

## The Impact of Digitalization on Net Promoter Score (NPS) among Banking Customers in Europe

Andreea-Raluca Rosca (Gavrila)<sup>1</sup>

### **Abstract**

*This study explores the impact of digitalization on the Net Promoter Score (NPS) among banking customers in Europe. The topic was selected due to the growing importance of digital transformation in reshaping the banking industry and its potential to influence customer satisfaction and loyalty, as reflected by NPS. The literature review provides a detailed analysis of the central concepts of digitalization and NPS in the European banking industry, including the historical context of banking digitalization, the importance of NPS as a customer satisfaction metric, and the influence of digital banking features on customer experience. A key contribution of this paper is the development of an original conceptual model that integrates key elements from literature to explain how digitalization impacts customer experience and, subsequently, NPS. As a novelty, the study distinguishes between overall bank-level NPS and the NPS specifically associated with digital products and services delivered through internet banking platforms. The methodology relies on secondary data to address two key questions: (1) How does the NPS for digital banking services compare to the overall NPS at selected banks level? (2) Does a higher degree of national digitalization relate with higher NPS scores of the banks? Using a case study of top-performing banks in Romania and two other European countries, the findings provide insights into how digital maturity influences customer loyalty and supports banks in refining their digital strategies.*

*Keywords: digital banking, net promoter score, customer experience, customer loyalty.*

*JEL Classifications : F65, G21, M31, O33*

DOI: 10.24818/REJ/2026/92/09

### **1. Introduction**

In recent years, the banking sector has undergone profound changes driven by rapid technological developments and evolving customer expectations. Digitalization is no longer a strategic option, but a necessity for banks seeking to remain competitive in an increasingly dynamic environment. Alongside this transformation, understanding and enhancing customer loyalty has become a central concern, as banks aim not only to retain their existing client base but also to attract new customers through positive recommendations.

The Net Promoter Score (NPS) has emerged as one of the most widely used indicators of customer loyalty, offering a simple yet powerful way to capture the

---

<sup>1</sup> PhD Candidate, Faculty of International Business and Economics, Bucharest University of Economic Studies, Romania, andreearaluca.gavrila@gmail.com

likelihood of customers recommending a bank's services. At the same time, the widespread adoption of digital banking has significantly changed how customers interact with financial institutions. Despite this shift, relatively little attention has been given to how digital interactions influence NPS compared to overall evaluations at the bank level.

Against this background, the present study seeks to contribute to the existing state of knowledge by addressing two key aspects: first, it examines whether customer loyalty differs between digital banking services and overall bank experience; second, it explores whether variations in national levels of digitalization are reflected in bank's NPS performance. By considering multiple European contexts with different levels of digital maturity, the paper aims to shed light on the broader relationship between digital transformation and customer loyalty in banking.

The paper is organised into several sections, each contributing to overall objective of analysing the impact of digitalization on Net Promoter Score (NPS) in the European banking industry.

The literature review provides the theoretical foundations, discussing the evolution of digitalization in banking, the current state of digital development across Europe and the growing importance of customers experience and NPS as performance indicators. Building on these insights, the paper proposes a conceptual model that brings together key elements identified in the literature and clarifies the relationship between digitalization and customer perceptions.

The methodology section outlines the research design, which relies on the secondary data and combines quantitative and qualitative approaches. It focuses on two main research questions: the comparison between digital banking NPS versus overall bank-level NPS, and the relationship between national digitalization and NPS.

The results and discussion section presents the empirical findings based on a comparative analysis of selected banks from Romania, the Netherlands and Germany, highlighting how differences in digital maturity are reflected in customer experience and NPS outcomes. In additions, the paper formulates a set of practical recommendations aimed at improving digital banking strategies, based on the insights derived from both quantitative and qualitative analysed customer feedback. The paper concludes by summarizing the main findings, discussing their implications for practice and outlining limitations and directions for future research.

## 2. Review of the scientific literature

### 2.1 Historical context and current overview of banking digitalization in Europe

The evolution of banking in Europe has been widely influenced by technological advancements and social relevant factors, shaping the industry's transition from traditional branch-based operations to highly digitalized services. This transformation can be traced back over time to some important milestones over the past decades, which will be subsequently detailed.

Hence, the early beginnings of digital transformation were marked by the introduction of automated teller machines (ATMs) in the banking infrastructure. Due to the extended demand of cash distribution after business hours, first ATMs were launched almost simultaneously, in 1967, in Sweden – the Bankmat and United Kingdom – Barclaycash and Chubb MD2 (Bátiz-Lazo, 2015). These machines revolutionized access to personal funds, enabling customers to perform basic transactions independently.

Another phase of accelerated digital transformation in the banking industry succeeds the development of the internet and its widespread access of the population in the 1990s, which transformed the financial sector once again through the emergence of internet banking platforms. These platforms allow users to view their accounts, transfer fund and pay bills, significantly changing the way financial services were consumed before (Mia et al., 2007). The COVID-19 pandemic further facilitated IT-driven modernization in European banking, as social distancing measures increased demand for contactless operations, reshaping customer behaviours and driving financial institutions to rapidly adapt their digital offerings (Doran et al., 2022).

In recent times, the excitement and heightened interest around technological innovations in financial services has continued to grow, as new players have emerged in the market: financial technology companies (fintech), which stood out through the extensive use of digital banking and online customer services. Therefore, the banking industry is challenged once again to adopt new technologies, characterized by high volume information flows and rapid data processing (Nguyen et al., 2023).

Analysing what digitalization means today, we can conclude that technological innovation has transformed the way banking products and services are designed,

provided and consumed. New offerings, driven by the need for remote access to financial services, have expanded the traditional accessibility, fostering inclusivity and convenience for underserved populations (Manta et al., 2024). The transformation of internal banking processes is another critical aspect of digitalization; automating repetitive tasks has minimized human errors while accelerating the speed of transaction handling, resulting in considerable savings in both time and expenses (Bueno et al., 2024). The shift towards automation-led process not only enhances operational efficiency but also frees up human resources for higher-value tasks such as customer relationship management (Adewumi et al., 2024). Nevertheless, to ensure the implementation of these advancements, banks must allocate significant investments toward IT infrastructure; key technologies such as cloud computing, Application Programming Interfaces (APIs), and artificial intelligence (AI) are increasingly integrated into banking operations (Beck & Sanchez, 2022).

## **2.2 Current state of digitalization across all sectors in Europe**

The current state of digitalization across European countries has been extensively documented in several reports, providing valuable insights into the progress and challenges of the nations to successfully implement available technological advancements at a state level.

A pivotal tool for assessing digital progress across EU member states is the Digital Economy and Society Index (DESI), which provides a comprehensive view of each country's readiness for a digital economy and society, by assessing four areas: human capital digital skills, internet usage, digital technology integration and digital public services. As shown in Figure 1, his report placed Romania at the bottom of the rankings, while countries such as Finland, Denmark and the Netherlands are the leader boards. Countries such as Germany, Lithuania, Portugal and Belgium exhibit scores comparable to the European average of the analysed nations.

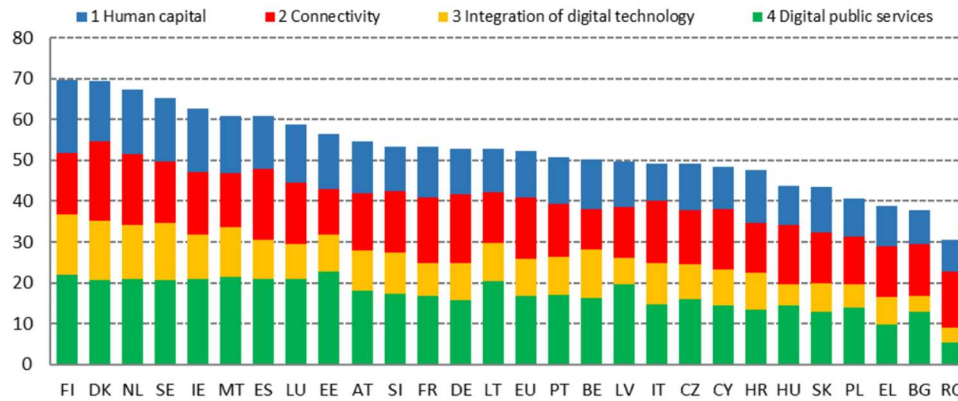


Figure 1. Digital Economy and Society Index, 2022

Source: DESI 2022, European Commission

”Digitalisation in Europe – 2024 edition” report by Eurostat also provides an overview of the digital landscape across European countries, focusing on three pillars: digital skills, technology uptake in businesses and e-government:

- in digital skills assessment, Romania has one of the lowest rates (at 27.7%), highlighting a need for increased investment in education and training, while countries like Netherlands (82.7%), Finland (82%) and Switzerland (77.5%) lead the rankings. States such as Portugal (56%), Greece (52.4%) and Germany (52.2%) are very close to the EU average (55.6%).

Further details can be found in Figure 2.

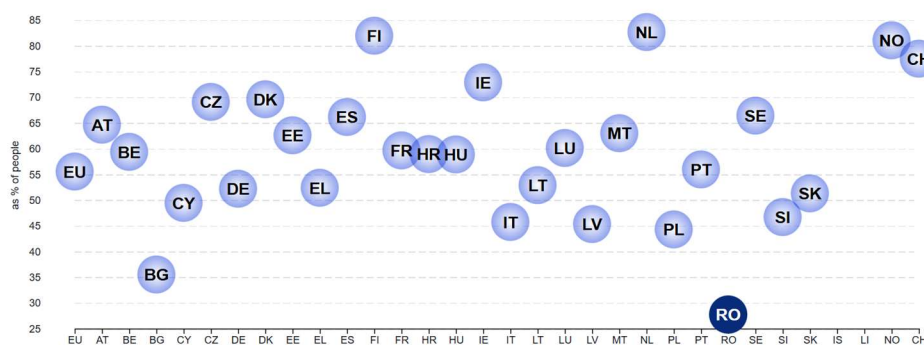
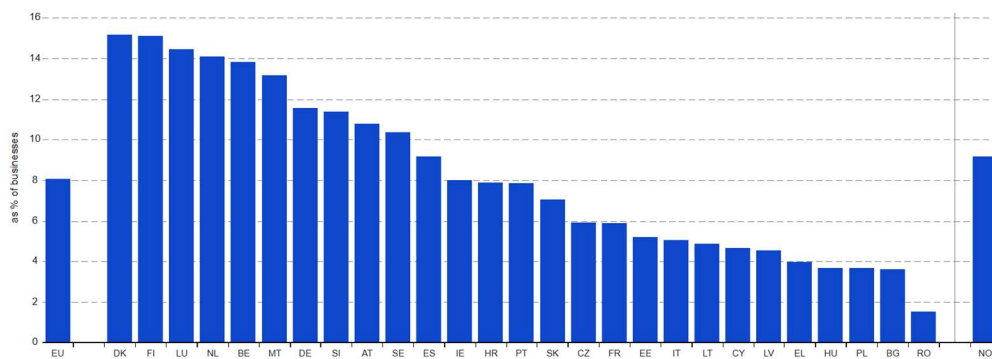


Figure 2. People with basic or above basic digital skills, 2023

Source: Eurostat, Digitalisation in Europe – 2024 edition

- in technology uptake in businesses, as displayed in Figure 3, the general situation is that only 8% of EU businesses used AI technology in 2023; Romania has, again, the lowest AI adoption rate at 1.5%, alongside Bulgaria, Poland, Hungary and Greece. Denmark and Finland lead with over 15%, followed by Luxembourg, Belgium and Netherlands.



**Figure 3. Businesses using AI technologies, 2023**

*Source: Eurostat, Digitalisation in Europe – 2024 edition*

- in e-government section, specific data on country rankings is not detailed, but information regarding the top performers are still provided: Finland (83%), Denmark (73%), and Sweden (71%), where percentages represent the share of individuals who accessed the internet within the past year to acquire information from governmental authorities.

### 2.3 Customer experience in European banking industry

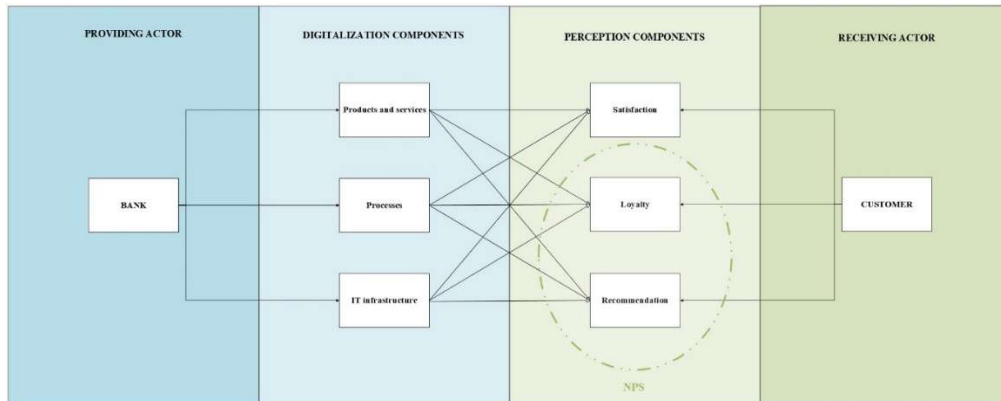
The concept of customer experience was addressed in the work of Holbrook and Hirschman (1982), particularly through their exploration of “consumption experience”. While the term “customer experience” itself is not explicitly defined in their study, the authors laid the groundwork for understanding consumer behaviour from an experiential perspective. This experiential approach highlighted the sensory dimensions of consumption, capable of generating strong emotional involvement. Later, the notion of customer experience has been introduced and explored by Pine and Gilmore (1998), whose research marked a significant milestone by highlighting how businesses could create memorable experiences for customers. Since then, the term “customer experience” has become widely used across industries, including banking, to describe the sum of all interactions between a customer and a company (De Keyser et al., 2015).

Customer experience is now a key dimension in the banking industry, critical for driving success business outcomes. Metrics that measure customer experience are essential tools for organizations aiming to understand and improve customer satisfaction and loyalty, with the final purpose of achieving competitive advantage by providing superior services and building lasting relationships that drive business growth (Kumar & Mokha, 2021). Positive sales interaction experiences directly influence customer satisfaction; correspondingly, customer satisfaction is a key determinant of loyalty, since satisfied customers are more likely to remain loyal to a company and increases the willingness to recommend (Human et al., 2020).

Among customer experience metrics, the net promoter score (NPS) has emerged as one of the most widely used and influential indicators in the field. The concept was first introduced by Reichheld in his article “The Only Number You Need to Grow” (2003), which aimed to establish an accurate method of measuring customer loyalty, identified as a key driver of the company growth, as the predisposition of loyal customers is to attract first-time buyers. In the effort to correlate the responses of the interviewees with their subsequent behaviour, identifying which question best predicted their future actions, Reichheld uncovered the most appropriate question: “How likely is it that you would recommend [company X] to a friend or colleague?”. Responses are then scored on a scale from 0 to 10 (where 10 means “extremely likely” to recommend, 0 signifies “not at all likely”) and categorized into three groups: Promoters (9-10), Passives (7-8) and Detractors (0-6). To determine the value of the NPS, Reichheld suggests subtracting the percentage of detractors from the percentage of promoter customers. The result ranges from -100 to + 100, where higher scores signify better customer loyalty (Hamilton et al., 2014).

## 2.4 Conceptual model of digitalization and customer experience

The original conceptual model developed in the present research, illustrated in Figure 4, provides a systematic approach to understanding the theoretical relations between digitalization components (as developed by the providing actor – the bank) and the customer’s experience components (framed as perceptions of the receiving actor – the customer).



**Figure 4. Conceptual model**

*Source: compiled insights from literature review*

As derived from the literature review, a bank's digital transformation relies on three major concepts: products and services, processes and IT infrastructure. Products and services represent the core offerings of the bank's digitalization efforts, which constitutes the customer-facing output of the technological transformation strategy. Processes refer to the changes in operational internal workflows and service delivery methods, intended to provide remote products and services to customers. Processes ensure operational efficiency by minimizing the involvement of human labour, provided they are automated straight-through workflows, and also contribute to customer convenience through accessibility and processing rapidity. All these initiatives and transformations must be built on a strong technological foundation: the IT infrastructure, without which digitalization efforts risk being inefficient or unsustainable.

On another layer, we have customer's perception, as part of their experience in purchasing banking products and services, influenced by the way processes function, and, indirectly, the security, adaptability and ease of use enabled by a solid IT infrastructure of the providing bank. Concerning customer perception, it has been synthesized into three key concepts, which are elaborated in the subsequent content. Customer satisfaction reflects how well a bank meets or exceeds customer expectations. At the same time, customer loyalty stands as another essential pillar, representing the ongoing commitment of consumers to a particular bank, even when alternatives are available. Recommendations occur when satisfied customers actively endorse a bank's services to others. Loyalty and recommendation are fundamental to net promoter score because NPS directly measures the likelihood of customers recommending a certain bank. Building on this idea, loyal customers

are more likely to promote the brand, creating a cycle of trust and growth that drives NPS improvement.

### 3. Research methodology

This study addresses two key research questions:

1. How does the NPS for digital banking services compare to the overall NPS at selected banks level?
2. Does a higher degree of national digitalization relate with higher NPS scores of the banks?

The analysis is based on secondary data, sourced from financial reports and online customer reviews, employing a mixed method approach with both quantitative and qualitative components, as detailed below.

#### 3.1 Research question 1: Comparison of NPS for digital banking services versus overall NPS

Quantitative component: to address this question, the paper focuses on Romania as a case study. As part of original contribution, the NPS for internet banking platforms of three top-performing banks, selected based on their assets and market presence, will be calculated using publicly available customer testimonials. Internet banking was selected as the representative of digital products in the study because it serves as a comprehensive platform through which customers can access a wide range of digitalized banking services, including current account management, deposit set-ups, loan application, electronic payments and so on (Laplante & Kshetri, 2021). The testimonials will be categorized into the three standard NPS customer segments: promoter, passives, and detractors, by adapting the NPS calculation to the available review evaluation scale (ranging from 1 to 5, where 5 represent promoters, 4 passives and 1 to 3 represent detractors). The calculated NPS for digital banking products will then be compared with overall NPS reported by each bank. This approach enables the assessment of customer loyalty specifically in the context of digital banking interactions, reflecting real user experiences with digital services provided by each bank, as published on Google Play reviews. The total NPS score for each bank was collected from publicly available sources, where such data existed. To ensure the consistency and compatibility with available national digitalization reports and the financial indicators used for bank selection, the total NPS values were selected for the year 2023, aligning the temporal scope of the analysis with the most recent and relevant data available.

Qualitative component: a qualitative analysis will be conducted on the publicly available testimonials of detractors and promoters. This analysis aims to extract valuable and actionable insights that could inform business strategies, particularly regarding customer loyalty in the digital banking sector.

### **3.2 Research question 2: National digitalization and NPS**

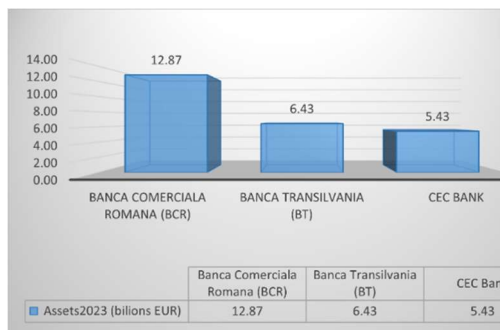
For the second research question, the same methodological framework as described above will be applied to two additional European countries: Netherlands, with a high level of national digitalization and Germany, with a digitalization level around the European average. The goal is to explore how national digitalization impacts customer loyalty, as reflected in NPS scores, while accounting for country specific factors such as digital literacy among the population, businesses digitalization and public administration.

## **4. Results and discussion**

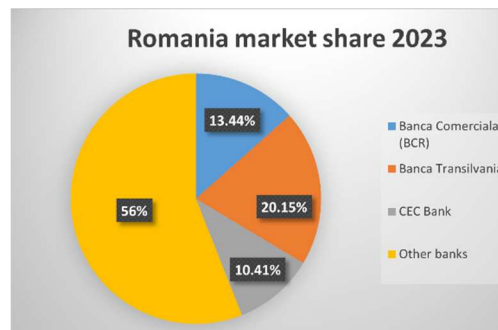
### **4.1 Research question 1: Comparison of NPS for digital banking services versus overall NPS**

#### **Quantitative results and discussions**

To address the first research question “How does the NPS for digital banking services compare to the overall NPS at selected banks level?”, the top three banks in Romania were selected based on reported assets at the end of 2023. As illustrated in Figure 5, these banks are: Banca Comerciala Romana, leading with its significant €12.87 billion assets, followed by Banca Transilvania (€6.43 billion) and CEC Bank (€5.43 billion). However, as shown in Figure 6, Banca Transilvania holds the largest market share (20.15%), followed by Banca Comerciala Romana (13.44%) and CEC Bank (10.41%).



**Figure 5. Major banks by assets – Romania** *Source: adapted from Ziarul Financiar (2024)*



**Figure 6. Market share – Romania** *Source: adapted from Ziarul Financiar (2024)*

For Banca Comerciala Romana (BCR), the digital banking platform analysed was “George”, which is the bank’s flagship internet banking service. According to Google Play, the George platform holds a rating of 4.8, indicating a high level of user satisfaction. As evidenced in Table 1, the calculated digital NPS for BCR George’s platform was 87.66, out of 124,828 customer testimonials. This value was derived by categorizing customer ratings into promoters, passives and detractors and applying the standard NPS formula: the percentage of promoters (91.17%) – the percentage of detractors (3.51%). In contrast, the total NPS for BCR, as reported for 2023, was 36. This figure was sourced from the information provided by the virtual assistant on the bank’s official website, named ADA (AI Beta), in response to the prompt: “What net promoter score did BCR have in 2023?”. The comparative analysis of these two metrics reveals a substantial difference in customer loyalty depending on the interaction channel. The case study of BCR suggests that customer loyalty towards the bank’s brand is significantly higher when interactions occur through digital channels, as evidenced by the markedly elevated digital NPS compared to the total NPS score of the bank. This finding underscores the positive impact of digitalization on customer experience, highlighting the strategic importance of digital platforms in fostering strong customer relationship and brand loyalty.

**Table 1. Customer Rating Distribution and NPS Structure for BCR**

Rating score	No of testimonials	Percentage	NPS customer
1	2744	2.20%	detractors
2	504	0.40%	detractors
3	1135	0.91%	detractors

Rating score	No of testimonials	Percentage	NPS customer
4	6638	5.32%	passives
5	113807	91.17%	promoters
Total	124828	100%	
NPS digital BCR			87.66
NPS BCR			36

*Source: own compilation of Google Play testimonials and bank's website*

The digital banking platform for Banca Transilvania (BT), known as “neoBT”, exhibits a contrasting scenario. As indicated in Table 2, the neoBT platform has a Google Play rating of 3.4. The calculated digital NPS, based on 11,981 testimonials, is 12.52. This value reflects 53.37% promoters and 31.07% detractors. According to BT’s 2023 sustainability report, the bank’s NPS for individual customers was 55, while the NPS for legal entities was 63. The smaller NPS values for digital interactions suggest that BT’s customers are more satisfied with traditional, in-branch services, which eventually may imply inefficiencies related to time convenience for those customers. The comparatively low digital NPS score indicates that a suboptimal implementation of digital channels can negatively impact the bank’s overall NPS, potentially offsetting gains made in traditional service areas.

**Table 2. Customer Rating Distribution and NPS Structure for BT**

Rating score	No of testimonials	Percentage	NPS customer
1	3723	31.07%	detractors
2	669	5.58%	detractors
3	502	4.19%	detractors
4	693	5.78%	passives
5	6394	53.37%	promoters
Total	11981	100%	
NPS digital BT			12.52
NPS BT 2023 individuals			55
NPS BT 2023 legal entities			63

*Source: own compilation of Google Play testimonials and bank's 2023 sustainability report*

CEC Bank’s mobile banking application, branded as “CEC Bank Mobile Banking”, enjoys a Google Play rating of 4.8. Table 3 offers an overview of the digital NPS, calculated from 12,601 customer testimonials, stand at 83.86, from 90.11% promoters and only 3.54% detractors. In absence of specific publicly available data regarding CEC Bank’s overall NPS score, the bank’s preliminary results report at

the end of 2023 mentions that their NPS is in line with the average of their top competitors. Already having the results of BCR and BT, it is reasonable to infer that CEC Bank's digital NPS is also higher than its overall NPS. Therefore, this means that the digital customer experience appears to positively influence loyalty, similar to the trend observed with BCR.

**Table 3. Customer Rating Distribution and NPS Structure for CEC Bank**

Rating score	No of testimonials	Percentage	NPS customer
1	446	3.54%	detractors
2	80	0.63%	detractors
3	262	2.08%	detractors
4	458	3.63%	passives
5	11355	90.11%	promoters
Total	12601	100%	
NPS digital CEC Bank			83.86
NPS CEC Bank			unknown

*Source: own compilation of Google Play testimonials and bank's preliminary results report*

### Qualitative results and discussions

The analysis of detractor's feedback reveals several recurring pain points concerning accessibility, functionality, usability or digitalization gaps. For accessibility challenges, some of the customers have complained about the lack of remote activation options, biometric features frequently failing and long maintenance and/or time-out periods delaying usability. Regarding functionality issues, applications were reported slow, buggy, with unreliable key functions, like payments authorization. People also had usability concerns: poor designs and unfriendly interfaces, inappropriate or hard to navigate lists of products or transactions and overall rudimentary design were among the most frequently identified negative elements. In terms of digitalization alignment with common standards, internet banking users noted that limited automation forces them to physically visit branches or call customer services.

The positive aspects highlighted by promoters revolve around mainly the same features like detractors, pointing out the importance of perception in the evaluation process of products, services, or the bank itself. Testimonials regarding functionality have therefore been analysed, and the positive aspects reported were that applications are continuously improving and exhibit fast performances. The security area was also evaluated, where warning messages and notification systems,

particularly in the case of outgoing payments, were highly appreciated. In terms of usability, some users found the apps straightforward and user-friendly. One final aspect worth mentioning pertains to digitalization, where customers believed that a wide variety of online services enhanced convenience.

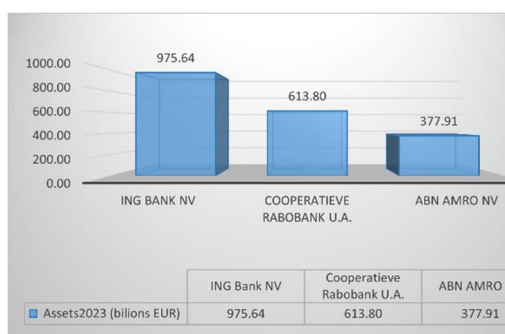
As a conclusion, detractors often focused on technical failures and accessibility problems, while promoters emphasized ease of use, reliability and security features as key drivers of satisfaction. A notable paradox emerged though where some users gave maximum ratings despite reporting negative experiences, that may suggest a tolerance for issues due to other positive factors, like security or brand loyalty.

#### 4.2 Research question 2: National digitalization and NPS

To address the second research question “Does a higher degree of national digitalization relate with higher NPS scores of the banks?”, the top three banks in the Netherlands and Germany were selected based on reported assets at the end of 2023.

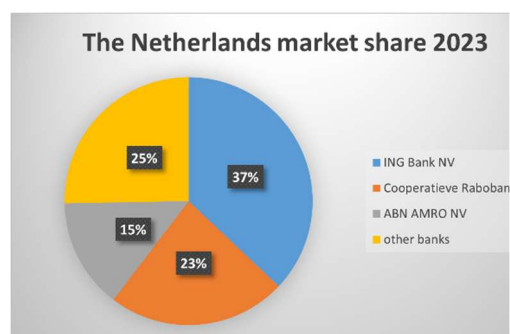
##### The Netherlands

The Dutch banking industry is highly concentrated, with top three banks – ING Bank, Cooperatieve Rabobank U.A. and ABN AMRO NV holding approximately 74.71% of total banking assets. As illustrated in Figure 7, Ing Bank holds the largest share of assets, followed by Rabobank and ABN AMRO. A similar concentration pattern is observed in terms of market share, as shown in Figure 8, where these institutions collectively dominate the Dutch banking sector.



**Figure 7. Major banks by assets – The Netherlands**

*Source: adapted from TheBanks.eu (2024)*



**Figure 8. Market share – The Netherlands**

*Source: adapted from TheBanks.eu (2024)*

In the Netherlands banking sector, the analysis of NPS reveals several distinctive patterns when compared to the previously analysed market – Romania. The total NPS of banks in the Netherlands is slightly higher than that of Romanian banks, reflecting a generally stronger customer loyalty within the Dutch financial ecosystem. This is consistent with the findings from the theoretical framework, which highlighted the Netherlands as a leader in digitalization across multiple dimensions, including digital skills, technology adoption in businesses and public administration.

As Table 4 reveals, for ING, the gap between the digital NPS and the bank's total NPS is the smallest among financial institutions studied. This suggests that ING is highly consumer-centric and succeeds in delivering a consistently positive experience across all channels. The digital NPS remains higher, indicating that the bank's digital platforms are particularly effective in fostering customer loyalty, and that a significant portion of its customers prefers digital interactions.

**Table 4. Customer Rating Distribution and NPS Structure for ING Bank NV**

Rating score	No of testimonials	Percentage	NPS customer
1	5487	1.70%	detractors
2		0.00%	detractors
3	2743	0.85%	detractors
4	24831	7.70%	passives
5	289477	89.75%	promoters
Total	322538	100%	
NPS digital ING			87.2
NPS total ING			72

*Source: own compilation of Google Play testimonials and bank's press release*

Rabobank represents a slightly different scenario, as shown in Table 5. While data on the bank-wide NPS is not available, the digital NPS is high. This underscores the bank's strong performance in the digital space and suggests that its digital services are well-received by customers, even in the absence of comprehensive data on overall customer loyalty.

**Table 5. Customer Rating Distribution and NPS Structure for Cooperatieve Rabobank U.A.**

Rating score	No of testimonials	Percentage	NPS customer
1	3614	1.95%	detractors

Rating score	No of testimonials	Percentage	NPS customer
2		0.00%	detractors
3	1807	0.98%	detractors
4	9036	4.89%	passives
5	170482	92.18%	promoters
Total	184939	100%	
NPS digital Rabobank			89.25
NPS total Rabobank			n/a

*Source: own compilation of Google Play testimonials*

ABN Amro, on the other hand, exhibits a larger gap between its total NPS and digital NPS, captured in Table 6. This indicates that, while the digital experience is highly rated, there is room for improvement in harmonizing the quality of services across all customer touchpoints. The higher digital NPS nevertheless highlights the effectiveness of the bank's digital offering in meeting customer needs and generating positive user perceptions.

**Table 6. Customer Rating Distribution and NPS Structure for ABN AMRO NV**

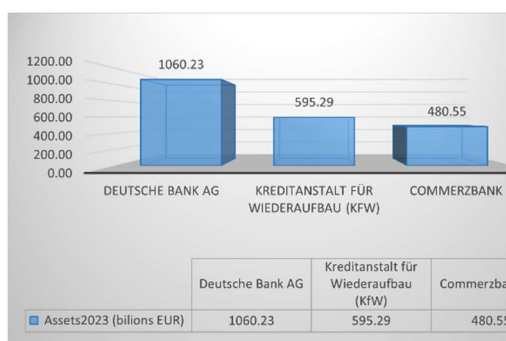
Rating score	No of testimonials	Percentage	NPS customer
1	6085	2.89%	detractors
2		0.00%	detractors
3	1659	0.79%	detractors
4	6085	2.89%	passives
5	196962	93.44%	promoters
Total	210791	100%	
NPS digital ABN AMRO			89.77%
NPS total ABN AMRO			41%

*Source: own compilation of Google Play testimonials and bank's annual report*

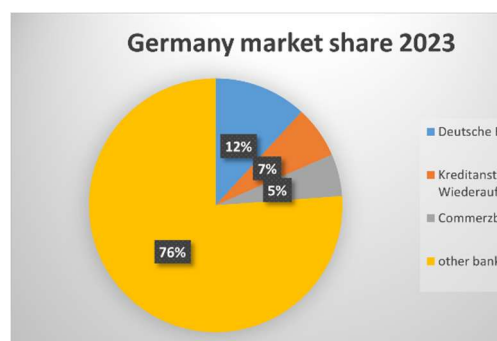
Across all three major Dutch banks, digital NPS scores are notably high, reinforcing the population's strong orientation towards digital services. Furthermore, the volume of customer testimonials in the Netherlands is approximately 4.8 times greater than in Romania, suggesting a much larger user base for digital channels. This substantial engagement further highlights the country's advanced state of digitalization and the widespread adoption of digital banking solutions.

### Germany

The banking industry in Germany, when analysed based on top three banks and their market share, represents a large and mature sector with numerous assets distributed more evenly compared to the Netherlands. On the other hand, the German banking market has a tripartite structure, which differs from that of Romania or Netherlands, where banks operate under a universal banking model; the German banking system consists of three major categories of financial institutions: private banks, banks with government involvement and cooperative banks (Behr & Schmidt, 2015). Figures 9 and 10 further provide a visual representation of the German banking market structure.



**Figure 9. Major banks by assets – Germany**  
 Source: adapted from TheBanks.eu (2024)



**Figure 10. Market share – Germany**  
 Source: adapted from TheBanks.eu (2024)

Given the unique structure of the German banking system, NPS data was analysed for only two of the top three banks by assets; for Deutsche Bank, in Table 7, the digital NPS is calculated at 78.25%. This is derived from a total of 78,557 testimonials, with 84.14% of customers categorized as promoters and 5.89% detractors. In contrast, the total NPS for Deutsche Bank is 63.

**Table 7. Customer Rating Distribution and NPS Structure for Deutsche Bank AG**

Rating score	No of testimonials	Percentage	NPS customer
1	3916	4.98%	detractors
2	712	0.91%	detractors
3		0.00%	detractors
4	7832	9.97%	passives
5	66097	84.14%	promoters
Total	78557	100%	
NPS digital Deutsche Bank			78.25
NPS total Deutsche Bank			63

Source: own compilation of Google Play testimonials and bank's financial report

Commerzbank present mostly the same picture, where the digital NPS is 77.32%. As can be observed in Table 8, this score is based on 228,312 testimonials, with 83.17% of customers identified as promoters and 4,86% as detractors. Data regarding the total NPS for Commerzbank is not available in official sources, preventing a direct comparison between digital and overall customer loyalty.

**Table 8. Customer Rating Distribution and NPS Structure for Commerzbank AG**

Rating score	No of testimonials	Percentage	NPS customer
1	8909	3.90%	detractors
2	2227	0.98%	detractors
3	2227	0.98%	detractors
4	25058	10.98%	passives
5	189891	83.17%	promoters
Total	228312	100%	
NPS digital Commerzbank			77.32
NPS total Commerzbank			n/a

*Source: own compilation of Google Play testimonials*

Germany exhibits lower digital NPS scores compared to the Netherlands, which once again aligns with the countries' overall digitalization rankings, where Germany is positioned around the European average.

### 4.3 Recommendations for Strategy Improvement

By implementing targeted strategies addressing key areas of dissatisfaction identified in customer testimonials, financial institutions can boost customer satisfaction, improve their competitive position and capitalize on the growing demand for digital banking services. Firstly, improving accessibility is crucial. This can be achieved by implementing remote activation solutions to eliminate the need for physical branch visits, optimising maintenance schedules to minimize downtime and enhancing the reliability of biometric features such as fingerprint recognition. Additionally, addressing functionality issues is fundamental; this involves prioritizing the resolution of bugs and ensuring that core functionalities, such as payment authorization, operate seamlessly. Regular updates should be implemented to improve applications speed and stability.

Furthermore, enhancing usability is essential. Banks should invest in design principles to create intuitive navigation and visually appealing interfaces. Leveraging the positive aspects highlighted by customers, such as high security measures and

constant improvements can be a powerful marketing strategy. Promoting these strengths can attract and retain customers who value secure and reliable digital banking services.

In terms of digitalization, expanding automation for routine processes is vital. This can significantly reduce the need for customers to visit branches, enhancing convenience and efficiency. Finally, using NPS data to identify key promoters and detractors allows banks to develop targeted engagement strategies. Offering incentives, such as discounts, to loyal customers who actively use digital channels can foster loyalty and further improve NPS scores.

## 5. Conclusions

This study examines the link between digitalization and customer loyalty in the European banking industry, using Net Promoter Score (NPS) as the main indicator. One of its key contributions is the conceptual model developed based on the literature review, which brings together essential components of digital transformations – such as products and services, internal processes, IT infrastructure – and connects them to customer experience dimensions, including satisfaction, loyalty and recommendation behaviour.

Another important contribution is the distinction made between overall bank-level NPS and the NPS associated specifically with digital banking services. The findings suggest that, in most cases, digital interactions generate higher levels of customer satisfaction than the overall experience. This highlights the potential of digital channels to strengthen customer relationships when they are well designed and effectively implemented. At the same time, the results also show poorly functioning digital platforms can negatively affect customer perceptions, underlining the importance of quality and usability in digital solutions.

The cross-country comparison further indicates that banks operating in more digitally advanced environments tend to achieve higher NPS scores, suggesting that national digitalization levels play an important role in shaping customer expectations and experiences.

From a practical perspective, the study points to several areas where banks can improve, particularly in terms of functionality, accessibility and usability of digital services, as well as process automation.

Future research could build on these findings by incorporating primary data, expanding the geographical scope and further exploring behavioural models. Customer acceptance of digital banking is captured and analysed by several frameworks that explain behavioural intention and adoption patterns. One of the most known applicable theories is Technology acceptance model (TAM), introduced by Davis in 1989 which posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the primary determinants of technology adoption. Future exploration of TAM integration in the matter is essential for advancing theoretical concepts and practical applications on determining the impact of digitalization on net promoter score (NPS) among banking customers in Europe. At the same time, the research has certain limitations. The use of customer reviews may reflect subjective opinions and may not fully capture the broader customer base. In addition, the limited availability of publicly reported NPS data reduces the comparability across banks. Another important note is that this study did not account for specific legislative aspects, which are critical in shaping the digitalization landscape. Differences in regulations concerning data protection and cybersecurity, for instance, can profoundly influence banking operations and customer interactions with digital banking platforms, with impact on perception related factors such as trust and security (Moga, 2010). Future investigations should address these regulatory dimensions to achieve a more comprehensive understanding of the effects of digitalization over European banking customer experience.

## 6. Acknowledgements

An earlier version of this paper was presented at the International Conference on Contemporary Economic and Management (ICCEM) 2025 – Advancing Marketing and Management Frontiers, organized by the Faculty of Economics and Business Administration, “Dunarea de Jos” University of Galati. The present manuscript has not been previously published.

## References

- ABN AMRO NV (2024) *ABN AMRO Clearing Bank N.V. annual report 2023*. Available at: <https://www.abnamro.com/clearing/en/who-we-are/annual-report> (Accessed: 9 April 2025).
- ADA – AI Beta (2025) ‘*Ce Net Promoter Score a avut BCR in 2023?*’, BCR virtual assistant. Available at: <https://www.bcr.ro/ro/persoane-fizice> (Accessed: 14 April 2025).
- Adewumi, A., Ewim, S.E., Sam-Bulya, N.J., & Ajani, O.B. (2024) ‘Advancing business performance through data-driven process automation: a case study of digital transformation in the banking sector’, *International Journal of Multidisciplinary Research Updates*, 8(2).

- Banca Transilvania (2024) *Raport de sustenabilitate 2023*. Available at: <https://www.bancatransilvania.ro/relatii-investitori/environment-social-governance/rapoarte> (Accessed: 3 April 2025).
- Banca Nationala a Romaniei (2025) *Cursul de schimb*. Available at: <https://www.bnro.ro/Cursul-de-schimb-3544.aspx> (Accessed: 1 April 2025).
- Bátiz-Lazo, B. (2015) 'A brief history of the ATM: how automation changed retail banking, an object lesson', *The Atlantic*, 26 March.
- Beck, T., & Sánchez, A. (2022) 'Digitalisation and banking: new risks and three scenarios for the European banking system of the future', *Financial Stability Review, Banco de España*, 42(Spring), pp. 11-27.
- Behr, P. and Schmidt, R.H. (2015) 'The German banking system: characteristics and challenges'. *SAFE White Paper* No. 32.
- Bueno, L.A., Sigahi, T.F., Rampasso, I.S., Leal Filho, W. and Anholon, R. (2024) 'Impacts of digitization on operational efficiency in the banking sector: thematic analysis and research agenda proposal', *International Journal of Information Management Data Insights*, 4(1), 100230.
- CEC Bank (2024) *Rezultate financiare preliminare la 31 decembrie 2023*. Available at: <https://www.cec.ro/presa/cec-bank-rezultate-financiare-preliminare-la-31-decembrie-2023> (Accessed: 1 April 2025).
- Davis, F.D. (1989) 'Perceived usefulness, perceived ease of use, and user acceptance of information technology', *MIS Quarterly*, 13(3), pp. 319-340.
- De Keyser, A., Lemon, K.N., Klaus, P., & Keiningham, T.L. (2015) '*A framework for understanding and managing the customer experience*', Marketing Science Institute Working Paper Series, 85(1), pp. 15-121.
- Deutsche Bank (2024) *Non-financial report 2023*. Available at: <https://investor-relations.db.com/files/documents/annual-reports/2024/Non-Financial-Report-2023.pdf> (Accessed: 11 April 2025).
- Digital Economy and Society Index (DESI) (2022) *Shaping Europe's digital future. European Commission*. Available at: <https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2022> (Accessed: 6 April 2025).
- Doran, N.M., Bădîrcea, R.M., & Manta, A.G. (2022) 'Digitization and financial performance of banking sectors facing COVID-19 challenges in Central and Eastern European countries', *Electronics*, 11(21), 3483.
- Eurostat (2024) *Digitalisation in Europe – 2024 edition*. Available at: <https://ec.europa.eu/eurostat/en/web/products-interactive-publications/w/ks-fw-24-001> (Accessed: 7 April 2025).

- Hamilton, D.F., Lane, J.V., Gaston, P., Patton, J.T., Macdonald, D.J., Simpson, A.H.R.W., & Howie, C.R. (2014) 'Assessing treatment outcomes using a single question: The Net Promoter Score', *The Bone & Joint Journal*, 96(5), pp. 622-628.
- Holbrook, M.B., & Hirschman, E.C. (1982) 'The experiential aspects of consumption: consumer fantasies, feelings, and fun', *Journal of Consumer Research*, 9(2), pp. 132-140.
- Human, G., Ferreira, C.C., Robertson, J., & Witherspoon, M. (2020) 'Customer experience, satisfaction and loyalty in business-to-business markets: does the chain hold across customer segments?', *Acta Commercii*, 20(1), pp. 1-13.
- ING Bank NV (2024) *Press release: Q4 FY 2023 results*. Available at: <https://www.ing.com/Investors/Financial-performance/Quarterly-results/4QFY2023-ING-press-release.htm> (Accessed: 10 April 2025).
- Kumar, P., & Mokha, A.K. (2021) 'Relationship between e-CRM, customer experience, customer satisfaction and customer loyalty in banking industry: a review of literature', *Research Review: International Journal of Multidisciplinary*, 6(2), pp. 127-137.
- Laplante, P., & Kshetri, N. (2021) 'Open banking: definition and description', *Computer*, 54(10), pp. 122-128.
- Manta, A.G., Bădîrcea, R.M., Gherțescu, C., & Manta, L.F. (2024) 'How does the nexus between digitalization and banking performance drive digital transformation in Central and Eastern European countries?', *Electronics*, 13(22), 4383.
- Medrega, C. (2023) 'Cum s-a schimbat topul băncilor după active în ultimul deceniu. Cine a câștigat cotă de piață și cine a pierdut', *Ziarul Financiar*. Available at: <https://www.zf.ro> (Accessed: 2 April 2025).
- Mia, M.A.H., Rahman, M.A., & Uddin, M.M. (2007) 'E-banking: evolution, status and prospect', *The Cost and Management*, 35(1).
- Moga, L.M. (2010) 'The adoption of e-banking: an application of theories and models for technologies acceptance', *Journal of Development, Energy, Environment, Economics*, pp. 255-259.
- Nguyen, D.K., Sermpinis, G., & Stasinakis, C. (2023) 'Big data, artificial intelligence and machine learning: a transformative symbiosis in favour of financial technology', *European Financial Management*, 29(2), pp. 517-548.
- Pine, B.J., & Gilmore, J.H. (1998) 'Welcome to the experience economy', *Harvard Business Review*, 76(4), pp. 97-105.
- Reichheld, F.F. (2003) 'The one number you need to grow', *Harvard Business Review*, 81(12), pp. 46-55.