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FINTECH DEVELOPMENT DEGREE IN THE RA BANKING SYSTEM. OPPORTUNITIES AND CHALLENGES

The development of digital technologies was a great stimulus for the faster development of a number of areas. The banking sector could not be left out of all of that where the provision of traditional banking services was gradually replaced by the provision of remote digital banking services. Most of the banks operating in the world have already accepted digitization as a challenge and are taking active steps towards digitization. Newly established banks, which are trying to occupy a place in the market, mainly provide services remotely through mobile or online banking excluding the existence of a branch network. All this significantly changes the principles traditional banking services and the ways of receiving services by clients.

Among digital technologies financial technology stands out which is a rapidly developing field at the intersection of financial services and advanced technologies. We can say that it is a powerful engine of technological progress which increases the global technological influence year by year. It promotes the development of innovative technologies leading to a new level of speed and flexibility in banking and the field of information technologies.

In recent years the active development of fintech has also been taking place in the RA. It brings not only new opportunities but also some risks with it which we will try to reveal in this work.

Keywords: *financial technologies, digital banking services, fintech challenges, the RA fintech market*

JEL: G21, O33
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INTRODUCTION. As we know, financial technology (fintech) refers to the companies that use the latest technologies to transform traditional banking services into digital ones. The development of fintech can generally be characterized by several stages, but the beginning of its current peak stage, can be said, began in 2008, when the global financial crisis promoted innovation, and many organizations began to provide direct and personalized services to their customers.

The use of financial technologies has made many authors, company managers and others think about whether their investment in banks is justified. Those who thought that the investment of fintech in banks was not justified, after some time witnessed the sharp development of those banks that decided to apply at least some innovation of financial technology in their banks.

Seeing all that, the top managers of the banks gradually started introducing innovative business models with the aim of satisfying the growing financial demands of their customers. Financial technologies enable banks to transition from their traditional business model to technologically new business models using such technological opportunities as Big Data, Artificial Intelligence, Machine Learning, Blockchain technologies, Open Banking, etc. These technological and digital innovations can enable the efficient use of new business models, which can change the way financial companies generate revenue, deliver products and services.

LITERATURE REVIEW. In recent years, the attention of companies to fintech has increased, which has been the impetus for the growth of research in this direction. However, before reaching the current period, it is necessary to understand where fintech started.

In general, the first stage of fintech development (FinTech 1.0) is related to 1836 with the creation of the telegraph and in 1866 with the construction of the transatlantic cable. Together, these two innovations are the pillars of financial globalization and fintech development.

The second phase (FinTech 2.0) began in 1967, when Barclays Bank installed the first ATM in Enfield, England, which enabled customers to conduct financial transactions via an electronic telecommunication device, eliminating the need to visit a branch. This progress revealed a deep connection between finance and technology which marked the first transfer from analog banking to digital banking. Until 1987 financial services became universal and digitized in developed countries (Nicoletti, 2017).

During the 1990s the positive results became evident to the public with the development of the World Wide Web, first internet banking and strong connection between finance and technology.

The third (FinTech 3.0) stage of fintech development began in 2008. In the financial markets start-ups and technology companies have been providing products and services directly to customers and businesses (Arner & Buckley,

2016). Although it is difficult to point out how and when this change began, the idea is clear that the global financial crisis had a breakthrough effect on it in 2008 and may have contributed to the growth of the third stage of fintech development. In parallel, the 21st century itself is characterized by the rapid growth of technologies, and each subsequent period is significantly different compared to the previous one, which characterizes the speed of this era's changes. Some experts already claim that we have entered the 4th stage of fintech development (FinTech 4.0), which is characterized by the introduction and application of the latest financial technologies, mainly Blockchain Technologies, Open Banking, Artificial Intelligence, and Machine Learning (Zigurat Global Institute of Technology, 2022). All this really speaks of the formation of a completely new banking culture which cannot be seen immediately, but will become more obvious over time.

Along with the development of fintech, the opportunities and challenges created by it have been widely discussed by foreign authors in recent years, for example, in the work "The Future of Fintech" (Anne-Laure Mention, 2019), the author refers to the legal, technological, competitive, process and business model challenges arising from the introduction of new technologies in developing and developed countries. All this forces many countries to implement legislative changes and introduce new regulations through which market participants will be regulated. A clear proof of this is the progress of the financial system of Singapore which is a fintech hub and a bright example in the direction of creating favorable conditions for the introduction of digital technologies. Not only legislative regulations are implemented here, but also forums, festivals, use of Regulatory Sandboxes, etc (MAS).

Since the implementation of such experience in developing countries usually occurs after implementation in developed ones, developing countries may not face a number of risks. Research conducted on technologies that are already popular in international practice highlights the risks and opportunities that arise there, such as the research on BNPL service (Lake R., 2024), Biometric Authentication (Kinzer K., 2022), and extensive research on fintech development and dynamics (CBINSIGHTS, 2022).

The amount of research on fintech in the RA is not very large. The reason may have been the lack of demand for financial technology, but it has started to grow in recent years, so the existing research has mostly been done in the last decade. Major work on the digitalization of the RA economy was done by Yerevan State University specialists on the topic "Problems of forming the institutional system of digital transformations of the RA economy", where special attention was paid to the problems of the digital economy and digitalization, digital transformations of many sectors, etc (Sargsyan, et al., 2020).

In another work, "Coronavirus as a stimulus for the development of financial technologies", the author addresses the types of fintech, the impact of

the coronavirus on such organizations, the steps taken to promote the latest technologies in the world, development trends and challenges.

The last comprehensive analysis can be considered the joint work of ASUE professors on the topic "Applied solutions of artificial intelligence in financial infrastructures of the Republic of Armenia", where the prerequisites for the development of artificial intelligence, directions of application, as well as the current situation of digitization of the financial system of the Republic of Armenia were studied (Sargsyan V., Ghazaryan A., Baharyan F., Harutyunyan G., Stepanyan L., Ayvazyan M., 2021). As a result of the implementation of the latest technologies in the banks, calculations of their economic efficiency were also carried out in the research and recommendations were given mainly in the direction of improving the legislative field.

In general, the problems of introduction, application and development of financial technologies in the RA banking system remain completely unsolved and unaddressed in the RA, and in this work we will try to address the existing problems more thoroughly.

This study can help financial companies implement already verified solutions in their strategic planning and avoid predictable issues.

RESEARCH METHODOLOGY. In this paper we will try to highlight the opportunities and challenges created by financial technologies, as well as the risks that may appear as a result of their implementation. In the research the latest directions of fintech in the world were referred to, a comparison was made with the use of similar technologies in the RA and opportunities and challenges in the RA were highlighted. Since we have entered the 4th stage of Fintech the main emphasis has been placed on their opportunities and issues as a result of the introduction of the latest technologies in the banking system, while using critical, comparative, induction, deduction methods. The information base for the analysis was the research of international and the RA authors, analyses published in international periodicals, websites of international and the RA financial institutions, legislative initiatives implemented by central banks and other information bases. By conducting a comprehensive analysis, conclusions and recommendations have been made which can contribute to the implementation and development of such technologies in the RA. The analysis can help financial companies in their strategic planning to apply the already identified solutions and bypass the predicted obstacles, and the legislative framework to pay attention to the existing problems and take appropriate measures.

ANALYSIS. Thanks to the expansion of fintech in the banking sector, banks have ample opportunities to maintain their positions and stability in the market. At the same time, these changes should be a signal for traditional banks to implement technological upgrades to withstand market competition, as well as

to provide more customer-friendly services, because if they want to stay competitive, they need to realize that technology companies have their speed and due to their flexibility, they can penetrate the banking sector faster and leave traditional banks out of competition in a short period of time.

Witnessing all this, the international banking system has seen active applications of the latest technologies in recent years, such as chatbots to answer customer questions (Gnani Marketing, 2022), mobile applications to perform various banking transactions (ITMAGINATION, 2023), blockchain technologies to ensure the security of financial transactions and systems (Deloitte, 2016), online crowdfunding to raise funding for various projects, mobile payments to facilitate electronic shopping, including the introduction of Buy Now Pay Later service, P2P lending to enable individuals to lend to each other, etc. The above-mentioned technologies are already actively used all over the world, but not all of them are used in the RA.

Chatbots. Chatbots have had a huge impact on the banking industry since they appeared in the market. In many circumstances they may be useful for both banks and customers. Let us try to understand a few directions from their influence zones.

1. Increasing the quality of customer service,
2. Improving customer experience,
3. Cost savings,
4. Personalized remote assistance,
5. Quick solution of problems,
6. Fraud detection, etc.

Many banks around the world, we can say, took this into account a long time ago and have implemented chatbots, improving customer experience and simplifying service delivery methods. Such largest banks using chatbots are:

- Bank of America, a virtual assistant named Erica and endowed with artificial intelligence, helping customers with questions related to accounts and financial advice (Bank of America).
- Wells Fargo, which uses a chatbot called "Fargo" to help customers with account information, find ATMs and other banking services (Natalie, P., Eric, B., 2023).
- DBS Bank, which uses a chatbot named "POSB digibot" for customer support, provides assistance with transactions and can also apply for a loan (DBS digibot).
- HSBC, which uses a chatbot called "Amy" to answer customer queries. At the same time, it may provide information to customers about accounts, products and services (Bo-Peter, 2023).
- Capital One, which uses an artificial intelligence virtual assistant named "Eno" to answer customer inquiries and provide comprehensive information on their finances (CapitalOne).

The above-mentioned were just a few of the many banks that are already using chatbots for customer service and transactions. As of now, we can say that chatbots are very popular in the banking sector, which can help banks to save costs, improve customer experience and provide 24/7 uninterrupted service.

Mobile Banking. Currently, it is almost impossible to imagine any bank that does not have digital banking, because its absence will negatively affect banks and they will automatically be out of competition in the current era of digital transformation. And what main problems mobile banking solves we will discuss below.

Convenience: mobile banking enables bank customers to access their accounts and make transactions from anywhere in the world with Internet access. All this has contributed to the mobile banking usability growth.

Cost Reduction: by offering mobile banking services, banks are able to reduce a significant portion of operating costs, which implies a smaller number of branches and staff, as many transactions can be done online.

Customer Engagement: mobile banking applications provide a direct connection between the bank and the customer. Banks can send notifications as well as personalized offers, keeping in touch with the customer.

Extended Access: mobile banking applications are available 24/7, allowing customers to check their accounts, make transfers, payments and other transactions at any time of the day.

Security Systems: In order to reduce fraud risks, banks have implemented preventive security systems, such as biometric identification technologies, data exchange encryption systems, etc.

Expedited Transactions: mobile banking has automatically accelerated many banking processes such as transfers, deposits, payments, etc.

Financial Involvement: mobile banking allows to increase the financial involvement of the population, thanks to which it can be used by the part of the population that is located far from bank branches or in inaccessible places.

Personalized Services: banking applications may collect, analyze data about users and offer personalized services, such as managing expenses, making investments, etc.

Promotion of Competition and Innovation: The advancement of mobile banking has increased competition among banks driving banking innovation in product and service delivery. Thus, banks are trying to improve their remote banking services to keep existing customers and attract new ones, stay competitive.

Risk Management: mobile banking customers have the opportunity to monitor the movement of their accounts in real time, which enables timely detection and prevention of fraud cases

Those mentioned above are some of the many problems that mobile banking solves. We can say that along with the growth of technologies, online

banking will also expand and gradually transform the traditional banking system into a digital one.

Peer-to-Peer Lending. In recent years, new lending methods have started to operate in the international banking systems and beyond, which are an alternative to traditional lending methods. One of such methods is the P2P (peer-to-peer) lending method, which allows individuals or organizations to borrow directly from other individuals or be a lender without the mediation of a financial institution (Julia, 2024). Such platforms usually set their own commissions and also contain information on borrowers' creditworthiness which can guide investors in their lending decisions.

Transactions to be made through P2P platforms are relatively high-risk, that's why the loan interest here is also high compared to a standard bank loan, where the risk of repayment of the loan is borne by the bank, not the investor. However, the interest rates for transactions through P2P platforms are not always high for borrowers, as they offer lower interest rates than banks if you have a good credit history, which is one of the reasons why customers prefer these platforms to loans provided by traditional banks (Finance Magnates Staff, 2023).

All this, of course, promotes the development of the fintech sector which also benefits customers as both fintech companies and traditional banks try to provide more customer-friendly services. However, the activities of such platforms first of all should be in the center of attention of regulatory bodies, so that the interests of both borrowers and lenders are protected, the market is transparent and stable. In the markets where such platforms do not yet operate, the main obstacle is from the regulators of the legislative field, until there are clearly defined regulations for the sector. In some countries, the strict legal framework restricts the entry of new players into the sector, limiting competition, while in others it is quite liberal, which breathes new life into financing (Naoko, et al., 2019). We can say that the main and decisive role here is in the hands of the market regulator, and the degree of development of the P2P market depends on it.

Buy Now, Pay Later. One of the innovations of recent years and widely accepted payment methods by society is the "Buy Now, Pay Later" service. It is a short-term financing method, through which customers can make purchases and make payments in several stages, mostly without additional interest rates (Rebecca, 2024).

Many companies providing such a service operating in the world initially appeared in Europe, after which they spread throughout the world. Perhaps this is the main reason why European countries have the largest share of the "Buy Now, Pay Later" (hereinafter "BNPL") payment method in e-commerce: 8 of the top ten positions belong to Europe (Table 1).

Table 1

The percentage of BNPL service in e-commerce by individual countries in 2016-2021

N	*Country*	*2016(%)*	*2019(%)*	*2020(%)*	*2021(%)*
1	Sweden	12	25	23	25
2	Germany	3	18	19	20
3	Norway	5	13	15	18
4	Finland	-	8	12	13
5	Netherlands	6	8	9	12
6	Denmark	5	7	8	12
7	Australia	-	8	10	11
8	New Zealand	-	-	10	10
9	Belgium	5	6	7	9
10	United Kingdom	1	3	5	6

As we can see, in 2016-2021 the percentage share of BNPL service in e-commerce has registered a steady growth, which is the impulse for the growth of competition among market players. In the world, such large specialized companies as Klarna, Afterpay, etc. have been created.

This method of payment is mostly preferred by the younger generation, because it is quite flexible, there is no need for additional paperwork and it is mostly interest-free. The BNPL payment method is also beneficial for sellers as it contributes to the growth of product circulation and demand. However, there are doubts that in the case of non-returnable loans, it contains quite large risks for the market, that's why the regulatory body should be able to control and regulate the market of BNPL.

Technological summary of the RA banking system. The above-mentioned financial technologies are already widely understood and applicable in foreign countries, but not all of them are fully or partially applied in the RA. We can say that the RA commercial banks are taking enough steps in terms of setting digital agendas, but in what period the results are visible, it is not clear.

Let us try to reflect on the above-mentioned four points that we have highlighted and see what levels of development they are at and what perspectives are available here.

Regarding chatbots, after studying the commercial banks of the RA and the services provided by them, we have found out that among commercial banks of the RA, only VTB-Armenia Bank under the name "Chat-bankDIRECT" uses chatbots (VTB Bank Armenia,). It is localized in WhatsApp and Facebook messengers and offers a toolkit of services such as obtaining a loan, making a quick money transfer to a card, making a deposit, as well as receiving information about existing products and services.

Other commercial banks of the RA still do not have similar chatbots or they are in the software development stage. However, it is obvious that in order to provide customer-oriented digital services banks must introduce modern technology-based systems. At the moment, only 1 out of 18 commercial banks

of the RA has a chatbot, which cannot be considered a positive description for the banking system of the RA.

The RA commercial banks are perhaps quite competitive only in terms of mobile banking, because currently 17 out of 18 commercial banks have mobile banking. Mellat Bank does not have such a system at all. If we take into account that the banking transactions made through digital channels are increasing year by year, we can positively assess the fact that almost all banks in the Republic of Armenia already have mobile banking.

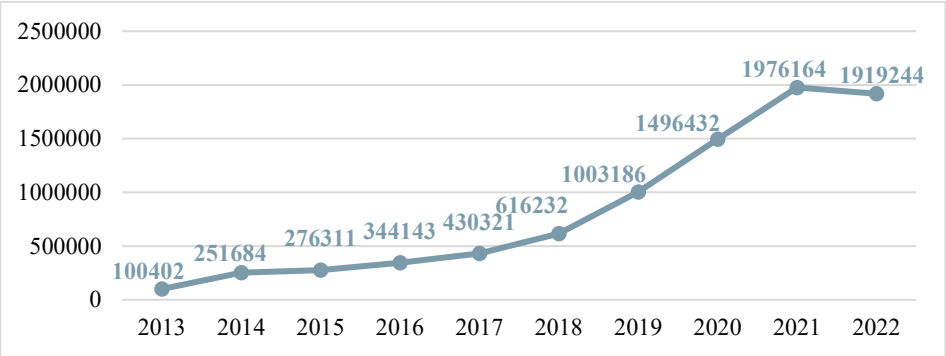

Figure 1. ***Use of Financial Services, Mobile Banking: Registered Number of Mobile Money Accounts for Armenia (Federal Reserve Economic Data)***

As we can see in Figure 1, the number of users of remote financial services, in particular, mobile banking, registered a continuous increase until 2022. The growth has been greatly felt since 2018, when banks in the RA began to actively engage in the introduction of financial technologies, which was also facilitated by the pandemic, and a sharp increase in the number of citizens using digital banking services was observed, ensuring an almost three-fold increase in 2021 compared to 2018. All this in a chain began to form a demand for new digital services, in response to which banks gradually began to pay attention to the introduction of new services.

However, having mobile banking alone is not enough to stay competitive, as traditional services need to be digitized so that customers can use fully digitized services remotely, as well as security measures to reduce the risk of fraud.

Having studied the mobile banking services of almost all banks in the Republic of Armenia, we can conclude that, despite the digitization of basic services, namely payments, transfers and other traditional services, most banks do not have such software to enable remote registration in real time as bank client, open an account, make a deposit, formulate a loan and other necessary transactions. We believe that the main issue here is risk prevention, as remotely identifying a customer is quite difficult and risky, and implementing biometric identification systems is quite a costly and time-consuming process, so most banks prefer to carry out the process of opening customer accounts in branches.

We believe that this problem is also included in the digitalization agendas of banks, and we hope that the implementation of fully digitalized systems for all banks of the Republic of Armenia is only a matter of time.

Unlike other innovations, P2P lending is not implemented in the RA. Despite the fact that it is an alternative lending method, no fintech company has yet introduced such a service to the market. It is noteworthy that there is still no legal regulation on P2P lending in the RA, and any such activity would be more than risky for investors. In order to make the level of riskiness of borrowers more visible for investors, the introduction of open banking activity can also help, which is closely related to P2P lending, because the current scoring systems do not comprehensively reflect the riskiness of the client, and thanks to the introduction of open banking activity, it will be possible to calculate as well as obtain additional information about the client, such as delays in payments for other non-bank services (e.g.: utility bills, subscription payments), etc.

Generalizing, we can say that in order to promote the P2P lending market in the RA, a priority legislative framework is needed not only for P2P lending, but also for open banking.

As for the "Buy now, pay later" service, in 2020 among the banks of the RA, IDBank was the first to introduce a payment option using the BNPL method under the names "Rocket Line" and "Rocket Line 0%", when customers can use the limit, make payments and pay for it in a period of 1 to 36 months (IDBank). The difference between the "Rocket Line 0%" payment method and the other method is that it is possible to make a payment at partner trading points and make the payment to the bank in the future without additional interest.

As we can see in Figure 2, clients using the BNPL service made a total of 2.2 million transactions until the third quarter of 2023, and from the start of this service to the end of 2022 - about 1 million transactions (Armenpress, 2023). As it turns out more transactions were made in the first nine months of 2023 than before which indicates an increase in demand for this instrument.

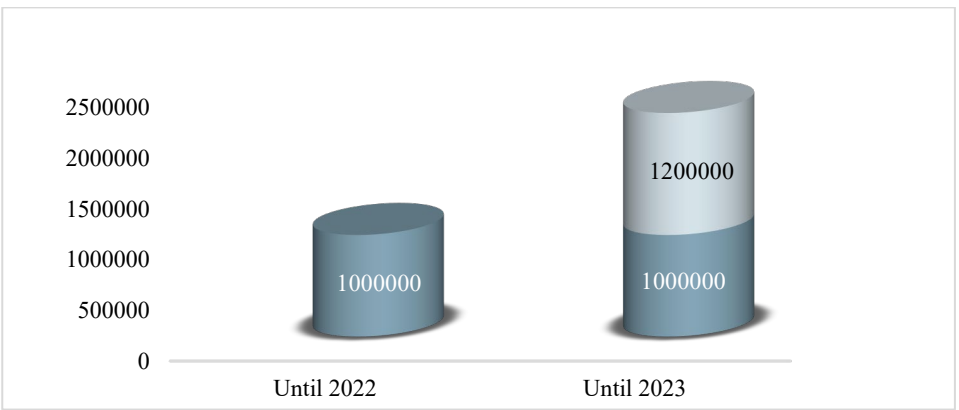

Figure 2. ***The number of transactions and growth dynamics of IDBank's BNPL in 2022-2023***

After some time, Inecobank introduced a payment service for BNPL under the name Paylater. When making payments at partner trading points, customers can use the pre-approved limit and make payments to the bank in terms of 3 or 6 months (Inecobank). Here, in contrast to IDBank's "Rocket Line 0%" service, it is possible to postpone the payment terms either for 1 month, or in case of non-payment, the client will automatically receive a new schedule for 24 months, but with the interest rate set by the bank.

Having the BNPL products of these two companies, we can say that, despite some differences in terms of service, that is, making payments on clearly defined dates in the case of IDBank, and the possibility of delaying payment in the case of Inecobank, the fintech market is entering a new phase where market competition is shifting to digital service delivery instead of traditional service delivery method. Seeing the level of market perception, we must note that the primary steps in the RA banking system have been made in this direction, and most importantly, the customer experience has also increased in this direction, and in the future, it will be more beneficial for other banks to introduce such products, expecting to achieve the expected results in a shorter period of time.

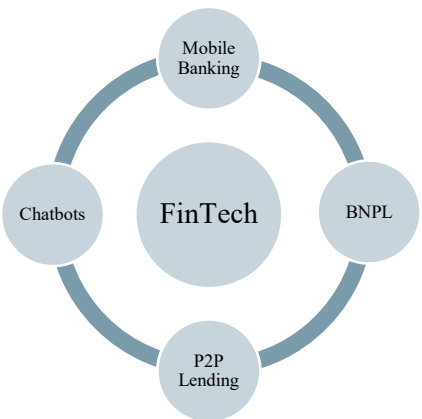

Figure 3. ***The emerging relationship between fintech solutions***

In order to describe the above-mentioned fintech solutions in a more systematic way, we have obtained Figure 3. Here the term "Fintech" refers to a broad category that encompasses a range of financial technology, including P2P lending platforms, chatbots, mobile banking apps, and BNPL services. Here the term "Fintech" refers to a broad category that encompasses a range of financial technology, including P2P lending platforms, chatbots, mobile banking apps, and BNPL services.

These categories can work independently or interact with each other, such as Chatbots and BNPL services can be integrated into Mobile banking applications, chatbots for customer support and BNPL services to offer seamless payment options. P2P lending services can also be integrated into

Mobile banking applications, but there are also separate platforms for providing such services. Because we believe that all mentioned fintech solutions interact and are closely related to each other, that is why in the diagram they are in one commonality, which means that the degree of use and usefulness of each depends on the others.

In the course of our studies it has become clear that there are no universal assessments of fintech development that can characterize the current state of the RA fintech development and the existing assessments do not fully represent the degree of fintech development because they do not fully reflect the areas of fintech inclusion as we know fintech has expanded over time to cover many areas. That is why we will try to give an assessment of fintech trying to give a wider coverage.

Accordingly, using the SPSS program, we have conducted a factor analysis based on 26 statistical data characterizing fintech as a result of which we have received a new model which, in our opinion, characterizes the state of fintech development in a more detailed way.

Table 2

Principal Component Analysis

Communalities		
	Initial	*Extraction*
X1-Made a digital payment (% age 15+)	1.000	.819
X2-Received digital payments (% age 15+)	1.000	.675
X3-Made a digital in-store merchant payment: using a mobile phone (% age 15+)	1.000	.312
X4-VC Investments	1.000	.321
X5-Information and Communication Technology (ICT) use	1.000	.776
X6-Government's online service	1.000	.671
X7-Used a debit or credit card (% age 15+)	1.000	.887
X8-Regulatory Quality: Percentile Rank	1.000	.745
X9-Human capital index (HCI)	1.000	.853
X10-Research and development expenditure (% of GDP)	1.000	.572

Table 3

Total Variance Explained

Total Variance Explained						
Component	*Initial Eigenvalues*			*Extraction Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	6.632	66.323	66.323	6.632	66.323	66.323
2	.938	9.378	75.701			
3	.723	7.230	82.931			
4	.487	4.867	87.798			
5	.442	4.420	92.218			
6	.280	2.805	95.023			
7	.187	1.871	96.894			
8	.132	1.325	98.219			
9	.126	1.265	99.484			
10	.052	.516	100.000			

Extraction Method: Principal Component Analysis.

Using the above-mentioned ten variables we can build a new model that will characterize the score of fintech development and will look like this:

FDS (Fintech Development Score) = $0.819*X^1 + 0.675*X^2 + 0.312*X^3 + 0.321*X^4 + 0.776*X^5 + 0.671*X^6 + 0.887*X^7 + 0.745*X^8 + 0.853*X^9 + 0.572*X^{10}$ **(Model 1):**

We notice that the use of bank cards(X^7), the human capital index(X^9), as well as digital payments(X^1) have the greatest influence on the development of fintech.

Calculating the Score of the RA fintech development we will have the following model:

FDS_{ARM} (Fintech Development Score) = 0.819*40.34 + 0.675*30.86 + 0.312*65.5 + 0.321*2.5 + 0.776*73.4 + 0.671*69.3 + 0.887*65.52 + 0.745*51.89 + 0.853*57.9 + 0.572*0.21 = **324.84**

If we extend this model to the other countries we have, the RA ranks 48th, Sweden is in the first place with 950.03 points, and Nigeria is in the last place with 154.9 points.

Table 4

Classification of countries according to the new FDS model (Author's calculations)

N	*Fintech Index*	*Countries*	*N*	*Fintech Index*	*Countries*
1	950.03	Sweden	31	428.55	Poland
2	666.37	South Korea	32	425.95	China
3	613.38	Canada	33	420.66	Malta
4	568.69	United States	34	419.08	Slovenia
5	551.66	Australia	35	410.61	Greece
6	549.90	Uruguay	36	410.20	Chile
7	541.99	Austria	37	408.06	Lithuania
8	530.78	Israel	38	402.21	Cyprus
9	521.69	Japan	39	399.63	Hungary
10	514.03	United Kingdom	40	389.14	Bulgaria
11	513.76	Estonia	41	387.29	Ukraine
12	513.00	Portugal	42	386.62	Brazil
13	500.02	Singapore	43	385.25	United Arab Emirates
14	495.47	Denmark	44	381.02	Malaysia
15	483.48	Switzerland	45	367.35	Peru
16	476.83	France	46	365.67	Turkey
17	474.22	South Africa	47	346.56	Romania
18	473.53	New Zealand	48	324.84	Armenia
19	472.79	Finland	49	317.34	Argentina
20	470.38	Spain	50	291.59	Colombia
21	462.05	Russia	51	282.80	Indonesia
22	460.92	Germany	52	271.52	Kenya
23	458.60	Thailand	53	250.74	Ghana
24	453.45	Ireland	54	250.65	Philippines
25	453.35	The Netherlands	55	237.76	India
26	453.20	Belgium	56	195.11	Uganda
27	449.12	Norway	57	179.49	Egypt
28	444.01	Latvia	58	167.95	Lebanon
29	438.07	Italy	59	154.90	Nigeria
30	431.19	Czechia			

All this means that the RA still has a lot of room in terms of fintech development, and the prerequisites for fintech development are not being used to their full extent. In that sense, digital payments, VC investments, ICT usage volumes, the promotion of bank card usage, the level of regulation of the legislative field, the level of the human capital index and the expenditures on research and development are significant. The promotion of these prerequisites can greatly contribute to the growth of the Score of Fintech Development.

CONCLUSIONS. Analyzing the aforementioned fintech solutions in the RA banking system, we should note that, although there are active players in the market, their number in the list of general participants is quite small. It is obvious that the RA banking system is in the transformation stage, trying to integrate fintech solutions, thus keeping up with the global trends of digitization and innovation in the direction of financial services. The adoption of fintech in Armenian banks is characterized by a growing emphasis on enhancing the customer experience improving operational efficiency and remaining competitive in a fast changing market.

Having studied the digital services provided by the RA banks, as well as being well acquainted with the applied fintech solutions, we believe that they should first of all pay attention to:

- *Digital transformation and customer experience*, because without digitalization it is difficult to talk about customer experience. In that direction banks should develop their mobile applications, remote banking services and try to provide personalized services to customers.
- *The use of new payment tools*, which is more than relevant in modern times, including NFC and QR payments, development of BNPL solutions and other new products (only 2 banks offer BNPL solutions in the RA banking system).
- *The calculation of new methods of credit score.* We suggest that banks pay attention to all this after the introduction of open banking, because new opportunities will be created for banks to provide a more accurate credit assessment of the client, for example, if information about television, utility and other payments is obtained, a more accurate picture can be created to assess the probability of repayment of the client's loan.
- *Regulation of the legislative field (refers to the Central Bank of the RA).* The absence of legislative regulation causes difficulties and restrictions for banks, regardless of their will, in the direction of introducing the latest fintech solutions, such as P2P lending, Open Banking legislative gaps. All of that cannot but negatively affect the market competition not only within the country, but also outside its borders. Let us add that the National Bank of Georgia has been discussing Open Banking for a long time, and the preliminary regulations (Banking Association of Georgia)

and the first service providers are already available (Openbankingtracker).

- *Cyber security,* because along with digitalization, cyber attacks on banks are also increasing, which entails great risks both in the direction of maintaining the confidentiality of customer data and the uninterrupted operation of the bank. This challenge can also become an opportunity for new collaborations between traditional banks and fintech companies which will only have a positive result.
- The position the RA occupies is not so high in the level of fintech development, which means that the prerequisites for fintech development are not fully used.
- To increase the Score of the Fintech Development, great attention should be paid to digital payments, VC investments, ICT usage volumes, bank cards usage, the level of regulation of the legislative field, the level of the human capital index and the expenditures on research and development.
- We have obtained a new model that covers a wider range of fintech prerequisites and is applicable to all countries, including the Republic of Armenia.

Summing up, we should note that digitization is not a one-time process, but continuous efforts and resources must be invested to face market competition, provide customer-friendly services and promote business growth.

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Appendix 1

Statistical chart of fintech index and its influencing factors (WorldBank)

N	*Countries*	*X1-Made a digital payment (% age 15+)*	*X2-Received digital payments (% age 15+)*	*X3-Made a digital in-store merchant payment: using a mobile phone (% age 15+)*	*X4-VC Investments*	*X5-Information and Communication Technology (ICT) use*
1	Sweden	98.41	91.44	57.60	49.60	96.50
2	South Korea	96.17	85.88	59.15	17.40	98.10
3	Canada	98.08	81.20	29.14	60.70	83.60
4	United States	91.31	69.39	32.20	68.80	95.00
5	Australia	97.43	86.52	44.05	29.50	92.70
6	Uruguay	60.14	43.81	27.67	17.90	88.00
7	Austria	99.23	58.18	15.69	17.80	93.10
8	Israel	87.13	78.36	34.22	68.30	89.50
9	Japan	89.24	87.34	36.20	26.20	86.50
10	United Kingdom	98.59	67.02	26.44	57.40	99.50
11	Estonia	97.72	92.96	25.20	89.20	94.80
12	Portugal	87.48	66.00	26.18	11.00	85.40
13	Singapore	91.04	77.68	49.87	89.80	84.70
14	Denmark	99.93	88.94	73.31	33.00	99.60
15	Switzerland	98.02	46.00	17.81	59.50	100.00
16	France	98.38	52.24	14.63	35.40	95.60
17	South Africa	70.47	66.00	23.63	32.60	62.60

18	New Zealand	97.17	85.15	31.76	20.20	87.00
19	Finland	97.71	80.64	31.06	42.30	96.10
20	Spain	97.15	55.03	35.84	15.30	90.10
21	Russia	82.38	74.13	43.61	4.70	86.30
22	Germany	99.48	61.74	7.16	24.90	91.20
23	Thailand	80.13	83.53	57.22	24.20	83.70
24	Ireland	98.04	66.86	34.69	18.50	87.70
25	The Netherlands	98.01	76.06	32.11	33.50	91.40
26	Belgium	97.26	76.98	33.02	22.50	88.80
27	Norway	99.37	89.82	47.21	19.10	95.90
28	Latvia	93.03	82.77	26.43	12.40	91.70
29	Italy	92.99	55.06	18.96	6.70	84.00
30	Czechia	93.10	76.36	32.09	7.30	85.50
31	Poland	91.39	66.62	42.15	5.00	80.40
32	China	84.54	52.26	77.01	25.30	87.70
33	Malta	85.79	69.40	30.58	38.70	86.80
34	Slovenia	93.61	90.39	20.17	4.80	85.90
35	Greece	88.14	69.14	19.94	5.40	86.00
36	Chile	77.57	71.89	40.57	13.90	85.80
37	Lithuania	83.41	64.70	30.65	28.10	90.00
38	Cyprus	78.61	64.01	27.80	39.10	84.30
39	Hungary	81.37	75.22	23.45	5.10	83.00
40	Bulgaria	68.33	52.98	20.15	6.40	82.00
41	Ukraine	75.45	62.28	26.66	1.20	69.60
42	Brazil	70.74	49.81	24.04	16.90	73.10
43	United Arab Emirates	75.05	17.90	15.87	32.10	91.10
44	Malaysia	65.51	63.23	24.92	22.70	84.00
45	Peru	37.91	34.45	15.25	4.90	60.70
46	Turkey	61.67	46.62	11.42	9.60	75.80
47	Romania	56.06	46.25	22.77	2.50	83.50
48	**Armenia**	**40.34**	**30.86**	**65.50**	**2.50**	**73.40**
49	Argentina	59.14	37.12	27.39	4.20	70.40
50	Colombia	42.29	33.02	11.82	12.80	63.80
51	Indonesia	29.13	23.00	6.24	13.80	65.80
52	Kenya	75.80	56.74	35.10	21.50	35.20
53	Ghana	63.65	53.00	12.86	7.50	53.60
54	Philippines	38.53	28.50	12.21	12.10	54.10
55	India	24.69	19.40	8.31	38.60	49.20
56	Uganda	60.57	43.08	7.59	7.20	25.20
57	Egypt	8.20	16.51	1.41	7.70	55.10
58	Lebanon	5.69	9.69	0.42	7.40	58.80
59	Nigeria	29.45	25.38	5.72	9.00	29.40

N	*Countries*	*X6-Government's online service*	*X7-Used a debit or credit card (% age 15+)*	*X8-Regulatory Quality: Percentile Rank*	*X9-Human capital index (HCI)*	*X10-Research and development expendiure (% of GDP)*
1	Sweden	89.00	96.17	96.23	79.54	3.42
2	South Korea	98.10	89.76	83.96	79.88	4.93
3	Canada	83.50	96.71	95.75	79.75	1.70
4	United States	92.30	88.06	91.04	70.18	3.46
5	Australia	93.10	94.39	99.53	77.02	1.68

6	Uruguay	73.90	53.76	74.06	59.88	0.45
7	Austria	87.00	93.07	87.26	74.67	3.26
8	Israel	86.10	79.85	86.32	73.40	5.56
9	Japan	90.00	71.91	91.51	80.47	3.30
10	United Kingdom	87.40	93.34	93.40	78.29	2.91
11	Estonia	100.00	94.36	92.92	77.72	1.75
12	Portugal	77.40	80.97	75.00	76.89	1.68
13	Singapore	95.80	83.93	100.00	87.91	2.16
14	Denmark	97.80	98.56	98.58	75.51	2.81
15	Switzerland	74.30	86.40	94.34	75.61	3.36
16	France	86.40	87.14	85.38	76.27	2.22
17	South Africa	72.20	49.07	44.34	42.55	0.60
18	New Zealand	95.30	95.11	99.06	77.59	1.45
19	Finland	98.20	95.60	97.17	79.60	2.99
20	Spain	84.10	86.78	75.94	72.83	1.43
21	Russia	70.90	58.19	13.21	68.14	1.09
22	Germany	76.80	90.70	92.45	75.12	3.14
23	Thailand	75.30	35.27	58.49	60.93	1.33
24	Ireland	75.60	92.26	95.28	79.26	1.13
25	The Netherlands	89.20	93.90	96.70	78.99	2.31
26	Belgium	65.70	93.39	86.79	76.04	3.43
27	Norway	78.00	96.30	91.98	77.11	1.94
28	Latvia	79.40	84.84	84.91	70.66	0.74
29	Italy	85.20	83.55	68.87	72.78	1.45
30	Czechia	63.50	84.42	88.68	75.23	2.00
31	Poland	77.10	81.06	74.53	75.31	1.44
32	China	87.60	55.23	36.79	65.31	2.43
33	Malta	87.30	79.13	73.11	70.92	0.67
34	Slovenia	85.30	89.83	73.58	77.50	2.13
35	Greece	75.20	74.80	67.45	69.00	1.46
36	Chile	81.00	70.62	81.13	65.16	0.33
37	Lithuania	81.70	66.52	87.74	70.60	1.11
38	Cyprus	75.60	71.98	75.47	75.55	0.83
39	Hungary	72.00	72.90	64.62	68.31	1.64
40	Bulgaria	67.90	49.88	61.79	61.39	0.77
41	Ukraine	79.50	56.52	40.57	63.14	0.29
42	Brazil	88.50	55.26	43.87	55.15	1.15
43	United Arab Emirates	89.10	61.00	82.08	67.30	1.50
44	Malaysia	73.80	43.57	72.64	61.10	0.95
45	Peru	79.00	22.36	59.91	60.52	0.17
46	Turkey	84.50	45.65	43.40	64.93	1.40
47	Romania	64.80	42.32	63.68	58.42	0.47
48	**Armenia**	**69.30**	**12.76**	**51.89**	**57.90**	**0.21**
49	Argentina	78.90	43.52	25.94	60.21	0.52
50	Colombia	71.50	17.72	56.60	60.43	0.29
51	Indonesia	74.00	13.09	59.43	54.00	0.28
52	Kenya	64.90	11.13	39.15	54.68	0.81
53	Ghana	48.70	3.07	44.81	45.01	0.38
54	Philippines	59.10	15.87	53.77	51.60	0.16
55	India	77.20	13.38	50.94	49.35	0.65
56	Uganda	46.60	6.11	33.02	38.42	0.14
57	Egypt	52.80	5.57	24.53	49.44	0.91
58	Lebanon	36.50	4.68	13.68	51.51	0.15
59	Nigeria	47.50	13.17	12.26	36.06	0.13