

## **HOW IS CONSUMER BEHAVIOUR IN ELECTRONIC BANKING AFFECTED BY THE RISE OF DIGITAL BANKING IN A POST PANDEMIC WORLD?**

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### **Abstract**

The selection of banking institutions is influenced by various factors, including geographic location, security measures, and the availability of digital banking services. In addition, demographic characteristics such as gender and age may also shape consumer preferences. The onset of the COVID-19 pandemic has significantly accelerated the digital transformation within the banking sector, potentially altering the criteria by which customers evaluate and choose their banks. To investigate these dynamics, a questionnaire was administered to a sample of 283 individuals, with the collected data analysed using Pearson's correlation test. The findings indicate a decline in in-person visits to bank branches following the outbreak of the pandemic, accompanied by an increased reliance on online banking platforms. While no significant correlations were identified between gender and the choice of bank based on location, age-related differences in decision-making behaviour were observed. Furthermore, although gender did not appear to substantially influence overall bank selection, younger respondents tended to exhibit a more critical stance in their evaluations. Key factors associated with more favourable perceptions of banks included robust security features, ease of access, and high-quality customer service. These insights may prove valuable for Romanian banking institutions as they seek to enhance their service offerings, attract a broader customer base, and improve overall client satisfaction.

### **Keywords**

digital banking; Covid19 pandemic; electronic banking; consumer behaviour; SPSS method.

### **JEL Classification**

G21, G28, O33, I18, E44, J16, J10, D91

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## **Introduction**

The COVID-19 pandemic has had a profound impact on many aspects of life. It has led to significant psychological effects on individuals (Arden and Chilcot 2020; Dhar et al. 2020), transformed educational approaches to embrace blended or distance learning (Adedoyin and Soykan 2020; Zhou and Zhang 2021) and even changed research methodologies (Korbel and Stegle 2020). In response to the crisis, digital technologies have been widely used worldwide for public health purposes (Grover et al. 2020). The impact of the pandemic has also been observed in areas such as energy consumption (Aruga et al. 2020) and consumer purchasing habits (Eger et al. 2021; Safara 2020). The global economy has also felt spillover effects (El Keshky et al. 2020), with the banking sector being no exception (Berger and Demirgüç-Kunt 2021). As a result, there has been a rapid acceleration of their digital transformation, introducing new e-banking options. These innovations are significant from a customer perspective, but the question arises - do these new possibilities influence how customers select banks?

Moreover, as the banking sector has experienced accelerated digitisation, with a growing inclination towards e-banking worldwide, the shift to digital platforms has introduced a new paradigm in banking, transforming conventional banking methods and fundamentally changing the interaction between the consumer and the bank.

The pandemic has forced banks to accelerate their digital transformation plans to ensure the continuity of their services and meet the changing needs of their customers. E-banking has become increasingly important in the current scenario as social distancing and lock-in measures have made physical banking transactions a challenge.

Thus, the study aims to examine the link between the accelerated digitization of the banking sector and the COVID-19 pandemic from the perspective of e-banking consumers. The study aims to identify the impact of the pandemic on e-banking and how digitisation has transformed the banking sector. In addition, the study is particularly interested in how e-banking consumers have adapted to the changing banking environment.

Bank selection methods and considerations have been evaluated in bank marketing studies, but such research is relatively scarce (Gerrard and Cunningham 2001; Szili et al. 2022). Only a few authors have examined the banking sector in different regions, discussing bank selection criteria (Bhatti et al. 2010; Gerrard and Cunningham 2001; Heijes 2008; Tu and Hung 2009), banking reform (Bartlett 2019; Méré and Piroška 2016), and foreign bank ownership dynamics (Majnoni and Shankar 2003). These studies have highlighted the importance of understanding customer preferences and the need for strategic management and policy reforms in the banking sector. However, there seems to be a lack of studies exploring the selection criteria of banks in Romania. Consequently, the aim of this research is to deepen the factors influencing bank choice in the Romanian context.

This research is differentiated by an in-depth analysis of consumer behaviour and preferences in the banking sector, especially in the context of the COVID-19 pandemic. While previous studies have independently examined different aspects of banking preferences, digitalisation and crisis management, this study uniquely integrates these elements. Thus, it provides a comprehensive understanding of the factors shaping consumer choices in the post-pandemic era.

Therefore, the main innovation of this paper is that it makes a new contribution to the understanding of digital banking in Romania, especially in the context of the pandemic. It provides valuable insights for Romanian banks, policymakers and researchers interested in the Romanian banking sector, digitalisation and consumer behaviour.

Also, the study analyses the impact of the COVID-19 pandemic on digital banking, a current and relevant topic. The pre- and post-COVID comparison provides original insights into how a global crisis can accelerate digital transformation in the banking sector. Another novel contribution is that the focus on the consumer perspective provides a unique viewpoint. While other studies might focus on the impact of digitisation from the perspective of banks or regulators, this study prioritises the end-user. This approach highlights how consumer demographics and internet access influence the use of e-banking services.

In addition, the study uses demographic data by gender, age, residence and education, which allows for a new and interesting approach. It uncovers trends and patterns that other studies might miss and provides a more detailed understanding of consumer behaviour. However, the study examines how bank characteristics influence e-banking usage. This new approach can provide banks with insights on how to improve their digital services to better meet customer needs. Also, the use of a questionnaire technique allows the collection of primary data and provides direct feedback from consumers. This method provides a high level of originality and relevance to the study.

This paper is organized as follows. Section 2 presents the actual stage of the knowledge in the field and the research hypotheses; Section 3 describes the data and methodology; Section 4 and Section 5 refer to results and discussions; and Section 6 presents the conclusions, recommendations and limitations of the paper.

## **1. Review of the scientific literature**

### ***1.1. Impact of COVID-19 pandemic on Banking***

The literature provides a multi-faceted view of the impact of the COVID-19 pandemic, highlighting the role of digital transformation, the societal implications of the crisis and the responses of the banking sector. However, specific perspectives vary depending on the geographical context, the sector and the specific issue addressed. This provides a rich resource for understanding the changes underway in society and the economy in response to the pandemic.

Given the unprecedented global health crisis of the 21st century, the COVID-19 pandemic, the global economy has witnessed a significant and rapid transition to a digital future. Among the various sectors, banking has experienced accelerated digitisation, with an increased inclination towards electronic banking (e-banking) worldwide.

The implications of the pandemic have induced a dramatic shift in consumer behaviour and expectations, pushing financial institutions to rethink and restructure their operating models. Restrictions on physical interaction and travel, coupled with the need to continue to provide essential financial services, have created an environment conducive to the rapid proliferation of electronic banking.

Some strands in the literature highlight the impact of the COVID-19 pandemic on the banking sector and the varied strategies banks have adopted in response. Thus, Baicu et

al. (2020) and Barua and Barua (2021) provide a more focused perspective on banking practices during the pandemic. Baicu et al. (2020) highlight the role of ethical considerations in banking practices, while Barua and Barua (2021) explore the specific implications of the pandemic for banks. However, both studies highlight the need for banks to adapt their operations in response to the crisis.

On a more macro scale, Ashraf (2020) and Baker et al. (2020) examine the broader financial environment during the pandemic. Their findings provide valuable context for understanding the pressures facing banks and the need to change banking practices. Also, Bensley et al. (2020) and Dahl et al. (2020) provide practical insights into how banks can reshape their customer experiences and learn from the experiences of banks in different regions. These studies highlight the need for banks to innovate and adapt their practices to meet changing customer needs and expectations.

Similarly, Wu and Olson (2020) and Mersha and Worku (2020) examine the influence of the pandemic on the banking sector in general, with Wu and Olson focusing on the risk management aspect. Mathew et al. (2017) and Sudarsono et al. (2020) focus on the role of the pandemic in accelerating the adoption of technology-based banking in India and internet banking in Indonesia, respectively. These studies suggest that COVID-19 has accelerated digital transformation in the banking sector.

Additionally, recent studies such as those by Nozimov (2023) and Le and Tran (2024) analyse the specific impact of digital transformation on post-pandemic consumer behaviour and banking practices. They highlight how the rapid adoption of digital technologies has reshaped customer expectations and operational strategies in the banking sector. This is echoed by Lyu et al. (2023), who examine the recovery path of the consumer sector, finding a persistent shift towards digital and online services. However, Modgil et al. (2022) examine how COVID-19 accelerated opportunities for digital entrepreneurship in India, demonstrating that the pandemic necessitated a rapid shift to digital platforms that similarly affected the banking sector. Consumers have increasingly adopted electronic banking solutions, reflecting a wider trend towards digitization in various industries.

Furthermore, Benavides (2024) explores trends in e-commerce and internet usage during and after the pandemic, noting that the shift to online platforms for shopping and other services has paralleled the increase in the use of e-banking services. Consumers have become accustomed to online transactions, increasing the adoption of digital banking as part of their daily routine.

Nevertheless, Pomffyová and Veselovská (2023) highlight changes in consumer purchasing behaviour due to COVID-19, especially in smart regions. These behavioural changes are also evident in banking, where consumers have turned to digital banking solutions seeking convenience and security amid the pandemic. This shift has led to a more robust adoption of electronic banking services.

Likewise, Yıldırım and Erdil (2024) investigate the impact of COVID-19 on digital banking services from a business model perspective. The pandemic has prompted banks to innovate and improve their digital offerings to meet the evolving needs of consumers. This has resulted in an improved digital banking experience with increased accessibility and efficiency, thus aligning with the consumer's perspective on the need and benefits of e-banking during the pandemic.

### ***1.2. Digital Technologies and Banking***

In the 2022 Digital Economy and Society Index (DESI) (European Commission 2022), Romania ranked last among the 27 European Union (EU) Member States. The country showed lower annual growth than similar nations, indicating a lack of convergence with the rest of the EU. Despite ranking first in terms of the proportion of female ICT (information and communication technology) specialists and the number of ICT graduates, Romania's overall level of basic digital skills was significantly below the EU average. The country scored well in terms of connectivity but performed poorly in terms of the integration of digital technologies and the provision of digital public services, with the lowest percentages of digitally intensive SMEs (small and medium-sized enterprises) and e-businesses in the EU. Slow progress in digitisation prevents Romania from fully exploiting the opportunities offered by digital technologies, and the situation is worsened by the extremely low level of digital public services.

Bagana et al. (2021) investigated customer perceptions of conversational user interfaces in the banking industry, while Hameed (2021) explored the influence of online banking services on consumers and their perception and acceptance during the Covid19 pandemic. These studies highlight the importance of understanding customer preferences and addressing customer concerns to increase adoption and acceptance of digital banking solutions.

Several studies, including Nair et al. (2021), Mew and Millan (2021), and Wiese and Humbani (2019), have focused on mobile banking, mobile payment apps, and the technological readiness of mobile payment app users. The research highlights the growing reliance on mobile banking and payment apps, especially among younger generations, and the need to improve user experience and convenience.

Also, Filotto et al. (2021) explored the digital transformation of retail banking. These authors highlight changes in consumer behaviour, such as increasing digital interactions, preferences for online banking and the importance of a seamless digital experience. Also, authors such as Anysiadou et al. (2021) and Kameswaran and Hulikal Muralidhar (2019) have provided insights into the dimensions of mobile banking in Greece and the affordability of cash and digital payments in India, respectively.

Budd et al. (2020) explored the use of digital technologies in the public health response to COVID-19. These studies highlight the importance of digital technologies in the banking sector, particularly during the pandemic, and how they have been used to adapt to the changing environment.

However, Wang et al. (2020) discussed cybersecurity risks and breaches in the context of the Covid19 pandemic and internet banking. These studies shed light on the increased importance of cybersecurity in the banking sector during the pandemic and the need to address potential vulnerabilities.

Other strands in the literature (Manta et al. 2023) underline the importance of banking accessibility for economic growth in Central and Eastern European countries. Both physical and digital accessibility are highlighted as significant to economic performance. This aligns with the broader literature suggesting that improved accessibility improves financial inclusion and economic development, thereby making banking accessibility a fundamental aspect of economic stability.

In addition, Bădîrcea et al. (2022) link financial development with environmental performance in Romania. Robust financial systems, including accessible and efficient banking services, are indicated as integral to sustainable development. This perspective suggests that digital financial services contribute to broader socio-economic goals, thus adding complexity to the understanding of banking digitization.

In the digital landscape, the studies of Doran et al. (2022) and Bhatti et al. (2022) highlight the role of digitization in maintaining financial stability and performance during the COVID-19 pandemic. Despite the challenges of preparing the digital infrastructure to support increased interactions, rapid adoption of digital banking has become mandatory.

Nevertheless, Gherțescu and Manta (2023) provide a bibliometric analysis of fintech trends, indicating that the pandemic has accelerated the adoption of digital banking technologies. While fintech innovations have improved services and met changing consumer demands, continuous improvements in cybersecurity measures are needed to protect consumer data.

Furthermore, research by Mhlanga (2022) and Dluhopolskyi et al. (2023) emphasizes the importance of security in driving trust and wider adoption of digital financial services. This highlights an important consumer concern during the pandemic, reflecting the need for robust security measures in digital banking. Also, Manta et al. (2018) outline service quality, accessibility and technological adoption as key factors influencing bank profitability. These studies link operational efficiency and customer satisfaction to financial results, thus emphasizing the importance of these elements.

Additionally, studies by Uford and Mfon (2023) and Le and Tran (2024) suggest that the shift to digital banking, driven by the increased convenience and security of digital platforms, is likely to persist in the post-pandemic era. However, continuous innovation is required to retain and attract customers in an increasingly competitive digital landscape.

Moreover, studies by Bueno et al. (2024), Polyakova et al. (2024), Manta et al. (2024a, 2024b) and Gherțescu et al. (2024) indicate that digitization has significantly improved service delivery and operational efficiency in the banking sector. However, these improvements require substantial investment in technology and training, thus posing challenges for smaller banks. This is further supported by Ordoñez De Pablos (2023), who discusses the wider implications of the digital economy on innovation and technology adoption in banking.

### ***1.3. Consumer Behaviour and Bank Selection from the Perspective of Gender, Aging, Residence and Education Level***

Before the advent of the pandemic, the selection of banking institutions was influenced by a variety of factors. A multitude of research work underscores the paramount importance of bank location in these decisions.

Thus, recent survey findings (European Union, 2018) demonstrate a growing disparity in the involvement of men and women in the digital sphere, proposing that this gender inequality in the digital domain primarily stems from enduring intense biases regarding suitable roles and capabilities of different genders, and concerning the technology itself, necessitating a fundamental cultural shift.

Also, Mitiko's work (2012), based on a questionnaire administered to 271 consumers across 10 product types, suggested that perceptions of a specific product type could vary based on the individual's education level. Education is a vital factor that influences consumer behaviour and decision-making, as it enables consumers to adapt to the demands of the rapidly evolving technological era. It facilitates lifelong learning and assimilation of new knowledge, adapting to the accelerated rate of technological innovation, and enhancing consumers' decision-making capabilities (Burgehelea and Aceleanu, 2014). In contrast to the findings of most research, Mbah et al. (2019) observed that in Nigeria, education does not have a significant impact on the behaviour of digital consumers.

Furthermore, Jing et al. (2017) highlighted that the influence of internet financing on the consumption habits of urban dwellers surpasses that of their rural counterparts. As a result, they advocate for the promotion of internet-based financial services in rural regions to boost consumption demand among the rural populace and hence, ensure a balanced growth between urban and rural environments.

Moreover, research indicates that regional migration precipitates a fragmentation of the consumer base (Lobaugh et al. 2019). Several objectives - such as race and ethnicity, urban versus rural dwellings, and geographical origins - must be concurrently examined to gain a comprehensive understanding of consumers. The notion that consumers can be understood in simplistic, generalized terms is becoming increasingly redundant. Instead, a comprehensive view of consumers, considering a myriad of factors (De Blasio 2008), is required to paint a detailed picture of the dynamic consumer. De Blasio (2008) examined the significance of originating from urban or rural areas when it comes to the utilization of the internet and e-banking in Italy, and he observed that internet usage is considerably more prevalent among urban consumers than non-urban ones.

Nevertheless, a study conducted in Pakistan highlighted that profitability, efficiency, speed of transactions, religiosity, and the amiability of staff are the prime criteria in selecting a bank (Bhatti et al. 2010). As per the banking trends in China, local banks are predominantly selected based on their extensive network, whereas foreign banks are preferred for their professional conduct, client-centric approach, and innovative practices (Heijes 2008). In Taiwan, no discernible disparity was observed in the preferences for foreign or Taiwanese banks, but the location of the banks remained a significant consideration (Tu and Hung 2009). Mohd Suki (2018) proposes that banking services, social influences, electronic services, and security are significant determinants in bank selection, with these factors being of greater importance to females than males. In Cyprus, the key factors are service quality, efficiency, bank image, location, parking amenities, and financial considerations (Safakli 2007).

However, a focused study on the bank selection criteria of customers in Romania established the number of ATM booths as the most important determinant. Moreover, mobile and internet banking, reputation, personalized customer service, the image of the bank, confidentiality, staff appearance, and the number of branches are also given weightage. For the Romanian population, less emphasis is placed on bank advertisements, gifts, speed, efficiency of services, and people's recommendations (Florea et al. 2016; Florea et al. 2021; Katircioglu et al. 2011; Manta et al. 2018; Meghişan-Toma et al. 2022). In Poland, the criteria hinge primarily on reputation, price,

and services (Kennington et al. 1996). In the United States, the factor of convenience holds significant importance (Lee and Marlowe 2003).

Additionally, Anvarovich (2023) discusses innovative frontiers in remote banking, emphasizing the importance of navigating the digital horizon. This study further illustrates how the pandemic has catalysed the adoption of advanced digital banking technologies, improving the consumer experience and unlocking new opportunities for remote banking. However, research by Sweetline and Rima (2024) highlights generational differences in banking preferences. Younger consumers show a preference for digital banking solutions and fintech innovations, reflecting a global trend. Thus, banks need to adapt their services to meet the diverse expectations of different age groups.

Considering all of the above, fifteen research questions were formulated for this study. These are the following:

- *Research Question 1 (RQ1)*. Can bank choice in Romania be associated with gender?
- *Research Question 2 (RQ2)*. Can bank choice in Romania be associated with age?
- *Research Question 3 (RQ3)*. Can bank choice in Romania be associated with residence?
- *Research Question 4 (RQ4)*. Can bank choice in Romania be associated with education level?
- *Research Question 5 (RQ5)*. Can bank choice in Romania be associated with bank characteristics?
- *Research Question 6 (RQ6)*. Can the use of internet banking in Romania be associated with the COVID-19 pandemic?
- *Research Question 7 (RQ7)*. Can the use of mobile banking applications in Romania be associated with the COVID-19 pandemic?
- *Research Question 8 (RQ8)*. Can bank choice in Romania be associated with internet banking access?
- *Research Question 9 (RQ9)*. Can bank choice in Romania be associated with the security of the mobile banking application?
- *Research Question 10 (RQ10)*. Is the more frequent use of the internet or mobile banking applications correlated with the COVID-19 pandemic?
- *Research Question 11 (RQ11)*. Is the preference for online payments correlated with the COVID-19 pandemic?
- *Research Question 12 (RQ12)*. Is the frequency of internet banking use the same or higher after the COVID-19 pandemic?
- *Research Question 13 (RQ13)*. Is the frequency of mobile banking use the same or higher after the COVID-19 pandemic??
- *Research Question 14 (RQ14)*. Will there be a higher frequency of use of internet/mobile banking in the future?
- *Research Question 15 (RQ15)*. Can internet/mobile banking be improved in the future in Romania through better customer service?

## **2. Research methodology**

To answer the research questions, a quantitative research method, a questionnaire, was used. An online questionnaire was created using Google Forms. The questionnaire was designed to gather data on various aspects related to the adoption and use of electronic (internet and mobile) banking services before and after the COVID-19 pandemic. It included sections on demographic information (gender, age, residence and education level), perceptions and attitudes towards internet and/or mobile banking, frequency of use, satisfaction levels, and perceived challenges. The questions were carefully crafted to be clear, concise, and unbiased.

The research conducted is based on the questionnaire as a research tool, the analysis of the data from the questionnaire being a qualitative analysis, based on the perception of the bank's customers on the online services offered by the bank. The questionnaire was meticulously structured in three distinct phases. In the first phase, questions were designed to gather personal and demographic information about respondents, including age, gender, education level, income, and location. These demographics were crucial for segmenting respondents and understanding the diverse customer base. In the second phase, the questionnaire included questions designed to capture respondents' attitudes and opinions towards the bank's online services. These questions were designed to assess customer satisfaction, perceived ease of use and overall experience with the online banking services provided. The final phase of the questionnaire focused on the behavioural aspects of using online banking services. The questions in this section looked at the frequency of online banking transactions, the types of transactions most frequently done online (such as transfers, bill payments, and account management), and the level of trust and security concerns associated with the bank's online applications. This comprehensive structure ensured that the questionnaire covered all relevant aspects of customer experience and perception.

Thus, in other words, in the first phase, the questionnaire consists of questions (items) containing the respondent's personal and demographic data. The questionnaire is followed by questions (items) that track the position of the bank's consumers regarding the online services offered. The questions in the last part of the questionnaire track the frequency of use of online channels for transactions and the level of trust of customers towards the bank's online applications.

The processing of the questionnaire items applied to the banking sector was carried out with the help of the Statistical Package for the Social Sciences (SPSS v.20) statistical program. To process the questionnaire with SPSS, we first coded the questions in the questionnaire. In this way, we analysed the types of questions and made a coding plan. After coding the questionnaire questions, we proceeded to check the correlations between the questionnaire items and the additive result (general score) of all items. Because we are discussing a simultaneous analysis of several variables, item analysis is part of multivariate statistics.

From the analysis of the correlations between each item and the overall score obtained, the level of relevance of each item was determined, that is, the choice of representative items of the study: I16, I17, I19, I21, I22 and I23.

The descriptive statistics resulting from the analysis of the items selected as representative further strengthen our findings, since in the case of these items, both the

level of the Skewness and Kurtosis coefficients fall within normal parameters, as well as the relationship between their mean and standard deviation. The accuracy level of the study carried out on the 283 answers is 91.2%; in other words, only 25 of the 283 were excluded from the statistical study.

To determine the measurement accuracy of the questionnaire test, its consistency and reliability as an assessment tool, we determined Cronbach's coefficient.

The calculation relationship of Cronbach's coefficient is:

$$\text{Cronbach coefficient} = (n * \bar{c}) / (\bar{v} + (n - 1) * \bar{c}) \quad (1)$$

where:

$n$  – number of items

$\bar{c}$  – mean covariance between items

$\bar{v}$  – mean variance

Cronbach's level for the 6 selected items resulted very close to level 1, namely 0.825 on the unstandardized variant and 0.829 on the standardized variant of the items.

The sample population comprised 283 banking consumers in Romania. A stratified sampling technique was used to ensure representation across different age groups, socio-economic statuses, and geographical locations. The sample size was determined based on considerations of statistical power and practical constraints. The questionnaire was distributed online to reach a wider audience. It was shared via email, social media, and through partner banks. A deadline was set for responses to be returned, and reminders were sent to potential respondents. Responses were first cleaned to remove any incomplete or inconsistent entries. Descriptive statistics were then computed to provide an overview of the data. Inferential statistics, including correlation, regression, and factor analysis, were used to investigate relationships between variables and to test the study's hypotheses. All respondents were informed about the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. Informed consent was obtained before they could proceed with the questionnaire.

The reliability and validity of the questionnaire were ensured through several measures. For reliability, the questionnaire was pilot tested with a small group of respondents to ensure consistency in the responses. For validity, the questionnaire items were based on existing literature and reviewed to ensure they accurately measured the intended constructs.

The data collected from this questionnaire methodology was analysed using SPSS, and it provides valuable insights into the consumer perspective on the accelerated digitalization of electronic banking services during the COVID-19 pandemic in Romania. The questionnaire was divided into 3 main parts.

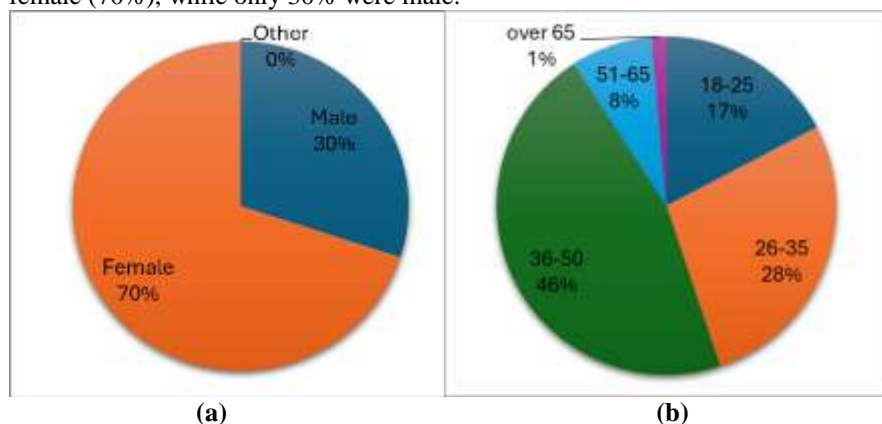
*The first part* evidenced the demographic profile of the respondents in terms of gender, age, residence and education level. Concerning age, there were six groups to choose from: "Under 18", "18–25", "26–35", "36–50", "51–65", and "Over 65". As for residence could be the following: "Urban", "Rural". Lastly, education level, there were four groups to choose from: "8 grades or less", "Skilled worker", "High School Degree" and "College/University". Furthermore, the banking reference had to be provided. Respondents first had to choose a bank from a list of Romanian banks that they

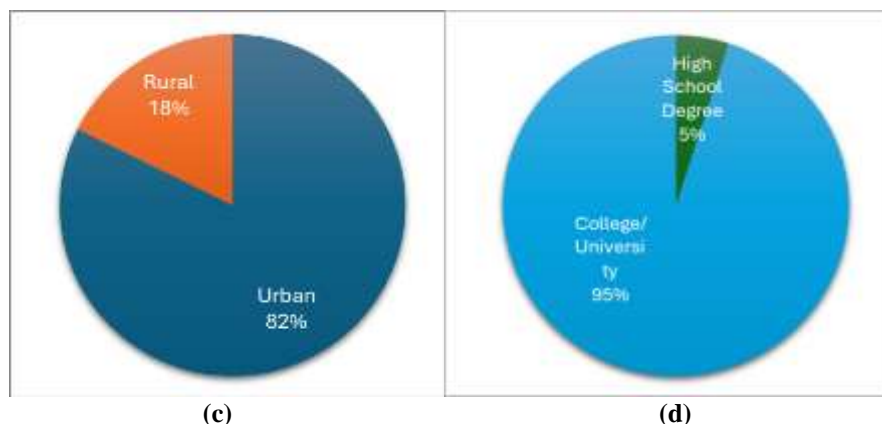
favourite the most. In the list, they could choose from: Banca Transilvania, BCR Erste Bank, BRD-GSG, ING Bank, Raiffeisen Bank, CEC Bank, UniCredit Bank, Alpha Bank, OTP Bank and Eximbank. An "Other" option was also added, where they could fill in the name of a bank that was not previously included. The following question of this part was, "Why did you choose this bank?". In this case, multiple answers could be chosen from the following answers: "Recommended by an acquaintance/family", "Employee account", "Advantageous financial products", "Good location", "Polite staff", "Availability of customer service", "Other" (filled in by own comment).

The second part was used to select the eligible people by asking whether they use electronic channels. Furthermore, collected responses from those who do not use electronic channels have been closed by describing the reason they do not use electronic channels.

The third part had the purpose to collect information about the experience of customers with electronic banking channels. Namely, there were questions about how frequently the respondents used the different channels (internet banking, mobile banking application, and in-person options) before the Covid19 pandemic, and after the pandemic. In addition, other information about the respondents' opinion on electronic banking services, mobile banking applications, and online customer service by several aspects were provided: "Internet access", "Security of transactions through mobile banking", "Lifestyle before Covid19-pandemic", "Frequency of use of electronic banking services before and after Covid19-pandemic", "Predictions of frequency of use of electronic banking services in the future". Next, suggestions for further improvements were unravelled. The respondents could select from the following (multiple answers were allowed): "More transparent interface", "Wider services", "Instruction manual", "Security", "Availability", and "Other" (filled in by own comment).

The demographic data are evidenced in Figure 1, and data about which and how banks were chosen are emphasized in Figure 2. About two-thirds of the respondents were female (70%), while only 30% were male.





**Figure no 1. Demographic data of the respondents grouped by (a) gender; (b) age; (c) residence; (d) education level.**

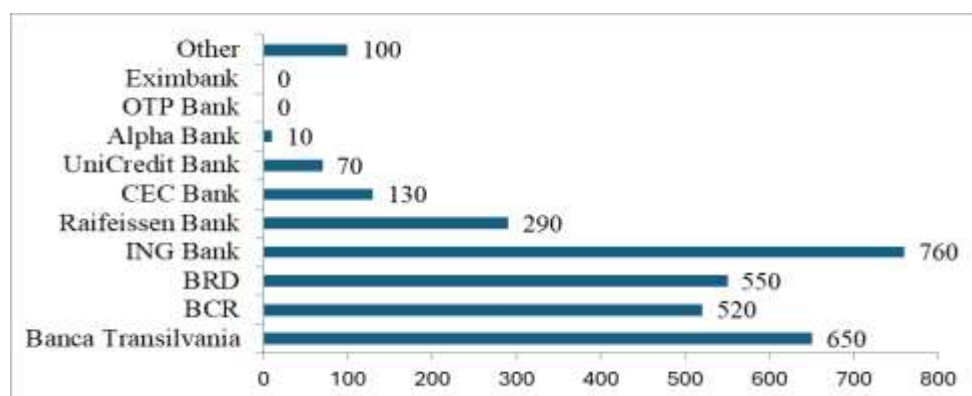
*Source: Author's processing*

Bar charts displaying the demographic data of respondents. Panel (a) shows the distribution by gender with separate bars for males and females. Panel (b) illustrates the age distribution with bars for different age groups. Panel (c) represents the residence data, differentiating between urban and rural respondents. Panel (d) depicts the education level of respondents with bars for various educational qualifications.

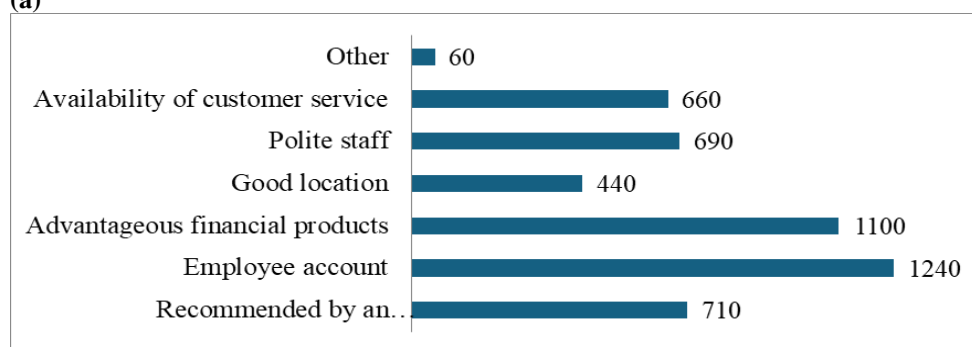
The highest number of respondents was in the 36–50 age group (46%), while almost a third of respondents were in the 26–35 age group (27%). Approximately two-tenths were in the 18–25 age group (17.2%), and a lower proportion of respondents was in the two oldest age groups. Ten persons under 18 completed the questionnaire. One of the main reasons for this may be that opening an account under 18 requires parental permission in Romania. The majority of respondents live in an urban area (82%), and the rest live in a village (18%).

The highest level of education for most respondents was “College/University” (95%). The “High School Degree” category had a negligible number of completers—only 5%.

Figure 2 shows which and how the main banks were chosen. According to the responses, most people chose ING Bank as their main bank (27%), and Banca Transilvania obtained a very similar percentage (23%). Slight differences for the following two banks, BRD-GSG (19.5%) and BCR Erste Bank (18.4%), but also for Raiffeisen Bank (10.3%). The other three banks had response rates below 5%.



(a)



(b)

**Figure no. 2. (a) Which main banks were chosen; (b) how banks were chosen (multiple answers could be selected)**

*Source: Author's processing*

Chart (a) displays the percentage distribution of main banks chosen by respondents, highlighting the most popular banks. Chart (b) shows how respondents selected their banks, with segments representing various selection criteria such as interest rates, customer service, proximity, and recommendations.

### 3. Results and discussions

#### 3.1. Reliability and distribution tests

The reliability of the questionnaires was assessed by computing Cronbach's alpha values, which can range from 0 to 1. However, a general consensus in statistical analysis considers alpha values over 0.7 as satisfactory. Subsequently, the hypotheses were scrutinized: initially, the distributions were examined using the Shapiro-Wilk normality test. This was followed by the execution of analyses using Pearson's correlation test to establish the relationship among the variables. The findings from these analyses are detailed in the subsequent subsection.

Before initiating the study, the reliability of these questionnaires needed to be established. Hence, their Cronbach's Alpha values were computed and are listed in Table no. 1. Cronbach's alpha, often denoted as  $\alpha$ , is a statistical measure used to assess the reliability, or internal consistency, of a scale or test, which is made up of multiple items or components.

**Table no. 1. Cronbach's Alpha Test**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
0.825	0.829

*Source:* Author's processing using SPSS v.20

The value of Cronbach's alpha ranges from 0 to 1. A higher value suggests that the items are more highly correlated, thus implying greater internal consistency. Although guidelines vary, a common rule of thumb is that an alpha of 0.7 or above is considered acceptable in most social science research situations. Based on these results, all questionnaires were deemed reliable.

### 3.2. Results

The selection criteria for banks (RQ1-RQ5) were first scrutinized. The outcomes of these analyses are detailed in Table no. 2. The findings suggest that neither gender nor the accessibility of a bank significantly correlates with the selection of the main bank. However, a significant yet weak negative correlation was observed between age and the choice of the main bank. In today's context, while security is a factor in bank selection, the data did not indicate a significant correlation between the security of internet banking and the choice of bank.

The initial analysis evaluated the influence of gender on choice. The findings indicate that there's no substantial link between gender and the evaluation of internet banking services, mobile banking applications, or the overall reputation of the bank itself.

Urban and rural individuals have exhibited distinct preferences when it comes to selecting banks. Furthermore, there were variations in the bank choices made by individuals with a "High School Degree" compared to those with a "College/University" education.

**Table no. 2. Influence of demography on bank choice**

Factor	Coefficient	p-Value
Gender	0.293	0.209
Age	-0.183	0.002*
Residence	-0.143	0.016*
Education level	-0.171	0.004*

\*1% significance level, \*\* 5% significance level

*Source:* Author's processing using SPSS v.20

Furthermore, the findings indicate that gender doesn't significantly correlate with the usage of electronic banking functions either pre-COVID or after the COVID period (Table no. 3). Still, the negative correlation coefficient and probability values became somewhat stronger. There exists a significant, albeit weak, negative correlation between age and the usage of internet banking functions both before and after COVID.

Similarly, there's no significant correlation between gender and the pre-COVID use of mobile banking applications, and the same is true for the post-COVID period. When examining the impact of age, a significant but weak positive correlation was found between age and pre-COVID use of mobile banking applications. This correlation persists after the COVID period, albeit weaker.

There exists a significant positive correlation between residence and use of electronic banking services, both pre-COVID and after the pandemic. Furthermore, the data suggests a significant positive relationship between the education level and most frequently used options pre and after the pandemic.

**Table no. 3. Influence of demography on the use of electronic banking services before and after Covid19 pandemic**

Factor	Coefficient Before Covid19	p-Value Before Covid19	Coefficient After Covid19	p-Value After Covid19
Gender and Internet banking services	-0.224	0.261	-0.204	0.401
Gender and Mobile banking applications	-0.543	0.301	-0.154	0.211
Age and Internet banking services	-0.135	0.029**	-0.143	0.020**
Age and Mobile banking applications	0.125	0.001*	0.105	0.002**
Residence	0.179	0.004*	0.233	0.000*
Education level	0.274	0.000*	0.164	0.008**

\*1% significance level, \*\* 5% significance level

Source: Author's processing using SPSS v.20

Next, the effect of bank characteristics on the use of electronic banking services before and after Covid19 pandemic was analysed in Table no. 4. The data revealed a positive but weak correlation between bank characteristics and the use of electronic banking services before and after Covid19 pandemic, suggesting that younger individuals tend to favour mobile banking more, whereas older individuals prefer internet banking.

Location significantly impacts a bank's overall evaluation, with a moderate positive correlation observed. People tend to prefer banking with institutions that are easily accessible and offer convenient parking. Additionally, the helpfulness of bank advisors significantly influences a bank's selection, showing a moderate positive correlation. This suggests that the more courteous and supportive the advisors are, the more likely customers are to bank with that institution.

**Table no. 4. Influence of bank characteristics on the use of electronic banking services before and after Covid19 pandemic**

Factor	Coefficient Before Covid19	p-Value Before Covid19	Coefficient After Covid19	p-Value After Covid19
Recommended by an acquaintance /family	0.153	0.013*	0.220	0.533
Employee account	0.131	0.414	0.153	0.013*
Advantageous financial products	0.196	0.001*	0.150	0.015*
Good location	0.270	0.006*	0.148	0.016*
Polite staff	0.157	0.011*	0.198	0.001*
Availability of customer service	0.130	0.036**	0.206	0.001*
Others	0.180	0.706	0.150	0.455

\*1% significance level, \*\* 5% significance level

Source: Author's processing using SPSS v.20

Furthermore, in Table no. 5, it is evidenced that in Romania there is a good internet connection that is easily accessible mostly to urban individuals and that facilitates the use of electronic banking services. Thus, there is a significant positive correlation between internet access and the use of electronic banking services before and also after the pandemic.

**Table 5. Influence of internet access on the use of electronic banking services before and after the COVID-19 pandemic**

Factor	Coefficient Before Covid19	p-Value Before Covid19	Coefficient After Covid19	p-Value After Covid19
Internet access	0.190	0.021**	0.220	0.033**

\*1% significance level, \*\* 5% significance level

Source: Author's processing using SPSS v.20

Similarly, the results unravel that Covid19 pandemic influenced the lifestyle of people by stimulating them to change their buying behaviours and thus banks have to adapt and face the new challenges. The positive significant correlation between the COVID-19 pandemic and the new preferences of people to use even more the internet and mobile banking instead of visiting the bank units, is shown in Table no. 6.

**Table no. 6. Influence of Covid19 pandemic on the preference for using the internet and mobile banking rather than bank visits**

Factor	Coefficient	p-Value
Internet and mobile banking preference	0.293	0.000*

\*1% significance level, \*\* 5% significance level

Source: Author's processing using SPSS v.20

Moreover, changing the mindset means embracing the new technologies to prevent physical contact with the bank advisors. Therefore, although difficult for some, the use of electronic banking channels became more frequent and accessible for many. Results from Table no. 7 outline the positive significant correlation between the COVID-19 pandemic and the frequency of use of electronic banking channels.

**Table no. 7. Influence of Covid19 pandemic on the frequency of use of electronic banking channels**

Factor	Coefficient	p-Value
Internet and mobile banking frequency	0.229	0.000*

\*1% significance level, \*\* 5% significance level

Source: Author's processing using SPSS v.20

### **3.3. Implications of results**

RQ1 was met with non-significant results, indicating that neither men nor women selected different banks, nor did the ease of access to banks matter to them. On the other hand, RQ2 got a positive response, suggesting that older individuals choose different banks compared to younger ones. Younger age groups tend to be more critical than older ones, and their expectations also vary significantly. One of the key priorities for younger people is to accomplish their banking quickly and conveniently. Digitalization has enabled them to have a better experience with banks.

RQ3, RQ4 and RQ5 received positive responses as bank choice differs depending on the customer's residence, education level, and bank characteristics play a role in the selection criteria of customers. Thus, urban individuals have chosen different banks than rural ones. Also, the bank choices were different for "High School Degree" and "College/University" individuals. Concerning the bank characteristics, younger individuals prefer to choose a bank that is recommended by an acquaintance/family and that offers advantageous financial products, whereas older individuals are more conservative, and they would rather choose the bank where they have their employee account.

However, RQ6 and RQ7 received a positive response as the most frequently used options – internet and mobile banking applications - were utilized even more after the pandemic. This indicates that those who were already using electronic channels prior to COVID-19 continued to do so with greater frequency after the pandemic.

When it came to selecting the primary bank based on access and security, the results were similar: RQ8 received a positive response, implying that the access of internet banking is a factor in choosing the main bank, and RQ9 received a positive response, indicating that the security of mobile banking applications is also a factor.

RQ10 and RQ11 received a positive response, meaning there was a correlation between a more frequent use of internet banking services and mobile banking applications and the COVID-19 pandemic.

In response to RQ12 and RQ13, it can be concluded that the pandemic did not cause a significant increase or decrease in the use of internet banking or mobile banking. When

evaluated by gender, no substantial correlation was identified. Although significant correlations were found when the data was segmented by age, both before and after the Covid19 period, no notable differences were observed in the outcomes. Given that digital solutions were already on the rise before the pandemic, the circumstances brought on by Covid19 provided a ripe opportunity for further augmentation of these platforms. As customers already had familiarity with electronic channels, it was easier for them to select the option most suitable for them. RQ14 also received a positive response, reflecting a decrease in the frequency of personal bank visits and increase in the use of internet/mobile banking. Finally, RQ15 also received a positive response, implying that good customer service can boost a bank's customer evaluation and indicating that the more secure the mobile banking application and internet banking services are, the higher the customer satisfaction.

### **3.4. Discussions**

In many countries, including the United States, Pakistan, Taiwan and Cyprus, the literature identifies bank location as a key factor in bank selection criteria (Bădîrcea et al. 2022; Heijes 2008; Kennington et al. 1996; Mohd Suki 2018). This factor also significantly influences bank selection in Romania. This suggests that Romanians tend to consider bank location after selection, possibly due to a greater reliance on electronic banking.

Prior to the pandemic, an accelerating pace of digitization has been observed in Romania and other countries (Hameed 2021; Nair et al. 2021), leading to a global increase in the popularity of online banking (Mew and Millan 2021; Wiese and Humbani 2019). This study reveals that the pandemic has led to a shift to e-banking in Romania, mirroring global trends. Mobile banking apps were predominantly chosen among the e-banking services examined in Romania, with increased usage during the pandemic.

With digitization, the security of online banking has become paramount (Tu and Hung 2009). In many countries, including Romania, customers consider security to be the most important aspect of electronic channels (Barua and Barua 2021; Katircioglu et al. 2011). Even though individuals generally feel safer with internet banking and mobile banking apps, digitization raises potential accessibility challenges (Filotto et al. 2021; Kameswaran and Hulikal Muralidhar 2019; Mathew Martin and Rabindranath 2017).

However, despite younger people being the main users of electronic channels, these platforms are becoming more accessible and understandable to all. Pandemic has been a catalyst in this regard, prompting people to explore the digital realm. This has led not only to increased use of e-services, but also to an expansion of the user base, a trend mirrored in other nations (Hameed 2021; Mew and Millan 2021; Nair et al. 2021; Wiese and Humbani 2019).

Research in the field suggests that women who are either technologically savvy or more educated are more likely to use mobile banking (Bhatti et al. 2010). Women also place a higher value on convenience such as bank location (Hameed 2021). However, the scenario in Romania differs from these findings. There were no significant differences in the use of internet banking or mobile banking apps between men and women.

Similarly, bank location did not play a significant factor in the bank selection criteria when comparing the preferences of the two genders.

In addition, the helpfulness of bank advisors is another important factor, as observed in several countries (Heijes 2008; Safakli 2007). Ensuring a positive customer experience is the collective responsibility of all staff, with customer service staff having a considerable share of this responsibility due to their close contact with customers. This study corroborates this premise, highlighting that a helpful employee equates to higher customer satisfaction and, consequently, a more positive reputation for the bank.

Consistent with another study (Burghilea and Aceleanu 2014), our findings also suggest that education plays a key role in shaping consumer behaviour and decision-making. It enables individuals to adapt to the demands of a rapidly changing technological landscape. Therefore, the higher the level of education, the higher the frequency of online purchases.

Echoing Blasio's (2008) analysis of the impact of urban and rural residence on internet use, e-commerce and e-banking in Italy, we found that urban consumers tend to use the internet more than those living in non-urban areas.

Moreover, the findings of the study reveal key alignments and distinctions in the literature, providing an image of bank selection factors in Romania. Thus, the results of the current study confirm the importance of service quality in bank selection, like the claims found in the literature. Similarly, Bădîrcea et al. (2022) address broader aspects of service, suggesting that superior service quality improves customer satisfaction and overall performance, in line with the findings of this study.

However, this study also identifies a generational divergence in bank selection, with younger people opting for different banks than their older counterparts. This observation aligns with the analysis of Gherțescu and Manta (2023), which highlights fintech trends and the growing inclination of younger generations towards digital banking solutions and innovations. In addition, Sweetline and Rima (2024) report similar generational shifts in the Middle East, suggesting a global pattern where younger consumers prefer digital to traditional banking solutions.

Moreover, the current study reveals that Romanians place more emphasis on the security of mobile banking applications compared to internet banking services, and on a higher quality service for customers. This finding is consistent with the work of Mhlanga (2022) and Dluhopolskyi et al. (2023), who emphasize the role of security in driving trust and wider adoption of digital financial services. Specifically, Doran et al. (2022) highlight the importance of security in digital banking during the COVID-19 pandemic, aligning with the observed preference for mobile banking security.

In addition, accessibility and location significantly influence bank selection in Romania, as this study demonstrates. Manta et al. (2023) explicitly address the importance of banking accessibility in economic growth, arguing that both physical and digital accessibility are crucial in bank selection. In addition, Manta et al. (2018) discuss accessibility as a determinant of bank profitability, linking it to operational efficiency and customer convenience, which corroborates the current findings.

However, the specific focus on the security of mobile banking applications versus internet banking presents a finding that has not been deeply explored in the broader literature, although it aligns with the general security concerns discussed by Doran et al.

(2022) and Mhlanga (2022). Moreover, while the literature of Bhatti et al. (2022) and Uford and Mfon (2023) discuss changes in consumer behaviour and adoption of digital banking services during and after the pandemic, the current study provides more detailed information on specific preferences for mobile security versus internet banking. In addition, the observed focus on high-quality customer service, along with the need for robust security measures, adds a layer of complexity to understanding consumer preferences in the digital age. This aspect, while broadly inferred in the literature through discussions on service quality and consumer satisfaction, is explicitly highlighted in the current study, offering new insights into the specific expectations of banking consumers.

### Conclusions

The literature highlights that, before the pandemic, service quality was a major factor in bank selection, with bank location, service and security also playing a significant role. However, the pandemic has catalysed a global acceleration of digitization, leading to an increase in the availability of electronic banking services. However, in Romania, no remarkable transformation in the use of e-banking has been observed during this period. Those who used electronic channels before the pandemic continued to do so, while the transition from physical to digital banking remained relatively limited.

The objectives of the study align with the findings. The results confirm the pre-eminence of service quality in bank selection, consistent with the literature. However, the study also observes a generational divergence in bank selection, with younger people opting for different banks than their older counterparts. In addition, Romanians place more emphasis on the security of mobile banking apps compared to internet banking and a higher quality of customer service. Also, bank selection in Romania seems to be influenced by accessibility and location.

The *novelty and originality of the study* lie in its unique geographical and temporal focus, consumer-centric perspective, demographic analysis, consideration of bank characteristics and efficient methodology. The findings could contribute significantly to understanding digital transformation in the banking sector, especially in the context of a global crisis such as the COVID-19 pandemic<sup>19</sup>. To begin with, the study focuses on Romania, a geographical area that has not been widely covered in previous research. This provides a unique perspective on the digital transformation of banking in an emerging European economy. Second, the study examines the impact of the COVID-19 pandemic on digital banking, a timely and relevant topic. Third, the focus on the consumer perspective provides a unique insight. While other studies focus on the impact of digitization from a bank or regulator perspective, this study prioritises the end user. This approach highlights how consumer demographics and internet access influence the use of online banking. This novel approach can also provide insights for banks on how they can improve their digital services to better meet customer needs.

Therefore, regarding the *key contributions*, the study's investigation into the impact of the COVID-19 pandemic on banking consumer behaviour provides valuable insights into how crisis events reshape consumer attitudes and behaviours. By analysing changes in banking preferences, channel usage and selection criteria before and after the pandemic, the research highlights significant behavioural changes. In addition,

exploring the role of digitization in shaping banking preferences, particularly regarding internet and mobile banking applications, highlights the rapid adoption of digital channels during the pandemic and its implications for consumer satisfaction and service delivery.

Furthermore, the study examines the influence of demographic and contextual factors such as age, education level and residence on bank selection criteria. This provides insights into the diverse needs and preferences of banking consumers from different segments of the population. In addition, the research integrates empirical findings with relevant literature on consumer behaviour, banking preferences and crisis management, contributing to theoretical advances in understanding the complexity of consumer decision-making processes in the banking sector, particularly during crises.

Thus, the novelty of the study lies in its holistic approach to examine the intersection of consumer behaviour, digitization and crisis management in the banking sector. This approach enhances our understanding of the evolving financial services landscape in the post-pandemic era.

In addition, the results of this study elucidate the factors that Romanian customers prioritise when choosing a bank. Thus, the study unravels several theoretical and practical implications, considering the evaluation of the influence of bank characteristics and demographic factors on the use of online banking services before and after COVID-19, as well as the influence of demographics in bank selection criteria.

*Theoretical implications.* The results of the study empirically confirm the theoretical link between internet access and digital banking adoption. The significant influence of internet access on online banking usage contributes to theories related to the digital divide and its impact on different aspects of life, including financial services. In addition, the study provides a theoretical understanding of how the accelerated digitalization in banking, triggered by the pandemic, influences consumer behaviour.

*Practical implications.* To begin with, understanding how demographics influence bank selection could help banks in their customer retention and acquisition strategies. From a practical point of view, the results also highlight the need to address infrastructure barriers to digital banking and underline the importance of policies aimed at bridging the digital divide. Banks and policymakers could work together to improve internet access, especially in underserved areas, thereby extending the reach of digital banking. In addition, understanding the significant role of internet access could help banks in developing digital transformation strategies. Finally, survey responses could serve as a benchmark for banks to measure their performance on digital services, customer satisfaction and other criteria. They can also assess the effectiveness of their interventions and strategies based on customer feedback.

Like all research papers, this study has *some limitations* that could provide directions for future research. For example, the study focused on consumers in Romania, which means that the results may not be generalizable to other countries with different banking systems, technological infrastructures and cultural contexts. Also, the data collected through questionnaires are based on respondents' self-reporting, which could be subject to recall bias, social desirability bias or interpretation bias. Although the study considered several important factors (demographics, bank characteristics, internet access), there could be other factors influencing the adoption and use of digital banking,

such as personal attitudes towards technology, perceived security and privacy risks or quality of customer service.

*Future research* could replicate this study in different countries to compare results, thus providing a more global perspective on digital banking adoption during the pandemic. Qualitative research methods, such as interviews or focus groups, could also be used to gain a deeper insight into consumers' experiences, perceptions and decision-making processes related to digital banking. However, future studies could also investigate other potential factors influencing the adoption and use of digital banking, such as consumer attitudes towards technology, perceived security and privacy issues or the role of customer services in the digital banking experience.

By addressing these limitations and exploring these future research directions, we can deepen and expand our understanding of digital banking adoption in the context of the COVID-19 pandemic and beyond.

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