



International Research Science and Development Center

International
Research Science
and
Development Journal

www.IRSDJournal.com

International Research Science and Development Journal
Vol. 2, No. 4, 2021, pp. 105-124.
ISSN 2348-3008

Providing a model to examine the role of open banking services on the effectiveness of profitable and customer-focused digital banking

Omid Rahmani¹

¹ Master of Industrial Engineering, Kharazmi University, Tehran, Iran.
Email: Omid.rahmani.ie@gmail.com

Abstract

The digital transformation has affected the banking industry like any other industry and is one of the main reasons for the changes in the banking industry ecosystem. Newcomers and financial technology companies are facing a serious challenge in the banking industry. Today, customers want excellent, diverse and quality goods and the bank is not able to meet all customer needs and improve the customer experience. Therefore, banks should re-create their business innovations, move towards open innovation and open banking. In this article, by searching the literature of various articles, in addition to explaining the concept of open banking, we examine its impact as an open innovation approach on banks' revenue flow and improving the customer experience. The method of data collection in this research is the use of questionnaires as well as the use of library information and referring to the documents in scientific and valid articles and understanding and inferring from this information. The mean test was calculated on the main and specific hypotheses in SPSS22 software and at a confidence level of 0.95. In general, the results of the present study showed that open banking allows leading banks to expose themselves, algorithms and processes through user interface interfaces, and create new revenue opportunities.

Keywords: Digital Banking, Banking Services, Customer Focus, Open Banking, Profitable Banking.

Introduction:

Open banking is a rapidly evolving approach to world banking. Open banking is a system that equips the user with a financial network through the use of an application programming interface. In fact, sharing financial information is electronic and secure, and only happens if the customer allows it [1]. How to create, share and access financial data is defined by the Open Banking Standard. This type of banking uses different networks instead of centralization, helps financial services customers to be able to share their financial information with other financial institutions in a completely safe and secure way. It also allows customers to do all banking in their internal software without having to go to the bank branches or enter information manually in the Internet banking software [2]. In this way, transferring funds becomes easier and users can choose the best and most cost-effective banking service option by comparing services. Open banking is also known as "open banking data". In open banking, banking operations are not limited to the walls of banks, and banks are essentially the bedrock and platform for banking operations [3]. Open banking improves the banking experience of customers in several ways. This type of banking forces large banks to compete with smaller and newer banks, resulting in cheaper services, better technology, and better customer service. According to the rules of open banking, banks must publish accurate and unbiased information online or in the branch to allow customers to evaluate the quality of services provided; This approach means moving towards transparency on the part of banks in order to provide the best possible customer experience [4]. Today, open banking is the main source of innovation in the banking industry. An open banking application for customers who want to buy a home can automatically calculate how many customers are able to pay based on available information. These programs can also provide a more reliable picture of lending instructions [5]. Another application may help visually impaired customers to better manage their

finances through voice instructions. Open banking can also help small businesses save money through online accounting, enabling fraud detection companies to better monitor customer accounts and identify problems.

Statement of the problem:

In traditional banking, the bank account held your money, and you had to use checks for most payments. But with the spread of technology, other options for exploiting banks emerged. With open banking or free banking, an intermediary can help you save, lend, or even repay your loan more easily. In the United States, the use of intermediaries is now mandatory, and in the United Kingdom, there are still banks that leave the use to the customer [6]. Open banking is a new development in the field of banking services in our country. Of course, Open Banking is not a new topic in the world, and it has emerged since the economic crisis in the United States in 2007. Banks were on the verge of bankruptcy at the time, and de-banking took place in some disadvantaged areas. This led to a loss of public confidence in the banking system. At the same time, people's interest and trust in new technologies such as Microsoft and Facebook created the conditions for the emergence of this modern way of banking [3]. Free banking is about sharing financial information electronically and securely, and only happens if the customer approves. API programming interfaces allow this interface to allow customers to access their financial information. This type of banking brings a better customer experience [7]. It is possible that you have already used these services. For example, personal financial management tools are PFM intermediaries that use your banking information to help you track expenses and achieve a specific savings goal. It has flourished dramatically in recent years [8]. In this way, third-party financial service providers can use the application programming interface or API to provide their financial services and access transactions or data of banks and financial institutions. Users in this type

of banking must give the bank access to financial information through an agreement [9]. So that the API of third party providers use user data. Users typically have to give some consent to allow the bank to grant such access to items such as financial information, transaction history, transactions, customer account comparisons, financial services, and so on. Third-party provider APIs can then use user data [10].

Services provided in open banking:

Before banking reopened, websites such as Mint and Personal Capital were collecting user account information. The way these websites worked was that they received usernames and passwords from users and then collected the necessary information from their accounts [1]. There were many security risks in this method and the result was not accurate. In some cases, it was difficult for users to identify transactions. It was also possible that the users' financial account was not compatible with the account aggregation service and did not provide an accurate picture of the individuals's finances [3]. But API is a more secure method. Because in this method, a platform is provided for applications so that the data can be shared directly without sharing user information. Open Banking offers a wide variety of banking services. Some of the most important of these services are:

1. Provide account-based services:

- PFM personal accounting and financial management tools are one of the most attractive services that Open Banking offers to people. If the user allows the software to access their bank account information, it will be possible for them to be aware of their income and expenses and be able to professionally create a personal budgeting program for themselves [5].
- Finetch provides services such as fund management, wallet resource management and settlement with wallet acceptors, and more [7].

- Use data from buyers' transactions to identify the best-selling products [8]
- Showing an accurate picture of the financial situation and risks ahead
Using networked accounts, open banking can help lenders get an accurate picture of the customer's financial situation and risk in order to provide better loan terms [10].
- Automatically calculate the number of customers who are able to pay for a product or service [2].
- An application that helps blind or visually impaired customers to manage their bank account through voice instructions [11].

2. Services related to capital markets and stock exchanges:

New technologies have made it possible for financial companies to easily extract and provide basic information about corporate profits and returns, financial statements and securities, foreign exchange and precious metals market information, and the stock market and OTC market [12].

3. Payment Facilitation Services:

Direct Debit or automatic withdrawal from a bank account (direct withdrawal) is one of the most important open banking services. With the help of this service, customers will be assured that bills, rent, loan installments, etc. will be automatically deducted from their account by the program in a timely manner and will be paid to the desired destination [13].

Open banking also has a wide range of applications. Here are some of these applications.

- Ability to securely and securely share users' financial data with financial institutions [14]
- Identify the best financial services and products for users: API is able to identify the best financial services and products for users by examining their transaction information [2].

- Provide an accurate report of users' financial condition using networked accounts [4]
- Automatically check users' financial ability to buy a home with an open banking app [5]
- Audio review of finances for visually impaired users by another application
- Save time using online accounting [1]
- Improve financial management and strengthen customer relationships and customer retention
- Reduce costs, improve customer service and grow technology in the competition of large and reputable banks with small and new banks [7]

Advantages and disadvantages of using open banking:

Undoubtedly, open banking, with its intelligent networking between accounts and data, has revolutionized the e-banking system, giving third-party service companies a great opportunity to put their creative ideas into action. Open banking, like any other modern method, has many advantages, and these advantages have put it on the agenda [9]. Here are some of the most important benefits of this new way of banking.

- Provide markets to promote business models and create growth opportunities for small businesses [14]
- Increase interoperability: Using open banking, separate accounts can be grouped together in one program and provide a solution to the most important challenge of traditional banking, namely interoperability [15].
- Providing the best financial services and products to bank customers, such as creating a new savings account with a higher interest rate than the previous account and offering a credit card with a lower interest rate [16]

- Provide an accurate picture of the customer's financial condition and level of risk for lending using a review of networked accounts
- Assess the client's financial ability to mortgage and buy a home [17]
- Creating solutions for cryptography and conversion of digital currencies and payment in crypto

Open banking has a huge impact on banks, regulators and startups. But what is the benefit for users? Of course, one of the benefits of open banking is that it provides better options for managing expenses, borrowing, or lending and paying [18].

Pressure on banks: Free banking enables them to access banking information. This causes banks to decide to improve their services. Banks can actually compete with these intermediaries by improving their tools and transparent and competitive pricing, rather than controlling their incoming messages [2].

More efficient tools: We expect to see more intermediate PFMs day by day. Developers can work more easily with open APIs, which allows them to more easily manage your consumption. They may be able to use artificial intelligence to predict what is going to happen to your account in the near future, and they may even offer products that will help you reduce your costs. Of course, some apps may not offer you the best products and services, some of them may be influenced by the people who pay them to advertise, so it is better to be careful in your choice [5].

Efficient borrowing: These tools also make it easier to get a loan. Instead of collecting information manually from various sources and sending it to a potential lender, lenders can get only what they need using these tools. They can also access and withdraw your account from time to time with open banking.

Commercial loans: Lenders want to check your account when your company needs a loan. Again, lenders can obtain your information manually from your bank and accounting system instead of submitting it manually [11].

Anti-fraud: Banks and intermediaries can scan data transmissions. Using artificial intelligence and other information, they can show you monthly treasures that were not necessary. Using open banking will make this information much easier to use and more accounts will be available. This way they can determine if the withdrawal from an account for a product was part of your account and whether you usually paid for it or not [19].

New ways to pay: Payments are an important part of open banking regulations. Banks must allow the intermediary to withdraw from your account. However, many sites like paypal have done this before. These intermediaries make it easier to handle payments for purchases. Even businesses use this method [20].

Innovative services: We do not yet know exactly how open banking will change financial services. Of course, new and innovative ways are launched by startups and the situation will be new day by day [15].

In addition to the many advantages of open banking, this method also has disadvantages. Banking still faces the same risks that threaten e-banking. Social engineering of users to use fake programs are the most important of these risks. It is also possible that by providing information to customers of various banks to third parties, they may commit criminal acts [8]. However, experts in this field are trying to use the advances made in the field of information technology to minimize the risk of these risks. In our country, Iran, there are three main obstacles to open banking [21]. Firstly, there are no specific standards and technical criteria, secondly, this method is still new for senior bank managers and they do not use it to the full potential of this banking method, and finally, the technical experience of using APIs in our country is not yet up to modern countries. And there is room for further progress [2]. As much as this method can give financial institutions easy access to data and financial services, as well as simplification of some costs, it also has risks and risks, which we will discuss below [10].

- Endangering the privacy and security of users: The API also has security issues. The user account may be destroyed by a malicious application. Things like hacking and threats can also occur if security is weak.
- Ability to access third party customer data and create security risks
- Endanger users' funds
- Unauthorized and unauthorized access of malicious third parties to customers' financial data
- Risks of financial services integration due to natural savings from big data scale and network effects and rising customer costs
- Technology giants misuse customer data
- Financial applications use the obsolete two-factor authentication method with SMS and email to confirm transactions
- Possibility of phishing attacks and requesting password or sensitive user information through infected emails

In general, it can be said that the most important weakness of open banking is its low level of security. Of course, by creating security measures and using new security methods, many of these weaknesses can be reduced.

The Impact of Open Banking on Traditional Banking:

Open Banking, with its transformation in traditional banking, has been able to both help people use banking services faster and easier, and provide a good opportunity for creative financial entrepreneurs to gain new sources of income by implementing their ideas [19]. Traditional banking has moved forward with the advancement of technology. Not only did e-banking (e-banking) facilitate many labor-intensive banking operations and reduce the number of people visiting branches, but it also enabled independent sites, applications, and software to help with programming interfaces. Accelerate the banking system

and gain people's satisfaction [6]. Using the latest technologies, Open Banking introduced new businesses and revenue streams to the banking sector and was able to establish a better relationship between the bank and its customers than traditional banking. In this new platform, customers have more choice and control over their assets. In one sentence, it can be said that open banking, like a catalyst, facilitates banking operations and gives more prosperity to the country's banking system [22].

When it comes to sharing bank account information, we are undoubtedly afraid that this data will not be misused by another person or persons. Therefore, maintaining security is one of the most important concerns of open banking. To secure the platform in Open Banking, several strategies have been considered, including [19-22]:

- The company or third party that intends to provide banking services must enter into a contract in person. In this way, the necessary validation will be done for the company and its owners, and more importantly, the necessary guarantees will be taken from these companies at the time of concluding the contract.
- The third party must obtain permission from the customer to access his account to perform or display transactions.
- Customer authentication will be done only with the approval of the bank.
- User-approved licenses will include specifications including account, transaction type, license validity period, amount limit, and number of transactions.
- All identity information is received from the end customer through bank portals or Shahin trusted portals and the third party is not allowed to access the identity information directly.

Digital business models for the possibility of open banking:

According to Accenture, there are four types of digital business models that enable open banking, which are described below:

Utility Provider: Payment Services Directive 2 (PSD2) enables open banking and forces banks to open access to third party accounts for customer accounts. Banks that operate only within the scope of the rules and benefit from the minimum compliance with these rules fall into this category and miss a lot of opportunities [23].

Digital Relationship Manager: Using user programming interfaces and rearranging and combining different types of services into one application can be a transformational innovation. Banks, especially smaller banks, can digitize their customer experience through external innovation and through application programming interfaces. Banks that follow this model must ensure the involvement of third-party companies, as otherwise it leads to a non-integrated customer experience [24].

Digital Category Killer: Creating internal user programming interfaces can enhance processes, increase cost productivity, and accelerate innovation. Internal programming user interfaces enable banks to increase the agility of their business and reduce the time it takes for a product to enter the market. In the traditional approach of banks' information technology, it took between 18 and 24 months for the product to enter the market. User programming interfaces can reduce product delivery time to a few weeks [25].

Open Platform Player: In this case, the bank uses the user programming interfaces of other organizations to create a service that can be sold to other organizations at the bottom of its value chain. Ecosystem partners can also combine the service with other value-added services and sell it to users. Extender advises banks to develop user-friendly programming interfaces for developers to develop and manage user interface relationships, and adds that new executive

models take into account organizational structure changes, especially the combination of IT and product development activities [17]. They are essential for open banking. Also, open organizational culture and senior management support are other necessities of open banking model. Finally, it considers artificial intelligence tools to be effective for effectively managing ecosystem partners and making quick decisions despite high data volumes [19].

The connection between blockchain and open banking

The relationship between blockchain and open banking can be seen in the concept of openness of this type of banking. As an emerging and expanding technology, blockchain seeks above all to create an open, free and decentralized environment in finance [26]. The goal that banking is still pursuing in itself. Blockchain seeks to layer the new digital financial ecosystem on older banking APIs. An ecosystem in which third parties can interact securely with banks and their data without direct access to banking systems. To better understand the relationship between blockchain and open banking, the applications of blockchain in this new banking method should be examined more carefully.

Applications of blockchain in finance and banking are [27-28]:

- Use blockchain to produce products and provide services such as loans, investment packages and... tailored to customers' financial situation.
- Increase the protection and security of banking data against hacking and invalid access through the blockchain network
- Ability to classify and manage data in the blockchain: Data in the blockchain can be categorized into private customer data, sensitive bank data, data used by third parties and public data.
- High access and security for any classification by creating smart contracts

The above shows that blockchain can easily fix the most important weakness of open banking, namely the low security of this method.

Improving the disadvantages of open banking with blockchain technology is as follows: Blockchain technology is the best solution to eliminate the disadvantages as well as accelerate the realization of open banking. Blockchain provides instant access to predefined data for this banking method. In this way, by sharing only the required information, users' trust is increased and user privacy is provided. Blockchain-based networks can create more enabling platforms for existing banks, Fintechs [14], FSI financial institutions, and other new challenges by building robust and fast digital platforms. Blockchain protects users' privacy. In this technology, users are identified by a digital ID and their personal information is not disclosed. These networks are able to program the terms of use of user information for each party and the user is aware of how to use this information. Blockchain-based networks provide the conditions for a free market economy by creating digital currencies and currency units or tokens [26]. This means that the most important principle of open banking is easily achievable in this way. These networks also allow the user to interact with networks such as the Atrium network with decentralized applications or DApps. In this network, financial exchanges can be done by creating smart contracts and decentralized. So it can be said that DApps are the most important and main gateway between open banking and blockchain [28].

Research Method:

Statistical population: The statistical population of this study includes 385 managers, specialists and experts in the field of electronic banking and open banking.

The sample size formulas and procedures used for categorical data are very similar, but some variations do exist. Since the data are qualitatively and the

number of statistical community is unlimited, so the sample size calculation formula is as follows:

$$n = \frac{Z_{\alpha/2}^2 p_0 (1-p_0)}{\epsilon^2} \quad (1)$$

In this study, researcher has set the alpha level a priori at .05, plans to use a proportional variable, has set the level of acceptable error at 5%, and has estimated the standard deviation of the scale as .5. Cochran's sample size formula for categorical data and an example of its use is presented here along with explanations as to how these decisions were made.

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384.16 \quad (2)$$

Where $Z_{\alpha/2}$ = value for selected alpha level of .025 in each tail = 1.96.

(The alpha level of .05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error).

Where $p(q)$ = estimate of variance = .25.

(Maximum possible proportion (.5) * 1 - Maximum possible proportion (.5) produces maximum possible sample size).

Where ϵ = acceptable margin of error for proportion being estimated = .1

Research hypotheses

Hypothesis 1: The structure of financial institutions affects the open banking business model.

Hypothesis 2: Customer segmentation affects the open banking business model.

Hypothesis 3: The open banking business model is effective in improving the business environment.

Hypothesis 4: The open banking business model has an effect on improving organizational performance.

Analysis of information

SPSS software was used for statistical analysis and one-sample t-test was used to analyze the statistical hypotheses. We used SPSS 22 to analyze the data. In following the results of test hypotheses are offered:

Testing Hypothesis H1. The structure of financial institutions affects the open banking business model.

The results of SPSS are shown below:

Table. 1. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H1	385	6.8443	1.01973	.17362

Table. 2. One-Sample Test

	Test Value = 5					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H1	16.844	384	.000	1.4721	1.09443	1.6832

Testing Hypothesis H2. Customer segmentation affects the open banking business model.

The results of SPSS are shown below:

Table. 3. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H2	385	6.8426	1.0964	.17031

Table. 4. One-Sample Test

	Test Value = 5					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H2	16.8443	384	.000	1.6843	1.6385	2.0591

Testing Hypothesis H3. The open banking business model is effective in improving the business environment.

The results of SPSS are shown below:

Table. 5. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H3	385	6.7392	1.0793	.19831

Table. 6. One-Sample Test

	Test Value = 5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H3	15.0946	384	.000	1.7931	1.0588	1.7692

Testing Hypothesis H4. The open banking business model has an effect on improving organizational performance.

The results of SPSS are shown below:

Table. 7. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H4	385	6.7593	1.0658	.19643

Table. 8. One-Sample Test

	Test Value = 5					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H4	17.7443	384	.000	1.9653	1.6883	1.9752

Conclusion:

Open banking is becoming more and more popular in Iran. But perhaps it is still at the beginning of the road. The central bank has not yet issued comprehensive guidelines in the field of open banking. Because Iran's banking industry is regulatory and different from the banking systems of many countries, there is a need to regulate more local and accountable laws. Of course, a significant number of financial and banking applications and software owe their success to this type of advanced banking system. The use of APIs in open banking does not affect the revenue generation of the banking system and can make it more prosperous. One of the best steps that can be taken to promote open banking in our country is for third-party companies that provide these platforms to interact

constructively with banks and, as intermediaries, to improve the relationship between banks and financial companies. That is, to make the open banking platform more secure, platforms should be defined that provide a logical and secure connection between business customers, API users, and banks, instead of banks providing APIs directly to third parties. In this way, banks can be more confident in third-party institutions.

In this article, we have fully and comprehensively explained what open banking is and what its advantages and disadvantages are. We also explained what applications this type of banking can have. Then we talked about the relationship between open banking and blockchain. As we have explained, one of the most important disadvantages of open banking is its low security and the risk of sensitive users' information in this banking method. One way to increase the security of this financial method is to use a blockchain network. Blockchain is the best solution for maintaining the security of users as well as the privacy of banking customers due to its decentralization.

References

1. Adelopo, I., Lloydking, R. and Tauringana, V. (2018), "Determinants of bank profitability before, during, and after the financial crisis", *International Journal of Managerial Finance*, Vol. 14 No. 4, pp. 378-398. <https://doi.org/10.1108/IJMF-07-2017-0148>
2. Ahmed, S. and Sur, S. (2021), "Change in the uses pattern of digital banking services by Indian rural MSMEs during demonetization and Covid-19 pandemic-related restrictions", *Vilakshan - XIMB Journal of Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/XJM-09-2020-0138>
3. Ajwani-Ramchandani, R. (2017), "Nationalisation to Demonetisation: An Overview of the Indian Banking Sector", *The Role of Microfinance in*

Women's Empowerment, Emerald Publishing Limited, Bingley, pp. 45-65.
<https://doi.org/10.1108/978-1-78714-425-520171004>

4. Alarifi, A.A. and Husain, K.S. (2021), "The influence of Internet banking services quality on e-customers' satisfaction of Saudi banks: comparison study before and during COVID-19", *International Journal of Quality & Reliability Management*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJQRM-06-2021-0168>
5. Amidjaya, P.G. and Widagdo, A.K. (2020), "Sustainability reporting in Indonesian listed banks: Do corporate governance, ownership structure and digital banking matter?", *Journal of Applied Accounting Research*, Vol. 21 No. 2, pp. 231-247. <https://doi.org/10.1108/JAAR-09-2018-0149>
6. Bankuoru Egala, S., Boateng, D. and Aboagye Mensah, S. (2021), "To leave or retain? An interplay between quality digital banking services and customer satisfaction", *International Journal of Bank Marketing*, Vol. 39 No. 7, pp. 1420-1445. <https://doi.org/10.1108/IJBM-02-2021-0072>
7. Bapat, D. (2017), "Exploring the antecedents of loyalty in the context of multi-channel banking", *International Journal of Bank Marketing*, Vol. 35 No. 2, pp. 174-186. <https://doi.org/10.1108/IJBM-10-2015-0155>
8. Bapat, D. (2022), "Exploring the relationship between lifestyle, digital financial element and digital financial services experience", *International Journal of Bank Marketing*, Vol. 40 No. 2, pp. 297-320. <https://doi.org/10.1108/IJBM-12-2020-0575>
9. Chauhan, S., Akhtar, A. and Gupta, A. (2021), "Gamification in banking: a review, synthesis and setting research agenda", *Young Consumers*, Vol. 22 No. 3, pp. 456-479. <https://doi.org/10.1108/YC-10-2020-1229>
10. Chauhan, S., Akhtar, A. and Gupta, A. (2022), "Customer experience in digital banking: a review and future research directions", *International Journal of Quality and Service Sciences*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJQSS-02-2021-0027>
11. Chiu, J.L., Bool, N.C. and Chiu, C.L. (2017), "Challenges and factors influencing initial trust and behavioral intention to use mobile banking services in the Philippines", *Asia Pacific Journal of Innovation and Entrepreneurship*, Vol. 11 No. 2, pp. 246-278. <https://doi.org/10.1108/APJIE-08-2017-029>
12. Garzaro, D.M., Varotto, L.F. and Pedro, S.d.C. (2021), "Internet and mobile banking: the role of engagement and experience on satisfaction and loyalty", *International Journal of Bank Marketing*, Vol. 39 No. 1, pp. 1-23. <https://doi.org/10.1108/IJBM-08-2020-0457>

13. Guerra-Leal, E.M., Arredondo-Trapero, F.G. and Vázquez-Parra, J.C. (2021), "Financial inclusion and digital banking on an emergent economy", *Review of Behavioral Finance*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/RBF-08-2021-0150>
14. Jayasekara, S.D. (2021), "Deficient regimes of anti-money laundering and countering the financing of terrorism: agenda of digital banking and financial inclusion", *Journal of Money Laundering Control*, Vol. 24 No. 1, pp. 150-162. <https://doi.org/10.1108/JMLC-04-2020-0035>
15. Kumar, P., Mokha, A.K. and Pattnaik, S.C. (2022), "Electronic customer relationship management (E-CRM), customer experience and customer satisfaction: evidence from the banking industry", *Benchmarking: An International Journal*, Vol. 29 No. 2, pp. 551-572. <https://doi.org/10.1108/BIJ-10-2020-0528>
16. Larsson, A. and Viitaoja, Y. (2017), "Building customer loyalty in digital banking: A study of bank staff's perspectives on the challenges of digital CRM and loyalty", *International Journal of Bank Marketing*, Vol. 35 No. 6, pp. 858-877. <https://doi.org/10.1108/IJBM-08-2016-0112>
17. Levy, S. (2022), "Brand bank attachment to loyalty in digital banking services: mediated by psychological engagement with service platforms and moderated by platform types", *International Journal of Bank Marketing*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/IJBM-08-2021-0383>
18. Makudza, F. (2021), "Augmenting customer loyalty through customer experience management in the banking industry", *Journal of Asian Business and Economic Studies*, Vol. 28 No. 3, pp. 191-203. <https://doi.org/10.1108/JABES-01-2020-0007>
19. Margiono, A. (2021), "Digital transformation: setting the pace", *Journal of Business Strategy*, Vol. 42 No. 5, pp. 315-322. <https://doi.org/10.1108/JBS-11-2019-0215>
20. Mbama, C.I., Ezepeue, P., Alboul, L. and Beer, M. (2018), "Digital banking, customer experience and financial performance: UK bank managers' perceptions", *Journal of Research in Interactive Marketing*, Vol. 12 No. 4, pp. 432-451. <https://doi.org/10.1108/JRIM-01-2018-0026>
21. Mir, R.A., Rameez, R. and Tahir, N. (2022), "Measuring Internet banking service quality: an empirical evidence", *The TQM Journal*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/TQM-11-2021-0335>
22. Nel, J. and Boshoff, C. (2021), "Traditional-bank customers' digital-only bank resistance: evidence from South Africa", *International Journal of Bank*

- Marketing, Vol. 39 No. 3, pp. 429-454. <https://doi.org/10.1108/IJBM-07-2020-0380>
23. Nguyen, N.T.H., Kim-Duc, N. and Freiburghaus, T.L. (2022), "Effect of digital banking-related customer experience on banks' financial performance during Covid-19: a perspective from Vietnam", *Journal of Asia Business Studies*, Vol. 16 No. 1, pp. 200-222. <https://doi.org/10.1108/JABS-09-2020-0366>
24. Raza, S.A., Umer, A., Qureshi, M.A. and Dahri, A.S. (2020), "Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model", *The TQM Journal*, Vol. 32 No. 6, pp. 1443-1466. <https://doi.org/10.1108/TQM-02-2020-0019>
25. Santos, A.A.d. and Ponchio, M.C. (2021), "Functional, psychological and emotional barriers and the resistance to the use of digital banking services", *Innovation & Management Review*, Vol. 18 No. 3, pp. 331-348. <https://doi.org/10.1108/INMR-07-2020-0093>
26. Sedaghatparast, E. (2019), "A meta-synthesis approach to specify components of future banking", *Foresight*, Vol. 21 No. 4, pp. 482-496. <https://doi.org/10.1108/FS-10-2018-0089>
27. Souiden, N., Ladhari, R. and Chaouali, W. (2021), "Mobile banking adoption: a systematic review", *International Journal of Bank Marketing*, Vol. 39 No. 2, pp. 214-241. <https://doi.org/10.1108/IJBM-04-2020-0182>
28. Urban, B. and Townsend, S.A. (2021), "TymeBank: digital disruption in SA's banking sector", *Emerald Emerging Markets Case Studies*, Vol. 11 No. 2. <https://doi.org/10.1108/EEMCS-06-2020-0193>