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The influence of sociodemographic factors on the attitudes and expectations of the younger generation towards modern finance

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Abstract

The objective of the article is to evaluate the impact of sociodemographic factors on the attitudes and expectations of the younger generation in the field of modern personal financial management. The study analysed the functionality of the applications used by, and the expectations of, students at the Poznań University of Economics and Business regarding modern finance. The research consisted of two stages: a phase involving monthly tests of the selected application, followed by opinion gathering in the form of an online survey. The results of the questionnaire show that financial applications offered by third parties enjoy significant popularity. According to the respondents, applications support the process of personal finance management and are most often used to accumulate savings and monitor finances on an ongoing basis.

Keywords: modern financial technologies, personal finance, Personal Finance Management, FinTech

JEL: D12, G41, G53, O33

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1 Introduction

An overview of Millennials characterises Generation Y (aged 23–38) and Generation Z (aged 7–22) (Dimock 2019) as highly active market participants, eager to open their first bank account, make frequent payments by card and numerous transactions using mobile devices. Despite Generation Y's and Z's optimistic nature with regards to their capabilities and contentment, they struggle with managing their assets, first debts, as well as making the first important decisions on savings and financial management in a situation of job loss and crisis related to the SARS-CoV-2 pandemic. Based on secondary data, one might state that almost one third of Generation Y use mobile banking and applications for routine transactions (e.g. payments, transfers, saving) (Tan, Lau 2016; Salesforce 2017; Kozhevnikov, Slupko, Sergeev 2019).

The growing popularity of mobile applications throughout the young generation forces the banking sector to look at the market more broadly and to cooperate with the FinTech industry. In order to be able to compete with external entities for the user of their applications, banks must implement more advanced personalisation strategies to facilitate more targeted marketing and product development using artificial intelligence (Nicoll 2019).

The effectiveness of using artificial intelligence (Belanche, Casaló, Flavián 2018) in various aspects of the economy has been a topic of discussion for many years now. The speed with which users implement and adapt new technological solutions depends on the level of sophistication offered by financial services in a given country. Each financial institution struggles with data overload and the problem of processing and selecting the most relevant data. Thanks to technology, robotisation and artificial intelligence, it is becoming possible to personalise customer service and switch to remote service channels. The application of modern financial solutions not only serves to minimise the costs associated with employment, but also to target action on the complex problems faced by customers. Robotics and artificial intelligence (Xie 2019) both significantly influence the financial industry, as the technology used there is a key element in the strategy of banks and emerging financial entities (Baker, Dellaert 2018; Jung et al. 2018). Replacing traditional consultancy services with innovations, especially at the beginning, is not met with much enthusiasm, mainly due to the novelty factor, competition, fear and lack of knowledge (Belanche at al. 2019).

Improvements in the management of home finances can be made using appropriate tools. The desire to use modern solutions is associated with the need to choose the right software, purchase a license, or install applications on a mobile device. The form of using personal finance management (PFM) tools depends on the consumer's preferences and/or the form that they are made available to the users by the provider. A combination of advances in technology, new uses of data, and changes in customer preferences and expectations is likely to create lasting structural changes in financial services (Xiao, Tao 2020) such as credit, digital payments, savings, investments and PFM, and distributed ledger technology (Marder 2016).

The key impetus behind the development of solutions based on traditional banking services is the PSD2 directive. Opening up financial institutions to third parties may provide a basis for building new solutions and business strategies, mainly in order to offer clients innovative solutions (EU directive 2015/2366).[1] Implementation of the PSD2 (Payment Services Directive 2) directive enables financial

[1] EP and Council of the EU (2015), Directive EU 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU).

data to be imported and exported from clients' accounts at various banks and to register financial transactions, as well as to group, aggregate and visualise financial events (Gafrikova, Szczesny, Odrzygóźdź 2015).

Bearing in mind the growing importance of modern financial technologies and entrenched social isolation, entailing the need to remotely manage the home budget during the SARS-CoV-2 pandemic, the study undertook an analysis of the functionality, attitudes and expectations of Generation Y and Z regarding the use of financial applications. The objective of the article is to evaluate the impact of sociodemographic factors on the attitudes and expectations of the younger generation in the field of modern personal financial management. The first phase involved students installing the financial application, then using it for one month. The selection of the application was preceded by a lecture on modern financial solutions. In the second phase, a CAWI survey was conducted. The entire study covered the period from 28 April to 19 May 2020. The architecture of the research covered the following areas: (a) the name of the application used, (b) its method of use, (c) the level of complexity of the software installation process, (d) the evaluation of the application's transparency, (e) the intuitiveness of the application, (f) the application's functionality, (g) whether it meets financial needs, (h) the technical and substantive faults of the application, (i) the degree of satisfaction with the application and recommendations, (j) the advantages and disadvantages of the application, (k) the use of PFM in the times of SARS-CoV-2.

2 Theoretical and research frameworks

Digital technologies are increasingly integrated in the economy and making a significant impact in the financial industry by introducing new products, services and providers. Digitalisation is affecting individuals and businesses globally, with mobile money services now available in 64% of developing countries (GSMA 2019), and their spread is likely to increase hand in hand with the growing penetration rate of mobile connections. These changes increase the demand for financial education, financial consumer protection and financial inclusion policies (OECD 2018).

Customer self-services enables a new service model to be created that bases its assumptions on the equal involvement of investors and bidders in the financial management process and can influence the establishment of long-term relationships between the parties involved (Djelassi, Diallo, Zielke 2018). Most financial institutions do not take advantage of the potential of customer self-service because they base their assumptions on an incomplete business model in the area of remote service. Remote financial management support services are focused on the speed of response to reported needs, reducing service time, as well as on convenience for customers and lowered costs for the service provider (Boon-itt 2015). Innovation in finance may go hand in hand with consumer discomfort arising from lack of control over modern tools, uncertainty of their knowledge and skills, lack of confidence in technology and a sense of technological overwhelm (Parasuraman 2000).

The Basel Committee on Banking Supervision categorised innovation in technology (Thakor 2019). The development of the FinTech industry (Table 1) affects the four major areas of financial services: credit and savings, payment and settlement, investment, and insurance, which are all components of the financial planning process (Waliszewski 2014).

The PFM application market is divided into applications offered by financial institutions from the banking sector and applications offered by external entities (non-banking, community). Mobile applications on the global markets that help to manage personal finances are especially aimed at the young generation that is entering adulthood. They are characterised by a modern approach in terms of graphics, functionality and availability for smartphones of different generations. It should be noted that developers of available applications on the market compete with each other in terms of usefulness of their programmes and their functionality. They are undoubtedly connected by a practical dimension, which in the case of the subject of finance is extremely important. The presented applications should be evaluated positively in terms of their subject matter, general availability and, in most of them, free access. The financial sector is facing the changes that result from technological developments (Omarini 2018). The implementation of advanced IT systems, business events and data collection and processing is an opportunity for the banking industry to improve profitability and customer relations.

Cooperation on the use of PFM from the worlds of business and science is also essential, as demonstrated by the research already carried out in this area (Table 2). Research activities have been intensifying since 2012, both in the field of cognitive consumer behaviour and the tools used to support the process of personal finance management.

The literature on the subject defines the criteria for assessing the quality of financial applications (mobile and websites). The most important areas include: functionality, reliability and usability. Functionality is understood as the availability of a function that can be measured by means of defined requirements, the capability to interact with other systems, the maintenance of security standards and accuracy of results achieved. Reliability is the capability of a website or application to operate efficiently under certain conditions. Among others, this is characterised by tolerance of errors, the site's ability to return to normal operation, and the frequency of failures. Usability, on the other hand, is understood as the accuracy of the user interface construction, which is based on efficiency, satisfaction, rememberability, resistance to errors and speed of learning (Nielsen 2012).

In the literature, sociodemographic factors (Table 3) are considered from a financial literary perspective, and financial behaviour is part of this concept (Grigion Potrish, Mendes Vieira, Kirch 2015; Ali et al. 2016; Binoy, Subhashree 2020).

The presented relationships of factors to financial knowledge refer to the results of research originating in the period from 1998–2013. The research paper by Grigion Potrich (2015) synthesizes an overview of the research in the analyzed period. In studies on the influence of factors on behaviour, researchers most often consider the following variables, among others: gender, age, marital status, having dependent family members, occupation, education level, parents' education level, income.

3 Materials and methods

The study group consisted of N = 205 students of Poznań University of Economics and Business. 69.76% of the study group were women, and the respondents were generally 20 (43.41%) or 21 (33.17%) years of age. The students most often came from four-person households (37.07%), and in terms of their place of residence, people from rural areas prevailed (41.95%). Most were enrolled as day students (81.46%) and the majority were in their first year of university (56.59%).

The work presents the attitudes of students towards financial applications, pointing out their needs and the practicality of using the application – especially during the period of social isolation and remote work due to COVID-19 – in connection with their sociodemographic features.

In order to assess the relationship between sociodemographic factors and the attitudes and expectations of the younger generation towards modern financial applications, a study was conducted consisting of two parts:

1. The first was related to students' installation of the financial application, and then its active use for 1 month to manage their finances.

2. Subsequently, the respondents used an online questionnaire tool, accessed via the Google platform, to answer questions about the usability of the application they chose. The selection of the application for analysis was preceded by a lecture on modern financial solutions. The survey was conducted among students of Poznań University of Economics and Business using the CAWI method. The study was conducted in the period from 28 April to 19 May 2020.

The following research hypotheses were formulated, which will undergo further verification on the basis of the empirical materials collected:

H1: Gender had an impact on the evaluation of the personal finance management application, i.e. women rated the application more highly than men.

H2: The application was evaluated more favourably by weekend students, whereas day students noticed more available functions.

H3: First year students gave the PFM application a higher rating than second year students.

H4: If the application satisfied more requirements, the assessment was higher mainly in terms of willingness to use and effectiveness in financial management.

H5: The higher the respondents' age, the lower the evaluation of the application's transparency, people living in larger towns or cities rated the quantity of the application's functions higher, but gave a worse assessment for its organisation and their willingness to use it, respondents from larger households tended to evaluate the application's legibility and organisation more favourably as well as their own willingness to use it and recommend it to their friends.

H6: The impact of the COVID-19 pandemic on student finances had no correlation to the evaluation of financial management applications.

The following methods were used to verify the statistical hypotheses: U Mann-Whitney tests, Spearman's rho correlation analysis and Kruskal-Wallis tests.

4 Results

Within the scope of the study, the first step was to verify whether sociodemographic factors influenced the assessment of satisfaction with using applications supporting personal finance management. Mann-Whitney U tests were used to compare the rating scales with gender.

By analysing the Mann-Whitney U test results, it was demonstrated that gender, in the study group, had a statistically significant impact on the evaluation of the application, satisfaction with its use and willingness to recommend it to other people. The female respondents assessed the clarity and legibility of the application, their own willingness to use it and recommend it to friends higher than male students. The evaluation of transparency was the aspect most differentiated by gender.

Similarly, analyses of U Mann-Whitney threw light on whether and how the mode of study differentiated satisfaction with using the financial management application.

The next series of Mann-Whitney test analyses revealed that the mode of study correlated to the assessment of the number of available functions in the application $Z = 2.92$; $p < 0.01$; $r = 0.20$, ease of installation $Z = 3.23$; $p < 0.01$; $r = 0.23$, application legibility $Z = 2.13$; $p < 0.05$; $r = 0.15$, willingness to use it $Z = 2.51$; $p < 0.05$; $r = 0.18$, application intuitiveness $Z = 2.25$; $p < 0.05$; $r = 0.16$, satisfaction $Z = 2.73$; $p < 0.01$; $r = 0.19$, willingness to recommend to friends $Z = 2.58$; $p < 0.05$; $r = 0.18$ and application efficiency $Z = 3.23$; $p < 0.01$; $r = 0.23$. Weekend students gave the application a higher assessment, but day students noticed a greater number of available functions. The U Mann-Whitney tests results were also used to compare the application's evaluation according to year of study.

The next series of analyses using the Mann-Whitney U tests showed that the year of study correlated with the evaluation of the number of functions available in the application $Z = 2.03$; $p < 0.05$; $r = 0.14$, transparency $Z = 2.95$; $p < 0.01$; $r = 0.21$, legibility $Z = 2.18$; $p < 0.05$; $r = 0.15$, willingness to use it $Z = 2.93$; $p < 0.01$; $r = 0.20$, application intuitiveness $Z = 3.01$; $p < 0.01$; $r = 0.21$, satisfaction $Z = 2.28$; $p < 0.05$; $r = 0.16$ and willingness to recommend to friends $Z = 1.90$; $p = 0.058$; $r = 0.13$ (borderline statistically significant). First-year students rated the application better.

Then, it was examined whether the age, place of residence and number of people in the household were related to the evaluation of the financial management application. For this purpose, a series of Spearman's rho correlation analyses were performed.

Analyses of Spearman's rho correlation demonstrated that the students' evaluation of the application's transparency $\rho = -0.16$; $p < 0.05$ and its intuitiveness $\rho = -0.19$; $p < 0.01$ was inversely proportional to age. People living in larger towns or cities gave the number of application functions a higher assessment $\rho = 0.18$; $p < 0.05$, but a lower evaluation for its organisation $\rho = -0.20$; $p < 0.02$ and their willingness to use it $\rho = -0.16$; $p < 0.05$. It was also shown that the higher the number of people in the household, the better the respondents assessed the legibility of the application $\rho = 0.16$; $p < 0.05$, its organisation $\rho = 0.18$; $p < 0.01$, their willingness to use it $\rho = 0.16$; $p < 0.05$ and willingness to recommend it to friends $\rho = 0.16$; $p < 0.05$. Furthermore, a series of Spearman's rho correlation analyses investigated the relationship between the use of the financial management application and level of satisfaction with that use.

The Spearman's rho correlation analyses indicated that people who performed more operations with the application gave a higher evaluation for its transparency $\rho = 0.14$; $p < 0.05$, willingness to use it $\rho = 0.21$; $p < 0\ .01$, satisfaction $\rho = 0.17$; $p < 0.05$, willingness to recommend it to friends $\rho = 0.15$; $p < 0.05$ and financial management efficiency $\rho = 0.18$; $p < 0.05$.

Correlation studies also showed that if the application satisfied more requirements, it received a higher assessment mainly in terms of willingness to use it $\rho = 0.24$; $p < 0.01$ and financial management efficiency $\rho = 0.22$; $p < 0.01$. It was also demonstrated that people who saw more benefits from using the application gave a better evaluation for their willingness to use it $\rho = 0.21$; $p < 0.01$ and general level of satisfaction $\rho = 0.16$; $p < 0.05$. It was also verified if and how the impact of the COVID-19 pandemic on the students' finances was related to their evaluation of the financial management application. For this purpose, a series of analyses were performed based on Kruskal-Wallis tests.

The results of the Kruskal-Wallis test analyses proved to be statistically insignificant $p > 0.05$, which means that the impact of the COVID-19 pandemic on student finances was not related to their evaluation of the personal finance management application.

5 Conclusion

The period of the pandemic highlighted the relevance of remote management of personal finances. The potential of applications that support the financial management process is also appreciated by the younger generation. There is a growing significance of using financial applications for personal finance management. The popularity of PFM applications is mainly affected by the speed of transactions, registration of financial transactions, their categorisation, aggregation, and the visualisation of financial events. In addition, a two-track financial management approach is observed through mobile applications and websites due to the incompatibility of open operating systems. An empirical study conducted among students of Poznań University of Economics and Business showed that a relationship does exist between socio-geographic features and the assessment of a personal finance management application. This study also confirmed that the impact of the COVID-19 pandemic made no statistically significant impact on how the personal finance management application was evaluated. All the research hypotheses were positively verified. It was shown that gender in the study group had a significant impact on the evaluation of the application, satisfaction with its use and willingness to recommend it to others. Women more often than men rated higher the clarity and readability of the application. Weekend students gave higher ratings to the app, while full-time students pointed out the greater number of available features. First-year students rated the apps better in terms of intuitiveness, satisfaction with use, and willingness to recommend to friends. Fulfilment of more requirements by the apps increased the respondents' rating on willingness to use and effectiveness in managing finances. Students' ratings of the apps' clarity and intuitiveness were inversely proportional to age. Those living in larger towns rated the number of app functions higher, but their organization lower. Moreover, the higher the number of people in the household, the better the respondents rated the app's readability, its organization, their willingness to use it, and willingness to recommend it to friends. The pandemic situation did not affect the rating of personal finance management apps.

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Appendix

Table 1
FinTech services by sector

	Credit, deposit, capital-raising services	Payments, clearing and settlement services		Investment management services	Insurance
	Crowdfunding	Retail	Wholesale	High--frequency trading	Link do mobile devices
	Lending marketplaces	Mobile wallets	B2B point of sale	Copy trading	Big data
	Mobile banks	Peer-to-peer transfers	FX wholesale	E-trading	Improved risk pricing
	Credit scoring	Digital currencies	Digital exchange platforms	Robo-advice	New contracts
Market support services	Portal and data aggregators				
	Ecosystems (infrastructure, open source, APIs)				
	Data applications (big data analysis, machine learning, predictive modelling)				
	Distributed ledger technology (blockchain, smart contracts)				
	Security (customer identification and authentication)				
	Cloud computing				
	Internet of things / mobile technology				
	Artificial intelligence (bots, automation in finance, algorithms)				

Source: Thakor (2019, p. 3).

Table 2
Selected research on PFM in Poland and worldwide

Year	Author of the study/ report	Subject of the study	Main conclusions of the study
2009	Philip, James, Joorgen; Cisco Internet Business Solution Group (IBSG)	Financial priorities for banking services and preferred forms of customer contact with the bank	Financially active consumers and those using PFM applications rarely migrate from bank to bank. They have higher bank account balances and use a wider range of products and services
2012	NBP survey report	Functions for PFM applications	The biggest advantage of Internet services that make it easier to run a household budget is their independence from banks. The user can link several bank accounts to one service. The transparency of the operation and functionality of the application (at the time of the 2012 research) was questionable if only smartphone applications were used
2012	Employee Benefit Research Institute and Mathew Greenwald &Associates, Inc. Retirement	How do consumers manage their finances online? (convenience analysis)	Only a small proportion of consumers of working age and post-working age have a positive view of the use of Internet technologies to manage their finances. Among active website users: 4 out of 10 employees and 1/3 of retired people declared that they feel very good about keeping accounts through online calculators. Less interest is observed in the area of online specialist advice
2012	Musiał; University of Szczecin	To what extent do Polish households use basic personal finance management tools? (creating a household budget)	Polish households use personal finance management tools to a small extent. However, the most popular tool is the household budget prepared in the traditional form (card and paper). A relationship between the use of personal finance management tools and education was indicated (the percentage of people using these tools increases with the level of education)

Table 2, cont'd

Year	Author of the study/ report	Subject of the study	Main conclusions of the study
2013	Javelin Strategy & Research	Research on consumer expectations of PFM	56% of respondents declared that they would be willing to use PFM tools in their basic account. The use of remote tools will have an impact on the constant supervision of the budget, allow for forecasting and planning. American consumers declared that they would like to be able to aggregate all financial data in one application. Banks should focus their attention on personalization of advice and alerts
2013	Barembruch; University of Gdansk	Differences between classic and modern personal finance management tools. Disadvantages and advantages of PFM	The competitive advantage of banks which already implement PFM systems in Poland as part of online banking may be undermined when the services offered within a given bank will only concern products offered within that bank
2015	Gafrikova, Szczesny, Odrzygóźdź	Analysis of selected PFM applications on the Polish and foreign markets (evaluation of reliability and functionality)	Several factors that may contribute to the development of PFM applications are identified: the economic performance of companies offering PFM tools, the financial behaviour of consumers and the approach to financial planning
2016	Heikel-Elsabeh, Nouet, Nayaradou	Use and application of PFM applications for personal and corporate finance management	The use of PFM applications depends on the purpose and application of the tools. Consumers who use mobile solutions more intensively prefer to use applications offered by external entities instead of banking applications. Users emphasise the complexity of non-banking tools
2016	GfK Polonia for ING	Financial habits of Poles. The role of personal finances in comparison with other important areas of life	Poles are open to new solutions if they have a tool to help with specific financial goals (e.g. saving). They point to the great usefulness of statements of expenditure for a given month. The respondents treat the fact of analysing expenses as an unpleasant obligation

Table 2, cont'd

Year	Author of the study/ report	Subject of the study	Main conclusions of the study
2016	Świecka, Musiał; University of Szczecin	Enhancing financial literacy – experiment results in three topics: basic interest compounding, inflation and risk diversification	Statistical analysis of the obtained results allowed us to demonstrate that undergoing a course in finance raises the subjective assessment of the level of financial literacy and objective assessment of investment attitudes. Unfortunately, it failed to demonstrate that undergoing a course in finance raises the objective assessment of financial literacy
2017	Chamber of Electronic Economy/Mobile Institute	Pole's wallet: analysis of expenditure and payment methods	Use of banking services was declared by 80% of Internet users, of which 28% use a classic bank account management channel, 36% choose an Internet service, and 36% choose the bank's mobile service. Polish consumers presents themselves as pragmatic financial market participants open to innovation
2017–2018	Samsel; University of Szczecin	Personal finance planning. Information obtained from households	Households do not run a household budget for the most part (they do not manage their income in a planned manner). Households (head of household) have declared that they have their budget under control and do not have to plan regularly. Moreover, according to the respondents, managing the budget takes time – this is a disincentive
2018	Aite Group	Construction/ reconstruction of personal finance management. Tasks for banks	About 75% of respondents aged 22–49 indicate that they are interested in using a virtual financial coach. An opportunity for banks is to use artificial intelligence to provide tools to support the financial management process. Banks should strive to implement an interactive tool that will help consumers take control of their financial condition

Table 2, cont'd

Year	Author of the study/ report	Subject of the study	Main conclusions of the study
2020	Świecka; University of Szczecin	Survey on financial knowledge, financial skills, financial attitudes, financial behaviour, and financial information obtained by youth (data from 2017)	The results of the study showed a good, and partly very good, level of financial knowledge of young Polish students. This result explains the rationality of students in their financial decisions. However, as noted through the literature above, this cannot be seen in isolation as knowledge is only one of the components required to ensure their future financial livelihood and economic growth

Source: own elaboration based on: Farah, Macaulay, Ericsson (2010); Uryniuk (2012); RCS (2012); Musiał (2015), aleBank.pl (2013), Barembruch (2013); Gafrikova, Szczesny, Odrzygóźdź (2015); Haikel-Elsabeh, Nouet (2016); My ING Survey (2016); Świecka, Musiał (2016); eIzby Report (2017); Samsel (2019); Albertazzi (2018); Świecka (2020).

Table 3
Synthesis of the relationship between socioeconomic and demographic variables and financial literacy

Variables	**Relation with financial literacy**
Gender	– women generally have lower financial literacy levels than men – women are less likely to answer the questions correctly and more likely to say they do not know the answer – men's financial literacy is increasingly faster than that of women – making a comparison between women, those married and having higher incomes show higher financial literacy levels
Age	– the average age from 30 to 40 years is associated with higher financial literacy levels – financial literacy is low among young and elderly individuals – young adults have used loans with high costs
Marital status	– singles are significantly more prone to have lower financial literacy levels than married individuals
Having dependent family members	– individuals who have a child are less likely to have low financial literacy – levels than those who have two or three children – families with dependent members are more likely to contract loans with higher costs
Occupation	– individuals with longer work experience have higher financial literacy because of greater familiarity with economic and financial subjects, while unskilled or unemployed workers show less desirable attitudes and behaviour
Educational level	– those with higher educational levels are those with higher financial literacy levels – the number of courses related to the financial field attended during undergraduate education is related to the financial literacy level – those with lower education are less likely to answer the questions correctly and more prone to say they do not know the answer
Parental educational level	– parents influence their children's literacy – individuals' financial literacy is uniformly related to parental educational levels – parents play a major role by influencing their children's consumer behaviour – individuals learn more about money management with their parents
Income	– low income levels are associated with low financial literacy levels

Source: own elaboration based on Grigion Potrich et al. (2015, p. 5).

Table 4
Breakdown of the study group

		N	%			N	%
Sex	Women	143	69.76	Age	18–19	24	11.71
	Men	62	30.24		20	89	43.41
Number of people in the household	One	16	7.80		21	68	33.17
	Two	24	11.71		22	18	8.78
	Three	45	21.95		23	3	1.46
	Four	76	37.07		24	3	1.46
	Five or more	44	21.46	Place of residence	Village	86	41.95
Form of study	Day	167	81.46		Town up to 50,000	38	18.54
	Weekend	38	18.54		Town from 50,000 to 150,000	23	11.22
Year of study	I	116	56.59		City from 150,000 to 500,000	22	10.73
	II	89	43.41		City above 500,000	36	17.56

N – quantity, % – percentage.

Table 5
Results of the analyses based on Mann-Whitney U tests to compare the application's rating in terms of gender

	Women		**Men**		**Z**	**p**	**r**
	M	**SD**	**M**	**SD**			
Operations performed in the application	2.50	0.78	2.40	0.90	0.80	0.423	0.06
Amount of functions available in the application	3.69	1.52	4.15	1.70	1.84	0.065	0.13
Number of requirements met by the application	2.77	0.84	2.55	1.05	1.63	0.103	0.11
Number of benefits offered by the application	3.27	1.28	3.25	1.42	0.46	0.644	0.03
The application is easy to install	3.55	0.58	3.35	0.60	**2.22**	**0.026**	**0.15**
The application is transparent	3.92	0.84	3.47	0.94	**3.24**	**0.001**	**0.23**
The application is legible	4.01	0.89	3.61	1.00	**2.78**	**0.005**	**0.19**
The application is well-organised	4.17	0.78	3.82	0.82	**2.93**	**0.003**	**0.20**
The application is attractive to use	3.84	1.03	3.44	1.07	**2.58**	**0.010**	**0.18**
The application is intuitive	4.06	0.73	3.74	0.85	**2.78**	**0.005**	**0.19**
Satisfaction with the application	7.37	1.59	6.63	1.87	**2.56**	0.010	0.18
Willingness to recommend the application	6.82	2.14	5.84	2.23	**2.84**	**0.005**	**0.20**
Effectiveness of the application for financial management	3.58	0.98	3.35	0.99	1.52	0.129	0.11

M – mean, SD – standard deviation, Z – Mann-Whitney U test result, p – level of statistical significance, r – strength of relationship.

Table 6
Results of Mann-Whitney U test analyses to compare the application's evaluation according to mode of study

	Day studies		Weekend studies		Z	p	r
	M	SD	M	SD			
Operations performed in the application	2.51	0.81	2.29	0.84	1.56	0.119	0.11
Amount of functions available in the application	3.97	1.58	3.18	1.45	**2.92**	**0.004**	**0.20**
Number of requirements met by the application	2.76	0.94	2.45	0.76	1.95	0.052	0.14
Number of benefits offered by the application	3.33	1.36	2.97	1.08	1.38	0.167	0.10
The application is easy to install	3.44	0.57	3.71	0.65	**3.23**	**0.001**	**0.23**
The application is transparent	3.74	0.90	3.97	0.85	1.50	0.134	0.10
The application is legible	3.83	0.96	4.18	0.80	**2.13**	**0.034**	**0.15**
The application is well-organised	4.03	0.82	4.24	0.75	1.35	0.177	0.09
The application is attractive to use	3.63	1.07	4.11	0.89	**2.51**	**0.012**	**0.18**
The application is intuitive	3.91	0.79	4.18	0.69	**2.25**	**0.025**	**0.16**
Satisfaction with the application	6.99	1.74	7.84	1.39	**2.73**	**0.006**	**0.19**
Willingness to recommend the application	6.33	2.26	7.39	1.75	**2.58**	**0.010**	**0.18**
Effectiveness of the application for financial management	3.40	1.01	4.00	0.70	**3.23**	**0.001**	**0.23**

M – mean, SD – standard deviation, Z – Mann-Whitney U test result, p – level of statistical significance, r – strength of relationship.

Table 7
Results of the Mann-Whitney U test analyses to compare the application's evaluation according to year of study

	I year		II year		Z	p	r
	M	**SD**	**M**	**SD**			
Operations performed in the application	2.41	0.87	2.54	0.74	1.19	0.236	0.08
Amount of functions available in the application	3.65	1.62	4.06	1.53	**2.03**	**0.043**	**0.14**
Number of requirements met by the application	2.64	0.89	2.79	0.94	1.10	0.271	0.08
Number of benefits offered by the application	3.23	1.43	3.30	1.16	0.77	0.440	0.05
The application is easy to install	3.51	0.60	3.46	0.58	0.68	0.495	0.05
The application is transparent	3.96	0.83	3.56	0.93	**2.95**	**0.003**	**0.21**
The application is legible	4.01	0.95	3.74	0.92	**2.18**	**0.029**	**0.15**
The application is well-organised	4.10	0.87	4.02	0.72	1.12	0.263	0.08
The application is attractive to use	3.90	1.02	3.48	1.06	**2.93**	**0.003**	**0.20**
The application is intuitive	4.09	0.71	3.79	0.83	**3.01**	**0.003**	**0.21**
Satisfaction with the application	7.38	1.68	6.84	1.71	**2.28**	**0.023**	**0.16**
Willingness to recommend the application	6.79	2.21	6.18	2.17	1.90	0.058	0.13
Effectiveness of the application for financial management	3.58	1.04	3.42	0.91	1.38	0.167	0.10

M – mean, SD – standard deviation, Z – Mann-Whitney U test result, p – level of statistical significance, r – strength of relationship.

Table 8
Results of the Spearman's rho correlation analyses for the relationship between age, place of residence and the number of people in the household with the evaluation of the financial management application

	Age	**Place of residence**	**Number of people in the household**
Operations performed in the application	-0.06	-0.03	-0.04
Amount of functions available in the application	0.01	**0.18***	-0.03
Number of requirements met by the application	-0.03	0.01	-0.03
Number of benefits offered by the application	-0.11	0.06	0.01
The application is easy to install	0.06	-0.05	0.03
The application is transparent	-0.16*	-0.10	0.13
The application is legible	-0.05	-0.13	**0.16***
The application is well-organised	-0.05	**-0.20****	**0.18****
The application is attractive to use	-0.13	**-0.16***	**0.16***
The application is intuitive	**-0.19****	-0.11	0.12
Satisfaction with the application	-0.14	-0.08	0.13
Willingness to recommend the application	-0.10	-0.13	**0.17***
Effectiveness of the application for financial management	-0.11	0.00	0.05

*$p < 0.05$; **$p < 0.01$.

Table 9
Results of the Spearman's rho correlation analyses for the relationship between the use of the application for financial management and its evaluation

	Operations performed in the application	**Amount of functions available in the application**	**Number of requirements met by the application**	**Number of benefits offered by the application**
The application is easy to install	0.00	-0.01	0.08	0.09
The application is transparent	**0.14***	0.01	**0.20****	0.09
The application is legible	0.13	-0.01	0.07	0.01
The application is well-organised	0.13	0.01	**0.19****	0.05
The application is attractive to use	**0.21****	-0.05	**0.24****	**0.21****
The application is intuitive	0.05	0.02	**0.18****	0.05
Satisfaction with the application	**0.17***	-0.04	**0.21****	**0.16***
Willingness to recommend the application	**0.15***	-0.11	**0.15***	0.12
Effectiveness of the application for financial management	**0.18***	-0.11	**0.22****	0.09

*$p < 0.05$; **$p < 0.01$.

Table 10
Results of analyses with the Kruskal-Wallis tests to compare the evaluation of the application in terms of the impact of COVID-19 on student finances

	No influence		Less expenditure, more savings		Less income		Increased expenditure		χ^2	df	p
	M	SD	M	SD	M	SD	M	SD			
Operations performed in the application	2.52	0.89	2.44	0.81	2.51	0.85	2.55	0.52	0.35	3	0.951
Amount of functions available in the application	3.70	1.32	3.89	1.63	3.72	1.70	3.73	1.35	0.51	3	0.918
Number of requirements met by the application	2.65	0.80	2.69	0.90	2.79	1.00	2.73	1.10	0.45	3	0.929
Number of benefits offered by the application	3.26	1.43	3.24	1.29	3.36	1.50	3.18	0.75	0.65	3	0.886
The application is easy to install	3.41	0.69	3.52	0.56	3.46	0.60	3.45	0.69	0.50	3	0.918
The application is transparent	3.85	0.66	3.72	0.94	3.97	0.87	3.73	0.90	2.93	3	0.402
The application is legible	3.81	1.08	3.82	0.93	4.18	0.85	3.91	0.94	4.67	3	0.198
The application is well--organised	4.07	1.00	4.01	0.75	4.33	0.77	3.82	0.98	6.57	3	0.087
The application is attractive to use	3.85	1.13	3.66	1.04	3.79	1.10	3.73	0.79	1.33	3	0.721
The application is intuitive	4.15	0.82	3.88	0.79	4.03	0.74	4.27	0.47	6.61	3	0.086
Satisfaction with the application	7.63	1.47	6.95	1.79	7.41	1.55	7.27	1.62	4.55	3	0.208
Willingness to recommend the application	7.26	1.85	6.37	2.30	6.56	2.19	6.40	1.78	3.41	3	0.332
Effectiveness of the application for financial management	3.93	0.92	3.44	0.98	3.51	0.97	3.27	1.10	6.45	3	0.092

M – mean, SD – standard deviation, χ^2 – Kruskal- Wallis statistic, df – number of degrees of freedom, p – level of statistical significance.