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INNOVATIONS IN BANKING: DIGITAL BANKING

Abstract: The article discusses the development of a digital bank in Uzbekistan. According to the Payments Industry Intelligence portal, there were 60 non-banks in the world in 2018 year. At the beginning of 2021, the number of digital institutions has grown to 319 active. In 2019-2020 years alone, 144 new neobanks were opened. Currently, there are 24 digital banks operating in the USA, about 100 in the EU, 10 in China, 3 in Russia, and 1 in Kazakhstan. There are 2 digital banks in Uzbekistan: the first domestic commercial digital bank Anorbank, as well as a branch of the Georgian digital bank.

Key words: digital bank, software, Central Bank, IT infrastructure, banking services, digital innovations.

Language: English

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Introduction

Favorable conditions have been laid down in Uzbekistan for the opening of digital banks back in 2018, thanks to the Decree of the President of Uzbekistan "On measures to radically improve the activities of the Central Bank". It is obvious that the number of digital banks, compared to the "traditional" ones, is much smaller at the moment. However, it is already possible to assess the advantages of digital banks over "traditional" ones and predict a significant increase in their number in the near future. Due to savings on the maintenance of offices, staff, equipment, a reduction in the cost of transactions is achieved (according to various estimates, from 2 to 16 times), the opening and closing of accounts occur quickly, more attractive interest rates on loans and deposits appear, and due to online opportunities, the customer base expands and the issue of queues is practically solved. The profitability of this type of banks increases dramatically due to a significant reduction in the cost of services provided while increasing

After the signing of the Presidential Decree "On measures to radically improve the activities of the

Central Bank of the Republic of Uzbekistan", the banking system was tasked with organizing "digital" banks and banking units specializing in retail banking and customer service using innovative banking technologies to further improve the quality of service. Based on this, Anorbank and TBC Bank were registered as digital banks in Uzbekistan in 2020 year.

Research of methodology.

When writing the article, we used the synthesis and analysis of the materials under study.

Discussion of the results.

The concept of "digital banking" developed rapidly in European countries during 2015-2020. Digital banks widely use modern digital innovations to provide their customers with more convenient and useful services. Today, Anorbank and TVS Bank are both digital banks, also offering their customers a full range of digital services through mobile applications or personal computers. This means that a digital bank customer can use banking services 24/7. In other words, a mobile application is provided to the customer in the digital bank system, and on the basis

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of a mobile application, high flexibility of banking operations with a high-tech IT infrastructure is provided [1].

It is known that digital banks are divided into 2 types: some have a license and initially operate independently under their own brand, others directly cooperate with existing traditional banks and become a kind of online subsidiaries of these banks, but they can also have their own name and brand. For example, in Uzbekistan in 2020, the Georgian digital bank TBC Bank opened, which in Georgia has a head office and full-fledged branches, as well as a digital division with its own name Space, which is positioned as a digital bank with a license from TBC Bank. It is typical for digital banks not to expand the network of bank branches; 100% online communication system between the bank and the client; high-quality and convenient mobile application; the most favorable conditions for deposits and loans that meet market requirements (i.e. based on customer demand); availability of fast, high-quality, convenient and round-the-clock response centers [2,3,4].

The digital transformation of financial services will help expand the economic opportunities of customers, while creating a wide range of opportunities for the bank's customers, which is an important step towards increasing financial activity. In other words, one of the prospects for digital banks is to reduce the cost of services by 40-60% due to the digitalization of these financial sectors. The transformation of commercial banks and the transition to a digital banking system is a response to the development and active dissemination of new information technologies around the world, and digital technologies not only improve the quality of products and services, but also reduce unnecessary costs. In other words, the development of digital financial services is an important aspect of the development of the country's banking and financial system. The first digital bank in Uzbekistan will be a foreign company - TBC Bank Group PLC, which at the end of April received a license from the Central Bank of the Uzbekistan for the right to operate in the country.

The branches of the bank, the number of which will be three, will differ from traditional bank offices. The first steps towards digitalization of the banking sector in the Uzbekistan began in early 2018. Then, at the legislative level, they approved a course for the introduction and development of digital banks. A few months later, online deposits became available to users (they were the first to be implemented in "Hamkorbank"), then it became possible to convert currency through a mobile application. Now the functionality of applications is much broader: remotely you can not only open a deposit and change currency, but also apply for a loan, order a card, transfer funds to a card, receive a money transfer, manage accounts, pay for goods and services. Market

experts note that the level of digitalization of the sector is still low. Despite the fact that almost all banks in the country have got mobile applications, and some even two (for individuals and legal entities). The banking system of Uzbekistan is characterized by a high concentration: more than 80% of banking assets are in the hands of the state. Now both private and public have undergone some changes. Uzbekistan's policy is pushing state-owned banks to be more competitive in the market and maximize profits.

Over the past few years, the banking sector in Uzbekistan has made a breakthrough in development. Most banks began to offer their products and services through digital channels, mobile applications have become more convenient, their functionality has expanded significantly. Banks have paid attention to the retail sector and to our citizens as consumers of banking services. It can be noted the successful implementation of digital solutions in Uzbekistan, including mobile applications, for example, Kapitalbank's Apelsin, NBU's Milliy, Promstroybank's Joyda, InfinBANK, Ipak Yo'li Mobile, Hamkor Mobile and others. Increasingly, banks are making applications available not only to their customers. So the banking sector will win back the market share that was captured by payment organizations like Payme, CLICK, Upay and others. Digitalization of the banking sector is a complex and complex process. But its ultimate goal is to save the resources of both customers and the banks themselves, since the bank is available at any time through any channel convenient for the client: bank office, call center, video communication, ATM, mobile and Internet banking, chat bots, social networks and messengers; the client forgets the way to the bank's office, because he can get any service remotely: open a card with its delivery to his home, issue a loan, open a deposit, and so on; service becomes more personalized, up to individual tariffs [5,6].

All thanks to big data, using which banks know so much about customers that they themselves offer services without waiting for a request. A classic example of a digital bank is the Russian "Tinkoff Bank", which does not have a single office. Its main channels of interaction are a website and a mobile application through which you can order a card (it will be delivered to your home for free), apply for a loan (including cash, which will also be delivered to the client) or a deposit. Customers can top up the card or withdraw cash through ATMs, and all communication takes place through digital channels. For the bank, digitalization is primarily an opportunity to optimize costs: more than 5,000 people have opened deposits online. This means that the bank saved 5,000 deposit books, did not print out the contract in duplicate and the cash receipt order, the employee did not spend 15 minutes of time opening each deposit and does not spend 5 minutes monthly to pay interest on them, the accountant and cashier did not participate in this

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operation and also saved 2-3 minutes of their time. A simple calculation shows how many man-days the bank has saved. Internal optimization of the bank also includes digitization of all business processes. For example, the introduction of a credit pipeline that allows you to make a decision on the approval or rejection of a loan application in a few minutes without the participation of a bank employee. Here, too, two technologies that are leading the digital transformation of the banking sector come into play: big data and artificial intelligence. Having information about the client's income, the number of overdue loan payments and other data, the system analyzes in a few minutes and gives a positive or negative answer, or calculates the optimal interest rate for a certain applicant. When scoring (automatic assessment of a client's creditworthiness based on data about him), there are elements of big-data.

Really big data is used by mobile operators who have information about the movement of subscribers: where he lives, which restaurants he visits, how often he goes on business trips, and so on. In Ukraine, for example, scoring takes into account even the contacts of a potential borrower. If he often communicates with people from the bank's blacklist, then the level of risk for this client increases. The bank receives and stores a huge amount of information about the customer, from his income and the average check in the store to the time of card transactions and their location. If you manage these data correctly, you can use them to offer a loan to the client at the right time for him. Forced isolation of people on the one hand, and increased public interest in e-commerce (shopping in online stores, ordering groceries from supermarkets and food from stores), and, on the other hand, led to a sharp development of digital banking services [7].

In particular, it became possible to remotely open a card of national and international payment systems, which the bank's employees delivered to the client at home. Banks began to sell their products online and transfer the identification process from the stage of creating an application to the stage of delivering products to the consumer. Internet acquiring, courier delivery, remote scoring, unidentified mobile wallet began to develop. During the quarantine period, "Kapitalbank" launched remote money transfer and card delivery in just a week. According to the Central Bank of Uzbekistan, the number of bank cards in circulation exceeds more than 21 million. At the same time, as of January 1, 2020 year, over 10 million people are users of remote banking services. Most of them (93% or 9.4 million) are individuals. On the one hand, this indicates the success of the efforts of Uzbekistan's banks on the way to a fully digital bank, on the other hand, it demonstrates a huge potential for growth [8].

Banks that have not started the process of digital transformation now risk being left out in a few years. On the other hand, there are infrastructure problems in

the country that do not allow banks to digitalize at a rapid pace. In particular, this is a low level of Internet and smart phone penetration. Penetration, as well as the cost of mobile and fixed Internet is the main factors in the development of e-commerce. The penetration of smart phones at the level of 40-45% is also a strong limitation. The key feature of digital banking is the ability to open a bank account without the physical presence of the client. Currently, banks in Uzbekistan do not have such an opportunity, but we expect changes in regulatory documents that will allow customers to open accounts remotely in the near future. Experts predict that in the coming year, the banking sector of Uzbekistan will undergo major changes, in a year such professions as managers selling card and credit products will remain only in textbooks, because the entire retail business will go online. Digitalization helps to save time and resources of the bank's employees and customers, thanks to digitalization, the cost of all operations has fallen sharply, customers are satisfied with the quality and speed of services.

According to KPMG experts, in the next 10 years, the banking sector will change in a way that has not changed in the last century. It is important that the market is expanding at the expense of players who have become involved in payments and other banking operations, although this is not a core activity for them. For example, global technology corporations like Apple, Google, Samsung already have their own payment services. This forces such large and non-revolving structures as banks to become more flexible, customer-oriented [9]. The financial sector is one of the most active segments of innovative solutions consumption. At the same time, bank employees spend millions of dollars on high technologies, and constantly raise the bar of requirements for IT systems. Innovative trends characterizing technological breakthroughs in the banking sector are the improvement of the way of organizing processes, which allows to reduce the cost of banking services and products, as well as the expansion of integration services and the emergence of new payment systems.

Conclusion.

In 2017, credit institutions began using Apple Pay and Samsung Pay payment systems, Android Pay and Xiaomi Pay, because of their convenience as a means of payment. It is possible to note the prospect of support by Mir cards for making payments using Apple Pay and Samsung Pay technologies. Currently, in the call centers of banks, bots-robot consultants using speech technologies and simple forms of artificial intelligence are already used to help solve simple banking issues, and robotovizers are used for automatic investment management in the bank [10]. At the same time, artificial intelligence systems capable of self-learning and helping to make complex

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decisions based on processing large arrays of banking data are extremely promising technologies [8].

The introduction of a Unified Identification and Authentication System (USIA) for bank customers, the transition to the use of XBRL for reporting under IFRS, the use of biometric data (fingerprints, voice, iris, etc.) for multi-factor authorization increases the efficiency of the bank. The use of blockchain in a bank that stores information about all transactions of system participants in the form of a "block chain" is the main advantage of this technology over traditional banking transactions, where there are no intermediaries, because the blockchain does not have a central authority, and transactions are verified by the participants themselves [9]. According to the TAdviser survey on the prospects of blockchain technology in the Russian banking sector, it showed that blockchain has a great future and when using it, a deep rethinking of the technological principles of providing banking services is necessary.

Mobile applications of banks and online banks are constantly expanding their capabilities, becoming more convenient and advanced. However, along with this, the number of threats faced by customers is also growing. This, in turn, changes the paradigm of development of these financial products. Currently, the market of software products for credit institutions is represented by a wide range of systems that differ both in functional part and technical implementation. However, any banking information system must necessarily meet the following requirements: the possibility of network work of many users; the implementation of the entire complex of banking operations for settlement and cash services, credit and deposit activities, currency transactions; flexible configuration for end-user access; support for several hardware platforms; automated generation of most of the reporting forms, the possibility of their reconfiguration, etc.

These requirements are met today by most systems for financial organizations represented on the market of IT products. The use of a Russian-made information system ensures the accounting and operational activities of a credit institution, but the functionality of such systems in such business areas as strategic management, customer relationship management, and risk management lags significantly and is narrower than that of Western systems, although they are cheaper [10]. This is increased competition for the clientele, especially for a quality client. It is necessary for the bank to have sufficient information about markets and customers, to be able to respond flexibly and promptly to customer requests, to predict the changing needs of the clientele and to develop new products taking into account such forecasts. This situation primarily concerns those banks that have begun to develop retail business, private banking, etc. Now there is an increased interest in systems that provide comprehensive risk

management, primarily credit. In addition, it is necessary to introduce a modern corporate information system into the bank, which would cover all aspects of the bank's activities. The problem of strategic management and planning is urgent. The latest regulatory documents and recommendations of the Bank of Russia on the business plans of credit institutions encourage banks to use modern information systems in the field of strategic business development [11].

In order to avoid technological lag, banks should identify their niche and focus on automating selected business lines. The more high-tech a bank is, the higher its competitiveness. The processes of mergers and acquisitions taking place in the banking system require the adequacy of the development of information systems in banks to minimize risk and loss of their manageability.

The first and most important task of information technology (IT), among others, is to achieve business goals. Any activity in the field of IT only makes sense when it is aimed at obtaining the final result and is connected with the development strategy of the bank. If the management of a credit institution is properly organized, the IT manager should be directly involved in defining goals and developing a strategy to achieve them. In the field of IT, the means of achievement are resources, their balance.

The main IT resources are technologies, information, personnel, software and hardware. The common resource is money, time. In the field of IT resource provision, the use of third-party resources, i.e. outsourcing, is more preferable for some tasks and is increasingly expanding [12]. For example, if a bank has acquired banking programs and technologies for banking automation systems from a developer company, then after a while it will be necessary to add a function for working with new stock instruments (for example, bills of exchange) to expand the activity of the bank. And in this case, the outsourcing service involves the bank contacting the developer company for the design and purchase of information technology that provides the bank with work with bills. A new function in the activity of a particular bank is implemented by an external contractor and its resources, which is a more economical way to implement it.

Outsourcing services may be associated with the transfer of the bank's information technologies to new software and hardware (platform), with the replacement and updating of the network operating system, etc. When solving specific tasks, it is necessary to determine which type of resource use is more effective - internal or external. Outsourcing is also associated with new specific risks, the management of which is part of the operational activities of IT services [13]. In the international practice of banks, not only the experience and knowledge of managers and other personnel are used

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to solve the problems of optimal organization of information technologies, but they also use some kind of IT management methodology developed on the side or their own.

Such methodologies contain the definition of the main goals and objectives of the information technology management structure, the composition of functions, technologies, and the organization of work on their implementation. The advantages of well-known methodologies include offering proven approaches and solutions that comply with international legal standards and technical standards, achieving goals and results, etc. [14].

The bank's performance is assessed on the basis of a number of key indicators reflecting how successfully managers manage their own and borrowed funds, what is the profitability of interest and non-interest operations, the degree of profitability of assets, capital, the share of expenses on the management apparatus [14]. However, financial indicators are reliable for assessing the work already done and are not fully adequate when it comes to the future development of the bank. The owners of the bank mainly have a strategic view of its development. They decide in which areas of business to identify priorities and give them the status of strategic. Paying attention to the long-term perspective, it is necessary to provide resources for the bank's development program. This prepares the ground for implementation.

Experience shows that banks that have a clear strategy and clear plans are more likely to succeed. The process of translating the bank's strategy and plans into action is inextricably linked with the development of information technology. Therefore, it is necessary to expand the system of indicators, to give it a balance to reflect not only the past period, but also the future, forming goals and stages of their achievement.

Reducing the bank's strategic objective for monitoring individual indicators, many of which need to be monitored in the course of operational activities, and represents the translation of the strategy into action in the future. The degree of achievement of individual goals is determined by feedback, which is so necessary to adjust the bank's development for the implementation of a long-term program. To access, analyze and forecast the state of information technology, it is necessary, as well as for the bank as a whole, to have an objective system of indicators on the main aspects of ABS activities.

Such indicators provide control, management and achievement of the final results of IT activities. In foreign practice, such indicators are called key performance indicators. Examples include user satisfaction with the work of IT services, the number of supported users per ABS employee, the percentage of ABS employees' workload, the growth of the ABS budget compared to the growth of operations, the time

to resolve problems with users, the percentage of IT projects that do not meet deadlines or budget, the availability of critical resources (100% means that certain resources are available 24 hours), etc. It is important to determine which of the indicators should be taken into account when evaluating the activities of the IT bank.

One of the main aspects of the implementation of the bank's development strategy is the organization of information technologies in the direction of complex automation of banking activities based on the integration of the bank's management functions as a whole. Therefore, the automated banking system of the ABS of a credit institution should function as an integrated complex, in which, in addition to traditional solutions, modern tools, there is a system for visualizing key indicators, including about the future activities of the bank. The process of informatization of banking activities will continue in the future. In the banking sector, in the near future, trends will prevail towards improving the quality and reliability of the products and services offered, increasing the speed of settlement operations, and organizing electronic access of customers to banking products.

This is due to the desire of banks to achieve competitive advantages in the financial markets. The use of modern information technologies dramatically affects and changes business processes in banks, bringing them to a fundamentally different level. Banking technologies are inextricably linked with information technologies that provide comprehensive business automation. The formation of the national banking sector continues to this day. The future of banking remains for information technology. The Uzbek banking system should join the global one, and the fight against Western competitors is unthinkable without relying on modern high-level information technologies. New electronic technologies help banks to change customer relationships and find new means to make a profit. Banking computer systems are currently one of the fastest growing areas of applied network software. The advantages of non-banks over traditional ones are: free connection of new customers without queues and bureaucracy; personalized customer support works in a 24/7/365 time format; the vast majority of banking operations are via an online application, all processes work using blockchain technology, and credit rates and deposits are often offered with greater benefit for the client.

Digital banks focus on modern technologies and the target audience, which is used to online banking services. The main sources of income of such banks are transaction fees, paid subscription to VIP or premium services and commissions from third-party services. Certain disadvantages of digital banks include their narrow, in comparison with the broad masses of citizens, target audience. For example, the vast majority of pensioners and elderly people who are

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unfamiliar with modern technologies will not be able to fully use the services of neobanks.

Moreover, digital banks are mostly "sharpened" for monetary transactions taking place inside the network and in the absence of their terminals (or a small number of them), and sometimes even plastic cards (for the sake of virtual cards and electronic wallets). Also, factors slowing down the spread of digital banks in Uzbekistan are an adapted regulatory framework and insufficient technological capacities (data centers, experienced IT specialists, Internet coverage and speed, etc.). However, it must be said that it is a matter of time, education and resources when digital banks will be able to translate these shortcomings in their favor.

It is known that money is the equivalent of the cost of goods and services. Their forms are diverse: from ordinary coins and banknotes to digital and information sources of their issue. There are 157 currencies on the territory of 193 states today. According to the information portal FinFocus, there are \$80.9 trillion in turnover, taking into account long-term deposits, of which \$5 trillion - in coins and banknotes, the rest - in electronic form. The most popular among them are 5 national monetary units (US dollar, British pound sterling, Japanese yen, Swiss franc and Australian dollar) and 1 interstate - euro. There are also gold and foreign exchange reserves, no state can do without them. They are estimated at \$7.8 trillion. The IMF and the central banks of the participating countries account for about 17% of all gold reserves. It is also worth mentioning about crypto-currencies - virtual money. According to the international magazine Global Finance, the total value of crypto-currencies in the world is estimated at \$196.5 billion. The top three by capitalization for 2020 year include bitcoin (\$156.5 billion), ethereum (\$17.5 billion) and ripple (\$9.8 billion). But this is only a part of the entire money supply. Everything else, and this is a much more significant share - is non-cash money. Wondering how much electronic money is in the accounts of various electronic wallets, no study provides accurate data. According to various experts, the global volume of electronic money and securities can vary and reach \$1,280 trillion, i.e. it can be said with some confidence that almost all money in the world today is non-cash. Thus, in developed countries, the volume of cash is no more than 10%, i.e. about 90% of all money in developed countries is electronic. For example, in the Russian Federation, the turnover of electronic money, according to the National Association of E-Commerce Participants, annually amounts to 1.7 trillion rubles, and electronic wallets are used by more than 10 million Russians. Today, Web Money and Yandex are the leaders in the Russian electronic money market, Money, and the total share of which is about 46%. According to the estimates of the British specialized resource Learn Bonds, the global digital payments market in 2020

amounted to a record \$4.7 trillion, which is 15.3% more than a year earlier.

Analysts predict that the market will continue to grow in the coming years and will reach \$6.7 trillion by 2023 year. According to a "Statista" study on the financial and technology industry, the global digital payments market will grow by an average of 14% per year in 2017-2023 years. In many ways, the market is growing thanks to online trading. In the next three years, digital payments in this segment will account for 67% of the total number of digital payments. However, mobile payments will show the most significant growth: if in 2019 their volume worldwide amounted to \$745 billion, then in 2023 year it will reach \$2.1 trillion. At the moment, the world leader in the volume of digital payments is China, which by 2023 will account for 49% of the total global volume (\$3.1 trillion). In February 2020 year, the Law of the Republic of Uzbekistan "On Payments and Payment Systems" came into force, regulating, among other things, the use of electronic money and payment systems.

In the Republic of Uzbekistan, electronic money is the same Uzbek soums, only their circulation is carried out in an electronic system. They can be used to purchase goods and services from individual entrepreneurs and legal entities - subjects of the system. Special electronic wallets are formed for them, to which electronic currency is accepted for the goods sold or the service rendered in order to further transfer the equivalent amount to the bank's settlement accounts.

There are three such systems in Uzbekistan today, they are created by Click, Pay me and Ozon payment organizations. The first company was Avrio Group, which registered the first Ozon electronic money system. The issuer of the electronic money system was the private joint-stock private bank «Turkiston». In August 2020 year, Inspired (E-Card) LLC and Click (Click) LLC registered their electronic money systems. The issuers were Universal battery and Agrobank battery, respectively. Currently, about 500 thousand wallets have been created in the Click system, more than 140 thousand in Ozon, and more than 100 thousand in Payme. It is important for consumers in Uzbekistan to know that virtual wallets in which electronic money is stored are mainly intended for those who do not have a bank card, but at the same time want to use electronic payments. However, the capabilities of such wallets are limited compared to classic plastic cards, and electronic wallets are not yet able to completely replace cards. You can use them not in all stores, gas stations, pharmacies or other trade and service enterprises, but only in those where contactless payment is accepted (for example, using a QR code). Also, it is not yet possible to withdraw cash from an ATM from an electronic wallet. In general, electronic money is a good alternative to conventional cards, the issuance of

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which takes several days and requires a visit to the bank.

Perhaps, with the development of contactless technologies, phones will completely replace plastic cards. Which tool the consumer will use with an electronic wallet, a mobile application of a bank or a payment organization to which the card is attached will depend on the amenities and bonuses (in the form of cashback, special promotions and others) provided by market players. Nevertheless, the expansion of electronic circulation causes special attention to cybersecurity issues. According to the results of a survey of the international developer of antivirus software ESET, conducted in 2019 among IT directors of companies in Uzbekistan, it became known that 55% of companies in the country faced internal cyber threats and 72% with external ones.

Thus, spam and malicious software have become the most common cyber threats. Also, 18% of respondents reported that their companies suffered

from accidental information leaks, and 10% from intentional ones. Entrepreneurs of Uzbekistan consider financial information to be the most significant: 75% of companies noted that it needs special protection from cyber threats, 48% allocate information about operational activities, 45% information about partners and customers, 25% personal data of employees. It should be noted that the most advanced technologies of the digital economy and electronic money will continue to appear and find their development in Uzbekistan. There are practically all conditions for this, both at the legislative and communication levels. Of course, with the chosen vector of development towards digitalization, the main emphasis should be placed on ensuring cybersecurity, creating capacities for data centers to store "big data" (Big Data) and ensure the smooth operation of computing equipment, and there is also a lot of work to be done to increase the education of the population to use IT-technology services.

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| | ISI (Dubai, UAE) = 1.582 | PIHII (Russia) = 3.939 | PIF (India) = 1.940 |
| | GIF (Australia) = 0.564 | ESJI (KZ) = 9.035 | IBI (India) = 4.260 |
| | JIF = 1.500 | SJIF (Morocco) = 7.184 | OAJI (USA) = 0.350 |

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