

Anisa Haxhosaj^a
Kristaq Kume^b

JEL Classification: G21, L86
Original Scientific Paper
<https://doi.org/10.32910/ep.77.1.2>

Evaluation of the Perception Index of “E-Banking” Implementation Process (PI E-B) in the Republic of Kosovo

Abstract

Using data collected from a random sample of 351 consumers and 60 employees of second-level banks, the Perception Index and its component indicators were assessed for the process of implementing e-banking services (PI e-B) in Kosovo. According to values of PI e-B currently, this process is classified at the “Moderate” level. Legislation, regulatory framework and perceptions of the benefits that banks and consumers realize from e-banking services are driving factors for the success of these services. The characteristics and peculiarities of the consumer, the level of economic and social development, the capacities and experiences in the use of information technology are factors that currently create barriers to increasing the effectiveness and territorial expansion of e-banking services in Kosovo. The PI e-B is an instrument that can be used by second-level banks to design policies and implement programs to increase the effectiveness and quality of e-banking services in Kosovo. In-depth statistical analysis for the construction of PI e-B as a multi-dimensional instrument, the values of which will be the result of weighting the values of its constituent indicators, are future directions of scientific research

Keywords: index, e-banking service, implementation, Kosovo

^a A. Haxhosaj, Ph.D. student, Faculty of Economy, University of Pristina, Kosovo (e-mail: anisahaxhosaj@gmail.com).

^b K. Kume, Ph.D., Full Professor, Faculty of Business, “Aleksander Moisiu” University, Durrës, Albania (e-mail: kkume09@gmail.com). Corresponding Author. The paper was received on 10.05.2025. It was accepted for publication on 23.10.2025.

1. INTRODUCTION

Use of information technology to develop the service capacities offered by the banking system is currently a prevailing trend regardless of the level of economic development of the country, the experience and capacities possessed by banking institutions, the culture, opportunities and consumer behavior towards the products of this technology (Abduselam, 2019; Pham Tien Dat & Nga Phan Thi Hang, 2023; Egan, 2024). In order to achieve the most effective and efficient use of this technology, it is very important for second-level banks to assess the way consumers react to the E-banking service they offer.

Identifying the factors that influence consumer behavior and response to these services, assessing consumer perceptions of value, advantages, difficulties in use, security, etc., are very important information for the design of policies and the implementation of programs aimed at increasing the use of information technology in banking services. In addition to this important information, the assessment of the capacities that the bank possesses, as well as the recognition and evaluation of the factors that influence the success of investments aimed at increasing e-banking services, is also important. Meanwhile, it is important to emphasize that the analysis, judgment and decision for the growth and diversification of these services must be made, in each case, taking into account the characteristics and peculiarities of the country and the society and communities to which these services are provided (Choudhury & Bhattacharjee, 2015; Ifedi et al. 2024; Haxhosaj & Kume, 2024)

The study of consumer behavior towards e-banking services, the identification and evaluation of the way in which they interact with the provider of this service and with the products that this service offers are necessary to assess the effectiveness and efficiency of e-banking services (Ismaili & Braimllari, 2021; Chaudhary et al, 2022; Fathima, 2022; Schmidt-Jessa, 2023; Muthukumar et al. 2024).

This paper presents results obtained in the study for the evaluation of the Perception Index of "e-banking" implementation process (PI e-B) in Republic of Kosovo.

2. CURRENT USE OF E-BANKING IN KOSOVO

According to Central Bank of Kosovo (CBK) in 2024, through Interbank Payment System KIPS, the number of transactions increased by 1.8 million or 9.5%, while the value of transactions increased by about 3.6 billion euros or 16.3%. In 2024, about 21 million transactions were processed with a total value of about 25.4 billion euros, which is equivalent to about 2.4 times the Gross Domestic Product.

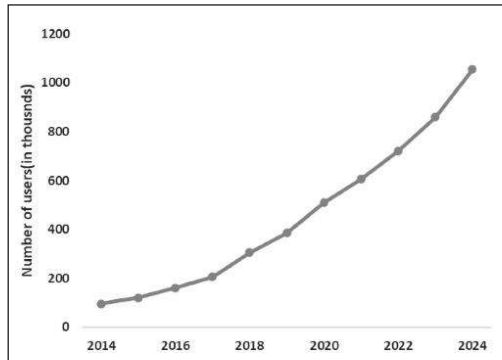
At the end of 2024, the number of customer cards reached approximately 1.7 million cards, which include debit cards, credit cards, delayed debit cards for individuals and businesses, as well as payment cards with electronic money function. Compared to the end of 2023, the total number of customer cards increased by 71,660 or 4.4%. The number of card transactions reached around 43 million, marking an increase of 10.8 million or 33.8%. In addition to card payments, with the growth of electronic money services and institutions, there has been a sharp increase in the number of electronic money payments. In 2024, around 2.2 million electronic money payment transactions were reported, marking an increase of 568,309 or 35% compared to 2023. During 2024 the number of ATM and POS increased respectively by 8.4 % and 21.1% compared to the end of 2023 (Central Bank of the Republic of Kosovo, 2025)

During the period 2014-2024, the increase curve of the number of users of e-banking services in Kosovo can be considered to be approximately like an exponential curve (Figure 1).

The growing trend that characterizes the dynamics of the use of e-banking services in Kosovo is closely linked to the increase in internet access of the population in Kosovo.

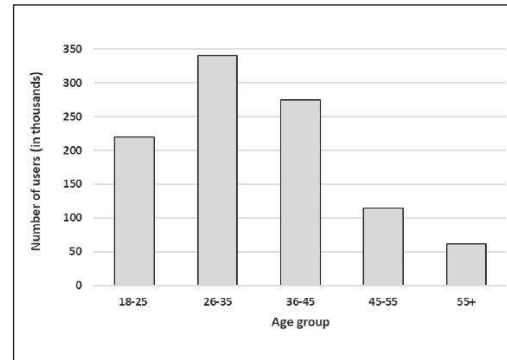
According to DataReportal (2024), 96.6% of Kosovo's total population had internet access in January 2024, showing a 12.6% increase compared to 2014. The most active internet users belong to the 18-44 age group. They make up about 41.4% of all internet users in Kosovo. Those users are also the group that use e-banking services the most (Figure 2).

Figure 1. Dinamic of Number of User of E-Banking Service



Source: Central Bank of Republic of Kosovo (2025)

Figure 2. E-Banking Users by Age Group (2024)



Source: Central Bank of Republic of Kosovo (2025)

3. LITERATURE

The study of the implementation of e-banking services and consumer reaction to them is given a special place in the current literature.

Afraz et al. (2024) emphasize that for the success of the implementation of e-banking services it is important that consumers perceive them as secure services. The speed in carrying out banking transactions is considered a significant advantage of these services. Meanwhile these authors emphasize the need to inform consumers about the risks that may accompany the use of e-banking services and the necessity for their continuous education. Similar conclusions have also been published by Jalani & Easwaramoorthy (2024) and Diallo & Ndiaye (2024). According to them in the marketing strategy of mobile banking apps it is important to highlight the security and convenience that e-banking services offer to the consumer.

Guraau, 2002; Juan C. Correa et al. (2022), Pantelieieva et al. (2022), Savaliya & Khasgivala, 2024 emphasize that the efforts and commitment of the banking system to adapt the typology of the services they offer to the demands of the products and the opportunities offered by information technology should be, in every case and for the banking system in every country, a permanent objective.

Verkijika, (2020) and Juan C. Correa et al. (2022) underline that e-banking, being a set of services that are offered only through the use of opportunities created by information technology, for its successful implementation it is necessary for the banking system and banks to design and implement policies and marketing models in accordance with the characteristics and features of all the different groups of their potential consumers. For this reason, it is necessary that any intervention that can be made in the typology of a certain banking service is preceded by a study of its usefulness and effectiveness. According to Sunderaraman et al. (2020) for the implementation of e-banking services, it is necessary for banking institutions to take into account the changes and differences in consumer behavior caused by the digitization process and the spread and use of the Internet, the culture and consumer behavior in the virtual market, the level of the use of equipment provided by information technology, etc

Savaliya, & Khasgivala, (2024) point out that e-banking, as a relatively new service, especially in countries that are in the process of economic development, can be realized as a successful service only if the providers of this service are constantly engaged in updating it. This makes it necessary to monitor and study the implementation process of this service with the aim of identifying the problems and challenges faced by this service (Lesjak, 2019).

Identifying and assessing consumer perceptions of e-banking services is one of the important arguments addressed in the current literature. Dhurup et al. (2014) identified seven key factors influencing customer perception of online banking service quality: assurance, responsiveness, ease of use, accessibility, fulfillment, speed and accuracy, and contact. According to them, these factors collectively impact customer satisfaction and loyalty. Shanmugam et al. (2015) highlighted that security is the paramount concern for UK customers regarding internet banking. The study also noted that features like money transfers and bill payments are the most utilized services, indicating functional preferences among users.

Altobishi et al. (2018) found that convenience, cost, ease of use, personalization, customization, and security positively affect customer satisfaction. Interestingly, privacy did not show a significant effect in the Jordanian context. Sthapit and Bajracharya (2019) focused on business school students in Kathmandu, revealing that perceived usefulness had the strongest influence on the adoption of e-banking services, followed by ease of use and perceived risks.

To study consumer behavior and perceptions of e-banking services, various authors (Featherman & Pavlou, 2003; Kesharwani & Bisht, 2012; Ghani et al., 2017; Beqaj & Baca, 2022; Anggraeni et al. 2024; Doros, 2025) have used the Technology Acceptance Model (TAM), presented by Fred Davis (1986). The study of consumer behavior through this model serves to judge the level of acceptance and use of technological systems by the consumer, referring to assessments for four dimensions - perceived ease of use, perceived usefulness, attitude toward using and behavioral intention to use (Beqaj & Baca, 2022; Baca et al. (2023).

Based on the results obtained from the use of TAM by second-level banks (or commercial banks), which are financial institutions operating under the supervision of the central bank, providing financial services such as deposits, loans, and payments, without performing monetary policy functions, Nguyen & Huynh (2018), Nayanajith, (2021) claim that the perceived usefulness and ease of use of e-banking services are

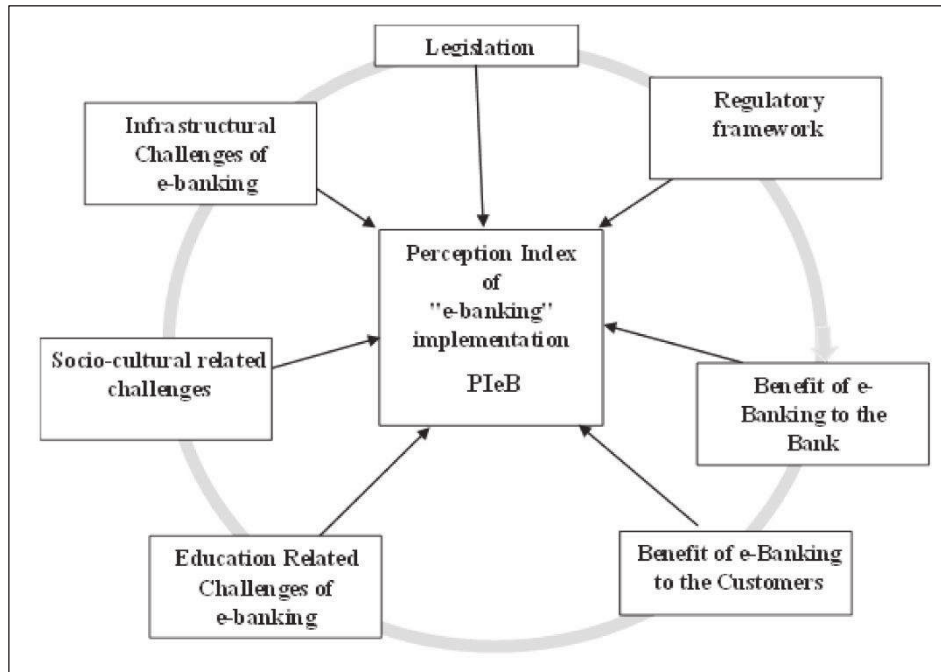
determining factors in the success of services offered by these banks.

Using TAM, Baca et al. (2023) concluding that while risk components are relevant, the perception of benefits has a more substantial impact on consumers' decisions to use e-banking services. Almansour and Elkrggli (2023) identified that customer attitude, perceived ease of use, credibility, and usefulness significantly influence customer satisfaction with e-banking services.

Through the analysis of Mobile banking in Kosovo and Metohija, Bozovic (2016) has assessed the potential, barriers and perceptions of users for this type of service. Beqaj & Baca, (2022) have focused on studying consumer behavior towards e-banking services in Kosovo, assessing perceptions of risk and benefits from these services. Meanwhile, Ahmeti et al. (2022) emphasize that demographic, socio-economic and technological factors influence the adoption of online banking in Kosovo. Haxhosaj & Kume (2025) has published results obtained from the analysis of the links between demographic / socio-economic characteristics and the use of e-banking, ATM and POS in Kosovo.

Haxhosaj & Kume (2023) emphasize that over the last ten years the use of e-banking services in Kosovo is characterized by a positive trend of considerable growth. Meanwhile, this trend is not accompanied by increased engagement in scientific research aimed at identifying and analyzing in-depth the factors that influence the success of this service, the challenges it faces, and determining the most effective ways and mechanisms that providers of these services should use. In order to fulfill this important objective of scientific research, Haxhosaj & Kume (2024) have proposed the use of "Perception Index of 'e-banking' implementation" (PI e-B) as a quantitative instrument through which in-depth analyses of the relationships between various factors that condition the effectiveness and success of e-banking services can be carried out. The authors emphasize that PI e-B can be used as an instrument that, through its periodic evaluations, creates the opportunity to judge the dynamics of the development of e-banking services and to identify the problems that this process faces.

Figure 3. Conceptual Model of PI E-B



Source: Authors

This study analyzes the results obtained from the first use of PI e-B. Based on these results, it is intended to quantitatively assess the current level of use of e-banking services and to identify the factors that influence the success of this service. Through the analysis of the perceptions of the providers of these services and their beneficiaries, the study aims to provide a complete and current picture of the implementation process of e-banking services by second-level banks in Kosovo.

4. METHODOLOGY

4.1. Method and Data

Haxhosaj & Kume (2024) have published the Methodology that should be followed to evaluate PIe-B as a quantitative instrument that can be used to analyze and assess the progress of the implementation process of e-banking services. They have proposed that the construction of PIe-B should be carried out while considering

the connections and interdependencies reflected in the Conceptual Model (Figure 3).

The basis of this proposal is the fact that success in implementing e-banking services is a result of the actions and interactions of various factors with different natures. Part of these factors are the legislation and the way in which issues related to the use of e-banking services are handled, the rules that second-level banks apply to e-banking services, the economic benefits that e-banking services provide, social, psycho-emotional factors, skills and capacities to use information technology products.

According to Haxhosaj & Kume, (2024) the value of Perception Index of "e-banking" implementation process (Pie-B) is the average of the values of 7 (seven) indicators. These indicators reflect different aspects and problems that are supposed to be associated with the implementation process of e-banking. These indicators include a total of 25 items (Table 1).

Table 1. Indicators and Number of Items

Indicator	Number of items
Legislation	3
Regulatory framework	4
Consumers' benefit by using e-banking	4
Bank benefit by e-banking service	4
Infrastructural Challenges of e-banking	4
Illiteracy Related Challenges of e-banking	3
Socio-cultural related challenges	3

Source: Authors

Each item is formulated in the form of a statement for which the interviewee, bank employee or consumer of the e-banking service, must express his perception as an assessment with an increase in the positive sense, starting from the lowest value (1) up to the highest value (5). So the answers of the interviewees will be values of 5 points Likert variable -Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly agree (5). The values of the indicators will be standardized in values from 1 to 100 points. The value of PI e-B, is calculated as the average of the standardized values of seven indicators, components of PI e-B.

For the purposes of analysis, judgment and assessment of the quality of the implementation of the e-banking services process and the customer response to it, the standardized values of the indicators and PI e-B are classified into five intervals that correspond to five different assessments. (Table 2)

Table 2. Classification Levels of PI E-B

≤ 40 scores	Very low
40+ - 50 scores	Low
50+ - 60 scores	Moderate
60+ - 70 scores	Hight
≥70+ scores	Very high

Source: Authors

4.2. Sample

Information gathered from interviews with 351 banking customers and 60 employees of second-level banks offering e-banking services, selected at random, were used to assess seven indicators and PI e-B

The characteristics of the sample of interview customers are presented in Table 3. The interviews were conducted online via Google Forms.

Table 3. Sample Structure According to Demographic Features of the Respondents-Consumers

Variable	Category	Number	%
Gender	Male	103	29.3
	Female	248	70.7
Age	18-29 years old	143	40.7
	30-39 years old	119	34.0
	40-50 years old	59	16.8
	>50 years old	30	8.5
Education level	Elementary	104	29.6
	Hight school	58	16.5
	University	287	81.8
Civil status	Single	163	46.4
	Married	188	53.6
Employment status	Unemployed	104	29.6
	Self employed	21	6.0
	Employed	226	64.4
Monthly income level	Less than 300 €	80	22.8
	300-600 €	93	26.5
	601-1000 €	44	12.5
	More than 1000 €	134	38.2
Using e-banking	< 1 year	120	34.2
	1-2 years	88	25.1
	2-5 years	74	21.1
	> 5 years	69	19.7
Residential area	Rural area	84	23.9
	Urban area	267	76.1

Table 4 shows the characteristics of the sample formed with bank employees. Interviews were conducted with employees at the National Commercial Bank, Raiffeisen Bank Kosovo, Procredit Bank, Credins Bank Kosovo.

Table 4. Sample Structure According to Demographic Features of the Respondents Employees in Second-Level Banks

Variable	Category	Number	%
Gender	Male	23	39.0
	Female	37	61.0
Age	18-29 years old	35	58.3
	30-39 years old	15	25.0
	>40 years old	10	16.6
	Hight school	6	10.0
Civil status	University	54	90.0
	Single	35	58.4
Work experience	Married	25	41.6
	< 1 year	13	21.6
Work experience	1-2 years	14	23.3
	> 2 years	33	55.1

The data were collected throughout the period September-November, 2024.

4.3. Limitation

Conducting the study using the data of a random sample is a limiting factor which conditions the careful use of the study results. Increasing the sample size, spreading it as much as possible over the territory and diversifying the typologies of consumers included in the sample are necessary to reduce the limiting effect caused by the random sample.

An important limitation of this study is that PI e-B, estimated as a simple average of the values of the constituent indicators, reduces the quality of

this indicator. The construction of a multidimensional index, whose values will be the result of the weighted effects of its constituent indicators, is future direction of scientific research

5. EVALUATION OF THE INDICATORS

5.1. Legislation

The indicator "Legislation", whose values are the perceptions of second-level banks employees and about 7% of consumers who declared their opinion on it, is assessed at the "High" level (62.50 scores) (Table 5). This high level of positive perception is a consequence of the care shown by second-level banks in Kosovo to implement e-banking service offers, in accordance with the requirements of national and international legislation.

Table 5. Indicator "Legislation"

Items	Evaluation	
The national legislative framework is supportive for the implementation of e-banking	3.32	3.50 (62.50)
The legal obligation of banks to implement e-banking is a driving factor for the development of this service.	3.63	
The legislative framework is aligned with international standards and the legislation of EU countries.	3.55	

Source: Authors

As emphasized by Teliti & Mersini (2012); Rachid, & Rachid, (2020); Syerova et al (2021), the way in which the requirements of the legislation are implemented in the offer of e-banking services is one of the most important factors in the successful implementation of this service. Rachid, & Rachid, (2020) underline that "The key challenge for e-banking is how to ensure proper legal protections for electronic financial transactions for both in local market and for cross-border transactions" This is a fundamental requirement

foreseen in EU legislation, which, according to the perceptions on which this study is based, is assessed to have been met at a “High” level by second-level banks in Kosovo (63.75 scores)

5.2. Regulatory Framework

The way in which the second-level banks have reflected the requirements of national and international legislation in the Regulatory framework that they have drafted for the implementation of their e-banking service offerings is perceived as a generally successful process. The value of the relevant indicator results in a score of 59.75, which ranks this indicator at the upper limit of the “Moderate” level, with only about 1.5 percentage points less than the “High” level (Table 6). Referring to Bower (2022), the values of the perceptions for the four constituent items of the “Regulatory framework” indicator show that the process of implementing e-banking services in Kosovo, in its main lines, is developing in accordance with the requirements that condition the success in the use of information technology.

Table 6. Indicator “Regulatory Framework”

Items	Evaluation	
The regulatory framework that deals with e-banking issues is an effective incentive and support for the development of this service by second-level banks	3.20	3.39 (59.75)
Government policies are effective support for the implementation of e-banking	3.13	
The rules and procedures approved by the second level banks for the e-banking service are understandable and easy to implement.	3.60	
The regulatory framework for the implementation of the e-banking service does not create unaffordable physical and psycho-emotional burdens for second-level bank employees.	3.63	

Source: Authors

5.3. Benefit of E-Banking to the Customers

The consumer of e-banking services in Kosovo perceives these services as convenient (Table 7). The corresponding indicator is assessed in the “Very high” column (77.78 scores). In particular, consumers appreciate the fact that these services enable their access to the bank to be unlimited in time, 7/24, and to receive the service requested by them without wasting time.

Table 7. Indicator “Benefit of E-Banking to the Customers”

Items	Evaluation	
Using e-banking has improved my relationship with the bank	3.96	4.11 (77.8)
The use of e-banking has reduced the cost of transactions	3.90	
e-banking has given me the opportunity to benefit from 24-hour service from the bank	4.31	
The use of e-banking saves me the time of waiting in line to receive the service at the banks	4.28	

Source: Authors

e-banking services are valued by consumers as an opportunity that improves their relationship with the bank and reduces the cost of transactions they make. These perceptions are similar to those reported by other authors in countries where banks offer e-banking services (Sambaombe & Phiri, 2022; Lila, & Tanushev, 2024).

5.4. Benefit of E-Banking to the Bank

The interviewed employees assess the bank’s commitment to providing e-banking services not only as a necessity for the contemporary development of the banking system but, at the same time, as an investment that increases the bank’s profits. This is a common perception expressed by almost all the interviewees, resulting in the assessment of this indicator at the “High” level (Table 8).

Bank employees in Kosovo perceive e-banking services as a factor that significantly affects the increase in the diversity, quality, effectiveness and efficiency of the services that the bank offers to its customers. This is a similar approach to that communicated by other authors

Table 8. Indicator “Benefit of E-Banking to the Bank”

Items	Evaluation	
e-banking has increased the range of services that the bank offers	3.82	3.65 (66.25)
e-banking has increased the effectiveness and efficiency of the bank	3.56	
e-banking has increased the bank’s image	3.80	
e-banking has increased the bank’s income	3.42	

Source: Authors

about the perceptions and opinions of employees in banks in other countries, that offer such services (Kariyawasam, & Jayasiri, 2016; Ismaili & Braimllari (Spaho), 2021; Sagar, 2023; Yahayai et al. 2023). Such a result indirectly shows that, in the process of implementing e-banking services, banking institutions in Kosovo are guided by principles and implement rules to enable the achievement of goals and expectations that condition the increase in profit. The high values in the perceptions for the constituent items of this indicator support the assertion that second-level banks in Kosovo are carrying out the process of implementing e-banking services, aiming to realize all the benefits formulated by Rosenberg, (2024).

5.5. Infrastructural Challenges of E-Banking

The level of internet penetration in the territory, the quality of the signal and, in places that have problems with the electricity distribution network, are among the factors that determine the success of the implementation of e-banking services (Serrah & Maideen, 2022). Consumers of

these services in Kosovo state that these factors have hindering effects on the implementation of e-banking services. The indicator is assessed at the “Moderate” level (46.0 scores) (Table 9).

Table 9. Indicator “Infrastructural Challenges of E-Banking”

Items	Evaluation	
The success of the e-banking service has not been negatively affected by the lack of electricity supply	2.85	2.68 (42.00)
The level and quality of internet use by the population has not limited the use of e-banking	2.62	
The level of telecommunications infrastructure has not limited the use of e-banking.	2.82	
The limitations in ICT infrastructure have not limited the use of e-banking	2.42	

Source: Authors

Referring to the items that are included in this indicator, on the one hand, and on the other hand, bearing in mind that the interventions in the infrastructures related to these items do not depend on the banking institutions, we can affirm that their negative, inhibiting effects, in the successful implementation, throughout the territory of the country and for every consumer interested in e-banking services, in Kosovo, as a country that is in the process of economic and social development, will continue to be present for a relatively long time long.

5.6. Education-Related Challenges of E-Banking

According to the Technology Acceptance Model (TAM), consumer behavior and perceptions towards e-banking services, especially in countries that are in the process of developing these services, as is the case of Kosovo, are significantly conditioned by the level of their information about the advantages of these services and by the level of education and skills they possess for the

use of information technology products (Baca et al. 2023). The responses received for the items constituting the indicator “Education Related Challenges of e-banking”, the formulation of which was made by referring to TAM, are valuable information for understanding consumer behavior in Kosovo towards e-banking services.

Consumers say that in order to increase the success in implementing e-banking services, it is necessary for banks to engage qualified employees in this service. Informing and raising awareness about e-banking services offered by the bank where they are a client is considered by consumers as a necessary process. In addition, consumers state that it is necessary for banks to be more committed to offering e-banking services that are easily understandable and with as few difficulties in their use as possible.

The assessment of this indicator with 47.25 scores (Table 10), consequently its classification at the “Moderate” level, highlights the need for qualitative improvement of the cooperation of banks that offer e-banking services with the consumer. Identification by banks of the difficulties and factors that negatively affect the use of e-banking services by the consumer, which, to a considerable extent, are a consequence of the level of education and

access of the consumer to the products and instruments that use technology of information, is necessary for achieving the expectations that banks have in offering for the use of e-banking services.

The problems and challenges generated by the low level of perceptions of this indicator are characteristic of developing countries that do not have consolidated experiences in the use of information technology (Ahmad et al. 2019; Serrah & Maideen, 2022; Jain, 2022)

5.7. Socio-Cultural Related Challenges

This is an indicator whose value and its constituent items are very important information to guide the work of drafting policies and programs in support of the process of implementing e-banking services. Especially for countries that are in the process of economic development and that have insufficient capacities and experience in the use of information technology, the assessment and analysis of this indicator is very important to identify the challenges that must be faced by second-level banks that offer e-banking services (Mawlawi, 2018; Richard, 2019; Khan, 2022).

Table 10. Indicator “Education Related Challenges of E-Banking”

Items	Evaluation	
The lack of educated and efficient staff in the context of e-banking has not negatively affected the implementation of the e-banking service.	3.01	2.89 (47.25)
The lack of customer awareness of the positive effects of e-banking products has not negatively affected the implementation of the e-banking service.	2.91	
Consumer difficulties to access e-banking services have not limited the use of e-banking	2.75	

Source: Authors

Table 11. Indicator “Socio-Cultural Related Challenges”

Items	Evaluation	
The level of general development of society has not limited the use of e-banking services	2.45	2.93 (48.25)
The consumer’s trust in the traditional system of payments and relations with the bank has not had a negative impact on the implementation of the e-banking service.	3.08	
Psychological resistance to changes in behavior as a consumer of banking services has not limited the use of e-banking	3.26	

Source: Authors

The value of this indicator (48.25 scores), which classifies it at the “Moderate” level, shows that in the Republic of Kosovo the process of implementing e-banking services faces challenges that are a consequence of the current level of economic and social development. According to the interviewed persons, consumers or employees in second-level banks, the general level of social development is a factor with negative effects on this process. The interviewees perceive this effect of this factor at the “Low” level, while according to the interviewed consumers the pressure of traditional ways of receiving services from banks is a factor that does not stimulate their interest in using e-banking services (Table. 11)

6. PERCEPTION INDEX OF E-BANKING IMPLEMENTATION PROCESS (PI E-B)

The value of PI e-B, which is calculated as the average of the standardized values of the seven indicators (Table 5 to 11) that make up the Index, is 57.79 score. Referring to the rule defined in Table 2, the process of implementation of e-banking services in the Republic of Kosovo, can currently be classified at the “Moderate” level. Meanwhile, it should be noted that the calculated standardized value of PI e-B is only about 4.0 percentage points lower than the value that the index should have to classify this process at the “High” level.

As can be seen (Figure 4), the smallest contribution to the Index value is made by indicators whose values are not a consequence of the level of commitment of e-banking service providers nor of the quality of their offers. The consumers and employees of the second-level banks interviewed stated that the legislative framework and its implementation by the e-banking service providers, as well as the benefits realized from the use of these services for both the service provider and its users, are factors that support the success in the implementation of these banking services. Considering the fact that e-banking services are a relatively new process being developed by the second-level banks in Kosovo, the situation identified by these indicators shows that the possibilities and trends in the

implementation and to achieve success in these services in Kosovo are optimistic. Currently, second-level banks in Kosovo are responding effectively to the needs of the financial system to develop as a system similar and close to the financial systems implemented in developed countries.

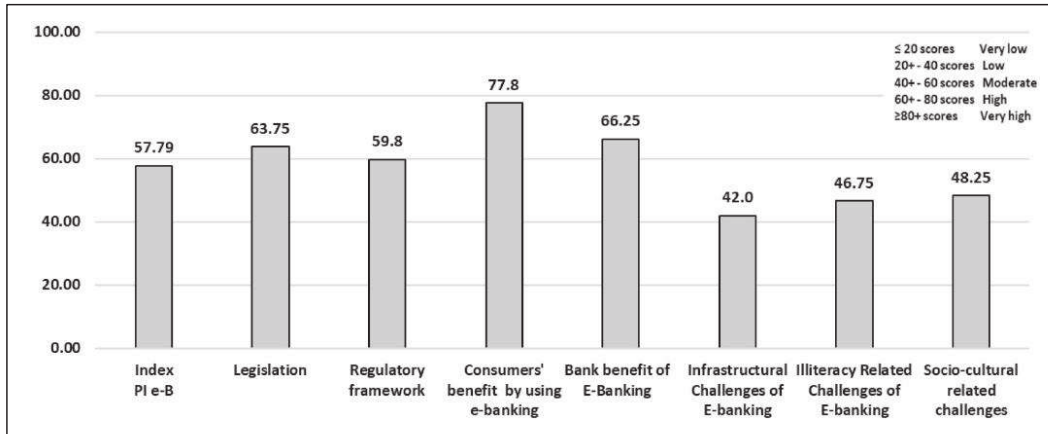
The low contribution, in the value of the Index, of indicators that are directly or indirectly related to the current stage of economic, social and cultural development of the country and society in Kosovo, is a situation that does not compromise the commitment of second-level banks to offer e-banking services. This is a situation similar to situations that other countries have faced, countries that are part of the group of developing countries and that, despite this, have not in any case stopped their efforts to use information technology in banking services.

The analysis of perceptions for different items, components of indicators that reflect the challenges faced by the process of implementing e-banking services is necessary to better understand this process and, on this basis, to design and implement more effective policies and programs.

The results obtained in this study show that the Perceptions Index for e-banking services (PI e-B) is a quantitative instrument that can be used effectively for the analysis of the process of implementing e-banking services. The periodic assessment of this Index and the analysis of the dynamics of changes in its value and the component indicators can be used by second-level banks that offer e-banking services as an effective way for decision-making for the further development of this banking service offer.

The value of PI e-B calculated as the simple average of the average values of the seven component indicators of the Index is based on the hypothesis that the effect and force of action of these indicators on the value of the index are equal. Acceptance of this hypothesis is an approximation to reality, which affects the quality of the results obtained. The increase in this quality necessitates the need for further research. Conducting in-depth statistical analyses and using their results to construct the PI e-B as

Figure 4. PI E-B and Their Indicators



Source: Authors

a multi-dimensional instrument, the values of which will be the result of weighting the values of its constituent indicators, are future directions of scientific research.

7. CONCLUSION

The implementation of e-banking services by second-level banks in Kosovo is developing as a complex process whose success is influenced by the action and interaction of factors related to (i) the level of adoption and use of information technology, (ii) legislative solutions and regulatory instruments used by banks, (iii) psychosocial and economic factors and (iv) perceptions of the advantages and economic benefits offered by these services.

The Perceptions Index for the Implementation Process of e-banking Services is a quantitative instrument whose values and the values of its constituent indicators are important explanatory information for understanding, judging and making decisions about the progress of the process of developing e-banking services.

Currently in Kosovo the process of implementing e-banking services is perceived to be developing at the “Moderate” level, with a difference

of only 4.0 percentage points to be classified at the “High” level.

Among the factors that have currently been identified as having a positive effect on the progress and success of e-banking services are legislative solution that regulates the use of this service and consumers` and bank benefit.

Increasing the success and effectiveness in the use of e-banking services in Kosovo requires commitment to face the challenges generated by lack of capacity in infrastructure, socio-cultural challenges and education related challenges.

The Perceptions Index for the Process of Implementing e-banking Services is recommended to be used, periodically, by second-level banks.

The study conducted using information from a random sample limits the generalizability of the results. Increasing the sample, expanding it in the territory and including consumers with different typologies, together with improving the qualities of PI e-B through the construction of a multidimensional Index, whose values will be the result of the weighted effects of its constituent indicators, are future directions of scientific research.

References

- Abdulselam F. (2019) Opportunity and Challenges of Electronic-Banking System in Commercial Bank of Ethiopia (A Case Study on Gurage Zone). *Journal of Accounting, Finance and Auditing Studies* 5/2 (2019) 106-122. <https://www.um.edu.mt/library/oar/handle/123456789/41868>
- Afraz, A. A. T. N., & Geetha, R. (2024). E-banking: Opportunities and challenges from customer's perspective. *Qubahan Academic Journal*, 4(1), 37-45. <https://doi.org/10.18502/qaj.v4i1.13274>
- Ahmad, Sh., Hussain Bhatti, S. & Hwang, Y. (2019) E- service quality and actual use of E-banking: Explanation through the Technology Acceptance Mode. <http://dx.doi.org/10.1177/0266666919871611>
- Ahmeti, F., & Prenaj, B., (2022). Determinants affecting consumer acceptance and adoption of internet banking in developing countries: The case study of Kosovo (*working paper / conference paper*). *SSRN / IDEAS*. <https://ideas.repec.org/a/bas/econst/y2022i6p60-79.html>
- Altobishi, Th., Erboz, G., & Podruzsik, S. (2018) E-banking Effects on Customer Satisfaction: The Survey on Clients in Jordan Banking Sector. *International Journal of Marketing Studies*; Vol. 10, No. 2. <https://ccsnet.org/journal/index.php/ijms/article/download/75596/41740>
- Almansour, B., & Elkrggli, S. (2023) Factors Influencing Customer Satisfaction on E-banking Services: A Study of Libyan Banks, *International Journal on Technology, Innovation, and Management (IJTIM)*, vol. 3, no. 1, pp. 34-42, doi: 10.54489/ijtim.v3i1.211.
- Anggraeni, A.F., Rismunandar, I., Ahada, R., Lasminingrat, A., & Devi, M.C. (2024) TAM Model on Digi Banking BJB in Bandung. *Siber International Journal of Digital Business (SIJDB)*. Vol. 2 No. 3.p. 187-202. <https://doi.org/10.38035/sijdb.v2i3>
- Baca, G., Artan Hajdini, A., & Elezaj, Sh. (2023). "Adoption of Electronic Banking: An Extension of Technology Acceptance Model (TAM)" *Ekonomski pregled, Hrvatsko društvo ekonomista (Croatian Society of Economists)*, vol. 74(6), pages 818-839. <https://ideas.repec.org/a/hde/epregl/v74y-2023i6p818-839.html>
- Beqaj B., & Baca, G. (2022) Consumer evaluations of e-services: A perceived risk perception in financial institutions. *Econviews: Review of Contemporary Entrepreneurship, Business, and Economic*. Issues, Vol. 35 No. 1, 2022. <https://doi.org/10.51680/ev.35.1.9>
- Bozovic, J. (2016). Mobile banking in Kosovo and Metohija - Status and Potential. *Journal of Research in Business, Economics and Management*, 5(2), 531-542. <https://www.scitecresearch.com/journals/index.php/jrbem/article/view/561>
- Bower. T. (2022) 10 Regulatory Requirements & Issues with E-banking. <https://financialedinc.com/10-Regulatory-Requirements-and-Issues-with-E-banking>
- Chaudhary, V., Mandaviya, M., Sameen, H. S., Maroor, J. P., & Bharti, A. (2022). A study on effect of various demographic factors on preference of consumers towards online banking usage. *Materials Today: Proceedings*, 51, 84-87. <https://doi.org/10.1016/j.matpr.2021.04.560>
- Choudhury, D. & Bhattacharjee, D. (2015) Impact of Socio Economic Factors on Adoption of E-banking amongst Salaried Employees. *International Journal of Research in Management, Science & Technology* Vol. 3, No. 3. p.37-46
- DataReportal. (2024, January). *Digital 2024: Kosovo*. <https://datareportal.com/reports/digital-2024-kosovo>
- Davis, F.D. (1986) A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results. Sloan School of Management, Massachusetts Institute of Technology.
- Central Bank of the Republic of Kosovo. (2025). *E-banking statistics* [Data set]. <https://bqk-kos.org/>
- Diallo, A., Sow, A., & Ndiaye, M. (2024). Security assessment of mobile banking apps in West African Economic and Monetary Union. *Journal of Information Security and Applications*, 76, 103516. <https://doi.org/10.1016/j.jisa.2023.103516>
- Dhurup, M., Surujlal, J., & Redda, E. (2014) Customer Perceptions of Online Banking Service Quality and Its Relationship with Customer Satisfaction and Loyalty. *Mediterranean Journal of Social Sciences*, 5(8), 72. <https://>

- www.richtmann.org/journal/index.php/mjss/article/view/2534/2502
- Doros, D. (2025) Determinants of the adoption of Digital Banking: A Study of Cyprus. *International Journal of Management and Commerce Innovations* ISSN 2348-7585 (Online) Vol. 12, Issue 2, pp: (195-207), Month: October 2024 - March 2025. p. 195-207. <https://doi.org/10.5281/zenodo.14747773>
- Egan, J. (2024) What Is Online Banking? Definition and How It Works. *Investopedia*. <https://www.investopedia.com/terms/o/online-banking.asp>
- Fathima, A. (2022) Influence of Demographic Variables on Determinants of Internet Banking Adoption. *2022 ECS-The Electrochemical Society*. <https://iopscience.iop.org/article/10.1149/10701.5671ecst#:~:text=DOI%2010.1149/10701.5671ecst>
- Featherman, M. & Pavlou, P. (2003). Predicting e-services acceptance: a perceived risk facets perspective. *International Journal of Human-Computer Studies*, 59(4), 451-474. [http://dx.doi.org/10.1016/S1071-5819\(03\)00111-3](http://dx.doi.org/10.1016/S1071-5819(03)00111-3)
- Haxhosaj, A., & Kume, K. (2024) Perception index of "E-banking" implementation process in Kosovo. A methodical approach. ISARC International Science and Art Research Center. The 4th International Uludağ Scientific Research and Innovation Congress will be held on November 16-17, 2024, in Bursa. <https://www.scribd.com/document/845264532/Uluda%C4%9F-Kongre-Program-241113-062607>
- Haxhosaj, A., & Kume, K. (2025) About the relationship between consumers demographic features, socio-economic factors and the use of e-banking service in Kosovo. *International Journal of Economics, Commerce and Management*. Vol. 13, Issue 1. ijecm.co.uk
- Ghani, M. A., Samar, R., Yasin, N. M. & Alnaser, F. M. (2017). Adoption of internet banking: Extending the role of Technology Acceptance Model (TAM) with e-customer service and customer satisfaction. *World Applied Sciences Journal*, 35(9), 1918-1929. https://www.researchgate.net/publication/320417108_Adoption_of_Internet_Banking_Extending_the_Role_of_Technology_Acceptance_Model_TAM_with_E-Customer_Service_and_Customer_Satisfaction
- Ifedi, Ch., Haque, R., Senathirajah, A.R. Bin S., & Qazi, S.Z. (2024). Service quality influence on consumer satisfaction in the banking sector aimed at sustainable growth. *RGSA – Revista de Gestão Social e Ambiental*. Vol.18, no.7. <https://doi.org/10.24857/rgsa.v18n7-032>
- Ismaili, E., & Braimllari (Spaho), A. (2021) Factors Influencing the Frequency of Use of E-banking Services in Albania. *International (CC BY 4.0). CEUR Workshop Proceedings (CEUR-WS.org)*. <https://ceur-ws.org/Vol-2872/paper08.pdf>
- Jain, M. (2022) The Impact of Technology in E-banking Services. *Journal of Pharmaceutical Negative Results*, Vol.13, Special Issue 8.p.1784-1799. <https://www.pnr-journal.com/index.php/home/article/download/3163/3103/3942>
- Jalani, S. N. M., & Easwaramoorthy, S. V. (2024). Factors influencing the usage of mobile banking apps among Malaysian consumers. *Journal of Business and Social Review in Emerging Economies*, 10(1), 93-101. <https://doi.org/10.26710/jbsee.v10i1.2980>
- Kesharwani, A. & Bisht, S. S. (2012). The impact of trust and perceived risk on internet banking adoption in India. *International Journal of Bank Marketing*, 30(4), 303-322. <http://dx.doi.org/10.1108/02652321211236923>
- Kariyawasam, N.J., & Jayasiri, N.K., (2016) Awareness and usage of internet banking facilities in Sri Lanka. *International Journal of Scientific Research and Innovative Technology*. Vol. 3 No. 6. P.173-190. https://www.researchgate.net/figure/41-Customers-occupation-vs-internet-banking-usage_tbl4_318929992
- Khan, I.U. (2022) How does culture influence digital banking? A comparative study based on the unified model. *Technology in Society*, Volume 68, February 2022, 101822. <https://www.sciencedirect.com/science/article/abs/pii/S0160791X21002979>
- Lila, A., & Tanushev, Ch. (2024) Customers' Attitudes and Perceived Constraints to E-banking Services: A Survey Study in Albania. *Apuntes CENES* Volumen 43, Número 78. p.27-49. <https://dialnet.unirioja.es/descarga/articulo/9643209.pdf>
- Mawlawi, A. (2018) Consumer Social Aspects Towards Online Banking. *Arab Journal Platform Al Jinan* نوانجلا: Vol. 10, Article 16. <https://digitalcommons.aaru.edu.jo/aljnan/vol10/iss1/16>

- Muthukumar, R., Ramakrishnan, L., Poongodai, A., & Krishnamacharyulu, C.S.G. (2024). Association Between Demographic Factors and Internet Banking Usage. *Science, Engineering Management and Information Technology. SEMIT 2023. Communications in Computer and Information Science*, vol 2198. Springer, Cham. https://doi.org/10.1007/978-3-031-72284-4_27
- Pantielieieva, N., Rogova, N., Zaporozhets, S., Zhezherun, Y., Tretiak, N. & Pantielieieva, K. (2022) Current stage of formation of the financial intermediation ecosystem in the context of digitalization. *EKONOMSKI PREGLED*, 73 (2) 215-239. <https://hrcak.srce.hr/file/398320>
- Pham Tien Dat, Nga Phan Thi Hang (2023) Factors Affecting the Decision to Use E-banking Services: A Case Study of Individual Customers during the Covid-19 Pandemic in Vietnam. *Malaysian Journal of Consumer and Family Economics* Vol 30 (June, 2023):25-47. <http://dx.doi.org/10.60016/majcafe.v30.02>
- Rachid, El Hila; & Rachid, A. (2020) E-banking: Legal Overview. *Revue Internationale du Chercheur*. Vol. 1 : Numéro, pp : 194 – 205. <https://www.revuechercheur.com/index.php/home/article/download/19/18/70>
- Rosenberg, E. (2024) 5 Biggest Benefits of Online Banking. <https://www.synchrony.com/blog/banking/onlinE-banking-benefits>
- Sagar, K.D. (2023) Comparative study of E-banking services by public and private sector banks of India. PhD Thesis, Gujarat Technological University Ahmedabad, India. <https://shodhganga.inflibnet.ac.in/handle/10603/545581>
- Sambaombe1, J.K., & Phiri, J. (2022) An Analysis of the Impact of Online Banking on Customer Satisfaction in Commercial Banks Based on the TRA Model (A Case Study of Stanbic Bank Lusaka Main Branch). *Open Journal of Business and Management*. Vol.10 No.1. <http://dx.doi.org/10.4236/ojbm.2022.101022>
- Schmidt-Jessa, K. (2023). Demographic factors and customers' bank choice criteria. *Central European Economic Journal*, 10(57), 237-253. DOI: 10.2478/ceej-2023-0014 To link to this article: <https://doi.org/10.2478/ceej-2023-0014>
- Serrah, E. A., & Maideen, M. B. H. (2022). E-banking Services and Customer Satisfaction: ocus on A Private Bank in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 12(10), 1489 – 1499. https://hrmars.com/papers_submitted/13077/E-banking-services-and-customer-satisfaction-focus-on-a-privatE-Bank-in-malaysia.pdf
- Sthapit, A., & Bajracharya, N. (2019). Customer Perception towards Adoption of E-banking Services in Kathmandu: A Survey of Business School Students. *Journal of Business and Social Sciences Research*, 4(1), 13–26. <https://doi.org/10.3126/jbssr.v4i1.28995>
- Syerova, Y., Somychb, N., Ortynskyya, V., & Zakharchenkoc, A. (2021) E-banking: Commerce and Legal Aspects. IT&AS'2021: Symposium on Information Technologies & Applied Sciences, March 5, 2021, Bratislava, Slovakia. <https://ceur-ws.org/Vol-2824/paper15.pdf>
- Shanmugam, M., Wang, Y.-Y., Bugshan, H. & Hajli, N. (2015), «Understanding customer perceptions of internet banking: the case of the UK», *Journal of Enterprise Information Management*, Vol. 28 No. 5, pp. 622-636. <https://doi.org/10.1108/JEIM-08-2014-0081>
- Teliti, E., & Mersini R. (2012) Assessment of E-banking Services and Legal Framework in Albania. *Mediterranean Journal of Social Sciences* 3 (1). <http://dx.doi.org/10.5901/mjss.2012.03.01.267>
- Richard, M.O. (2019) Social Cultural Factors affecting adoption of Ict Integrated Banking Programs in Kenya. <http://dx.doi.org/10.13140/RG.2.2.19043.71209>
- Yahayai, M.H., Hanafiahii, N.M., Rosli, M.S.A., Md Ismail, M. A., Baharudin, & Z.N., Latifvi, A.A.A., & Mohd, N.A. (2023) E-banking system benefits and issues: An analysis of literature review. *Al-Qanatir: International Journal of Islamic Studies*. Vol. 30. No. 2. (2023). <https://www.al-qanatir.com/qq/article/download/687/419>

Indeks percepcije implementacije e-bankarstva (PI e-B) u Republici Kosovo

Sažetak

Na temelju podataka prikupljenih iz slučajnog uzorka od 351 potrošača i 60 zaposlenika banaka druge razine, procijenjen je Indeks percepcije i njegovi sastavni pokazatelji za proces implementacije usluga e-bankarstva (PI e-B) u Republici Kosovo. Prema trenutačnim vrijednostima PI e-B, ovaj se proces klasificira na „umjerenoj“ razini. Zakonodavni i regulatorni okvir te percepcija koristi koje banke i potrošači ostvaruju korištenjem usluga e-bankarstva predstavljaju ključne čimbenike uspješnosti ovih usluga. S druge strane, obilježja i specifičnosti potrošača, razina gospodarskog i društvenog razvoja te kapaciteti i iskustva u korištenju informacijske tehnologije trenutačno predstavljaju prepreke povećanju učinkovitosti i teritorijalnom širenju usluga e-bankarstva u Republici Kosovo. Indeks percepcije e-bankarstva (PI e-B) predstavlja instrument koji banke druge razine mogu koristiti pri oblikovanju politika i provedbi programa usmjerenih na povećanje učinkovitosti i kvalitete usluga e-bankarstva u Republici Kosovo. Buduća istraživanja trebala bi biti usmjerena na dublju statističku analizu konstrukcije PI e-B kao višedimenzionalnog instrumenta, čije će vrijednosti proizlaziti iz ponderiranja vrijednosti njegovih sastavnih pokazatelja.

Ključne riječi: indeks, usluge e-bankarstva, implementacija, Kosovo.