $F = 3.441$, $p = 0.0326$).

5.3 Reasons for using the app and advocacy rate

The usability of mobile applications is an important determinant of their choice and the way they are used. Of all the reasons mentioned, the most important is the one conditioned by economic factors, such as allowing to limit and streamline purchasing decisions. Generation Z representatives do not equate using the application with prestige and recognition of their friends. Applications are also not a source of new information; only the Zdrowe zakupy application was rated at 4.04. Only two of the analyzed apps, Too Good To Go (4.33) and Foodsi (4.31), are seen as a sign of environmental and social responsibility.

In the case of the Vinted, Veturilo, OLX and Allegro Lokalnie applications, there was a statistically significant difference between women and men in indicating environmental and social responsibility. Verification with the Mann–Whitney Z test showed that this is a significantly more important reason for women than for men (for Vinted $p = 0.0001$, for Veturilo $p = 0.0039$, for OLX $p = 0.0001$, for Allegro Lokalnie $p = 0.0432$). It was also found that the feature “improves purchasing decision-making” is significantly more important for women than for men in the case of the Vinted application ($p = 0.050$). The reason for providing new information was more important for women than for men in the case of the OLX ($p = 0.0369$) and Allegro Lokalnie ($p = 0.0259$) applications.

Haas et al. [2022], however, indicate the high potential of the application in terms of raising awareness, knowledge and changing behavior. Respondents using each application were asked how likely they were to recommend it to their friends or family. Previous research experience [Balińska et al., 2021] indicates that the variable differentiating the assessment of the application is primarily gender. Therefore, an analysis of the NPS values was carried out according to the gender of the respondents. The detailed distribution of responses is presented in Table 2.

Table 2. NPS value for individual applications in total and in the group of women and men

Applications	Categories of respondents by NPS (%)			NPS
	Critics	Neutral	Promoters	
Zdrowe zakupy	16.67	43.75	39.58	22.91
Women	11.76	41.18	47.04	35.28
Men	25.00	58.33	16.67	−8.33
Too Good To Go	9.89	31.32	58.79	48.90
Women	11.19	29.85	58.96	47.77
Men	2.22	35.56	62.22	60.00
Gdzie wyrzucić	46.67	26.67	26.67	−20.00
Women	22.22	33.33	44.44	22.22
Men	83.33	16.67	0.00	−83.33
Vinted	15.87	41.53	42.59	26.72
Women	12.41	43.45	44.14	31.73
Men	17.38	35.71	36.90	19.52
Veturilo	16.89	35.81	47.30	30.41
Women	16.33	34.69	48.98	32.65
Men	18.37	38.78	42.86	24.49
Bla Bla Car	16.67	37.18	46.15	29.49
Women	13.64	38.64	47.73	34.09
Men	20.59	35.29	44.12	23.53
Foodsy	4.17	29.17	66.67	62.50
Women	3.23	22.58	74.19	70.96
Men	5.88	41.18	52.94	47.06
OLX	22.71	48.96	28.33	5.63
Women	22.37	47.70	29.93	7.56
Men	22.16	53.29	24.55	2.39
Allegro Lokalnie	20.11	40.21	39.68	19.58
Women	19.15	35.11	45.74	26.59
Men	21.11	46.67	32.22	11.11

Source: own study results.

A very good level of the indicator was recorded in the case of the Foodsi application (NPS = 62.50%). There were definitely more promoters in the case of this application in the group of women and few critics. In the group of men, 41.18% represented neutral attitudes and, therefore, the NPS index was 47.06. The inappropriate level of advocacy was recorded for the “Gdzie wyrzucić” app at –20.00%, and for the group of men –83.33%. The variable differentiating the NPS value was also the frequency of using the application declared by the respondents, and the “Gdzie wyrzucić” application was the least recognizable, which is probably due to the fact that the rules of waste segregation presented in the application apply primarily to the Capital City of Warsaw. Sorting rules in other cities may be slightly different, and different applications and respondents represented different cities. The advocacy rate for almost all applications was higher in the group of women. Only in the case of the Too Good To Go application, it was higher in the group of men and amounted to NPS = 60%, which is a very good level. This may be due to the fact that men more often resign from preparing meals at home in favor of buying them.

6 Summary and discussion

Mobile applications are primarily condensed packets of information. We receive them in the form of a ready and constantly updated product, usually available in an aesthetic and useful form. They also represent a new way of communicating with customers and are perceived as an innovative advertising channel.

The attributes of useful applications were considered from the perspective of functionality, technical solutions and security. In the area of functionality, the problem of assessing the usability of mobile applications has been addressed, among others, by Marzuki et al., [2016], and it was noted that ease of use and perceived usefulness significantly influenced users’ intentions to accept the application. Cata and Martz [2015] identified areas of statistically significant differences in key features of mobile applications between their designers and users. Designers see “ease of access” and “ease of use” as the most important features of a mobile application. Researchers rightly note that mobile applications can achieve commercial success if they are created with the needs of users in mind. In turn, the research of Orehovački et al., [2023], shows that in the context of mobile banking applications used in Croatia, feedback quality and responsiveness contribute to ease of use. Usability is determined by both ease of use, and speed of response and data security.

So far, a larger number of researchers have focused their analyses on technical solutions. Shareef and Khan [2019] pointed out, among others, such attributes as small screen size, different display resolution, method of entering information, and navigation. In turn, Botilias et al. [2022], analyzing the usability of tourism applications, noted that they should work on various mobile platforms. Otherwise, some operator users will not be able to use the application. Additionally, according to Salido et al. [2023], it is important to constantly update and support the technical infrastructure.

The need to develop and implement more secure communication and more useful methods of authenticating users of mobile applications in ensuring security is emphasized, among others, by Papaioannou et al. [2023], and Yin and Cui [2023].

In the authors’ opinion, the presented analyses justify the conclusion that speed, ease of use and security of personal data are predictors of customer satisfaction, which in turn influences their behavioral intentions.

The hypotheses confirmed that the most important feature of a useful application from a functionality perspective is the lack of fees for its use, from a technical solutions perspective, speed of operation, and from a security perspective, payment protection. The hypothesis that more promoters of pro-environmental mobile applications are in the group of women was also positively verified.

The results of the study can serve as a starting point for researchers and practitioners who are working on consumer-centric applications to promote sustainable consumption. They can also be an inspiration to create campaigns to raise awareness in groups of those not convinced about sustainable consumer behavior. The hypotheses confirmed that the most important feature of a useful application from a functionality perspective is the lack of fees for its use, from a technical solutions perspective, speed of operation; and

from a security perspective, payment protection. The hypothesis that more promoters of pro-environmental mobile applications are in the group of women was also positively verified.

It is worth mentioning the gap in the research on the subject. There are a few articles in the databases that directly deal with the usefulness of mobile applications in shaping responsible consumption. In the ProQuest database on November 11, 2023, among the articles reviewed under the heading “Mobile applications shaping responsible consumption” for the last 5 years, only 366 items in this field were generated in English. Therefore, it is reasonable to continue the undertaken research among representatives of other generations. An interesting direction would also be to extend the research to application users from other EU countries.

It should be noted that the study was exploratory in nature and needs to be deepened. Its results are a valuable source of information for application developers, whose target groups are representatives of the Z generation.

The authors are aware of the limitations of the present study. One of the most important is that it was limited only to Polish users of mobile applications and generation Z. The research should be continued in the coming years and take into account changes in the use of the application and include new ones from the analyzed area.

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