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ХАБАРШЫСЫ

ВЕСТНИК

РОО «НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК РЕСПУБЛИКИ КАЗАХСТАН»
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В 2016 году для развития и улучшения качества жизни казахстанцев был создан частный Благотворительный фонд «Халык». За годы своей деятельности на реализацию благотворительных проектов в областях образования и науки, социальной защиты, культуры, здравоохранения и спорта, Фонд выделил более 45 миллиардов тенге.

Особое внимание Благотворительный фонд «Халык» уделяет образовательным программам, считая это направление одним из ключевых в своей деятельности. Оказывая поддержку отечественному образованию, Фонд вносит свой посильный вклад в развитие качественного образования в Казахстане. Тем самым способствуя росту числа людей, способных менять жизнь в стране к лучшему – профессионалов в различных сферах, потенциальных лидеров и «великих умов». Одной из значимых инициатив фонда «Халык» в образовательной сфере стал проект Ozgeris powered by Halyk Fund – первый в стране бизнес-инкубатор для учащихся 9-11 классов, который помогает развивать необходимые в современном мире предпринимательские навыки. Так, на содействие малому бизнесу школьников было выделено более 200 грантов. Для поддержки талантливых и мотивированных детей Фонд неоднократно выделял гранты на обучение в Международной школе «Мирас» и в Astana IT University, а также помог казахстанским школьникам принять участие в престижном конкурсе «USTEM Robotics» в США. Авторские работы в рамках проекта «Тәлімгер», которому Фонд оказал поддержку, легли в основу учебной программы, учебников и учебно-методических книг по предмету «Основы предпринимательства и бизнеса», преподаваемого в 10-11 классах казахстанских школ и колледжей.

Помимо помощи школьникам, учащимся колледжей и студентам Фонд считает важным внести свой вклад в повышение квалификации педагогов, совершенствование их знаний и навыков, поскольку именно они являются проводниками знаний будущих поколений казахстанцев. При поддержке Фонда «Халык» в южной столице был организован ежегодный городской конкурс педагогов «Almaty Digital Ustaz.

Важной инициативой стал реализуемый проект по обучению основам финансовой грамотности преподавателей из восьми областей Казахстана, что должно оказать существенное влияние на воспитание финансовой

грамотности и предпринимательского мышления у нового поколения граждан страны.

Необходимую помощь Фонд «Халык» оказывает и тем, кто особенно остро в ней нуждается. В рамках социальной защиты населения активно проводится работа по поддержке детей, оставшихся без родителей, детей и взрослых из социально уязвимых слоев населения, людей с ограниченными возможностями, а также обеспечению нуждающихся социальным жильем, строительству социально важных объектов, таких как детские сады, детские площадки и физкультурно-оздоровительные комплексы.

В копилку добрых дел Фонда «Халык» можно добавить оказание помощи детскому спорту, куда относится поддержка в развитии детского футбола и карате в нашей стране. Жизненно важную помощь Благотворительный фонд «Халык» оказал нашим соотечественникам во время недавней пандемии COVID-19. Тогда, в разгар тяжелой борьбы с коронавирусной инфекцией Фонд выделил свыше 11 миллиардов тенге на приобретение необходимого медицинского оборудования и дорогостоящих медицинских препаратов, автомобилей скорой медицинской помощи и средств защиты, адресную материальную помощь социально уязвимым слоям населения и денежные выплаты медицинским работникам.

В 2023 году наряду с другими проектами, нацеленными на повышение благосостояния казахстанских граждан Фонд решил уделить особое внимание науке, поскольку она является частью общественной культуры, а уровень ее развития определяет уровень развития государства.

Поддержка Фондом выпуска журналов Национальной Академии наук Республики Казахстан, которые входят в международные фонды Scopus и Wos и в которых публикуются статьи отечественных ученых, докторантов и магистрантов, а также научных сотрудников высших учебных заведений и научно-исследовательских институтов нашей страны является не менее значимым вкладом Фонда в развитие казахстанского общества.

С уважением, Благотворительный Фонд «Халык»!

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© Y.O. Nichkasova[1*], K.Z. Sadvokassova[2], A.K. Alpysbayeva[2], 2024
[1]Business School of Belarussian State University, Minsk, Belarus;
[2] Kazakh University of Technology and Business.
E-mail: y.nichkasova@gmail.com

DIGITAL TECHNOLOGIES: KAZAKHSTAN'S FINANCIAL MARKET TRANSFORMATION

Nichkasova Yuliya Olegovna — PhD, Candidate of Economic Sciences (Finance), associate professor, Department of Business Administration, Belarussian State University, Business School, Minsk, Belarus
E-mail: y.nichkasova@gmail.com; https://orcid.org/0000-0001-7084-9235;
Sadvokassova Kulyash Zhabykovna — Doctor of Science (Economics), professor, Department of Economics and Finance, Kazakh University of Technology and Business. Astana, Kazakhstan
E-mail: ksadvokas@mail.ru; http://orcid.org/0000-0002-5410-9154;
Alpysbayeva Ainur Kunanbayevna — Candidate of Economic Sciences, associate professor, Department of Business and Management; Kazakh University of Technology and Business; Astana, Kazakhstan
E-mail: alpysbayeva.ainur77@mail.ru; https://orcid.org/ 0000-0001-6444-2148.

Abstract. The digital revolution is rapidly evolving, increasing the scale and speed of change in all areas of life. The impact of breakthrough innovations in the financial sector is especially noticeable, which significantly increases competition between old and new market players. This paper studies the level of penetration of financial innovations into Kazakhstan's financial market transforming channels of interaction with customers, increasing the availability and efficiency of services. The research methodology is built in the direction from general to specific and from global to local based on six main sectors of financial activity identified by experts of the World Economic Forum. Based on empirical data this paper seeks to create a map of financial innovations and emerging digital technologies in the financial industry of Kazakhstan. It was proved that payment services and online loans are the main drivers of innovation, which carries certain threats and risks for the population with a low level of financial literacy. Kazakhstani banks must change business models in response to competition from postal and mobile service operators. The latter actively use Big Data and distributed service technologies for successful growth and meeting the consumer power of the country's young population. Alternative lending is one of the key disruptive trends in deposit and lending service in Kazakhstan will be balanced by regulatory requirements to protect the interests of the users of such services. However, we did not find sufficient evidence for clear penetration of innovation in the insurance sector, capital raising and investment management.

Keywords: digital revolution, disruptive innovations, online financial services, digital analytic platform, Kazakhstan

© Ю.О. Ничкасова[1*], К.Ж. Садвокасова[2], А.К. Алпысбаева[2], 2024
[1] БМУ бизнес-институты Минск, Беларусь;
[2] Қазақ технология және бизнес университеті, Астана, Қазақстан.
E-mail: y.nichkasova@gmail.com

ЦИФРЛЫҚ ТЕХНОЛОГИЯЛАР: ҚАЗАҚСТАННЫҢ ҚАРЖЫ НАРЫҒЫН ТРАНСФОРМАЦИЯЛАУ

Ничкасова Юлия Олеговна — PhD докторы, экономика ғылымдарының кандидаты, Беларусь мемлекеттік университетінің Бизнес институтының Іскерлік басқару кафедрасының доценті, Минск, Беларусь
E-mail: y.nichkasova@gmail.com; https://orcid.org/0000-0001-7084-9235;
Садвокасова Күләш Жабыкызы — экономика ғылымдарының докторы, профессор, Қазақ технология және бизнес университетінің экономика және қаржы қафедрасының профессоры, Астана, Қазақстан
E-mail: ksadvokas@mail.ru; http://orcid.org/0000-0002-5410-9154;
Алпысбаева Айнұр Құнанбайқызы — экономика ғылымдарының кандидаты, экономика және қаржы қафедрасының доценті; Қазақ технология және бизнес университеті, Астана, Қазақстан
E-mail: alpysbayeva.ainur77@mail.ru; https://orcid.org/ 0000-0001-6444-2148.

Аннотация. Цифрлық революция өмірдің барлық салаларындағы өзгерістердің ауқымы мен жылдамдығын арттыра отырып, қарқынды дамып келеді. Қаржы секторындағы серпінді инновациялардың әсері ерекше байқалады, бұл нарықтың ескі және жаңа ойыншылары арасындағы бәсекелестікті айтарлықтай арттырады. Мақалада Қазақстанның қаржы нарығына қаржылық инновациялардың ену деңгейі, клиенттермен өзара әрекеттесу арналарын түрлендіру, қызметтердің қолжетімділігі мен тиімділігін арттыру қарастырылған. Зерттеу әдістемесі Дүниежүзілік экономикалық форум сарапшылары анықтаған қаржылық қызметтің алты негізгі секторы негізінде жалпыдан нақтыға, жаһандықтан жергіліктіге қарай құрылған. Зерттеу нәтижесінде эмпирикалық деректер негізінде Қазақстанның қаржы индустриясында цифрлық технологияларды қолдану бойынша қаржылық инновациялар мен даму тәжірибесінің картасы жасалды. Төлем қызметтері мен онлайн несиелер қаржылық сауаттылығы төмен халық үшін белгілі бір қауіптер мен тәуекелдерді алып келетін инновациялардың негізгі драйверлері болып табылады деген қорытынды жасалды. Қазақстандық банктер табысты өсу және елдің жас тұрғындарының сатып алу қабілетін қанағаттандыру үшін Big Data және таратылған сервистік технологияларды белсенді түрде қолданатын пошта және ұялы байланыс операторларының бәсекелестігіне жауап ретінде өздерінің бизнес үлгілерінің трансформациясын қамтамасыз етуі тиіс. Баламалы несиелендіру Қазақстандағы депозиттік-несиелік қызмет көрсету саласындағы негізгі серпінді тенденциялардың бірі болып табылады

және мұндай қызметтерді пайдаланушылардың мүдделерін қорғау үшін нормативтік талаптармен теңдестірілетін болады. Дегенмен, біз сақтандыру, капиталды тарту және инвестицияларды басқару секторларында инновацияның айқын енуінің жеткілікті дәлелдерін тапқан жоқпыз.

Түйін сөздер: цифрлық революция, серпінді инновациялар, онлайн қаржылық қызметтер, цифрлық аналитикалық платформа, Қазақстан

© Ю.О. Ничкасова[1*], К.Ж. Садвокасова[2], А.К. Алпысбаева[2], 2024
[1]Институт Бизнеса БГУ, Минск, Беларусь[2] Казахский университет технологий и бизнеса, Астана, КазахстанE-mail: y.nichkasova@gmail.com

ЦИФРОВЫЕ ТЕХНОЛОГИИ: ТРАНСФОРМАЦИЯ ФИНАНСОВОГО РЫНКА КАЗАХСТАНА

Ничкасова Юлия Олеговна — PhD, кандидат экономических наук, доцент, кафедра бизнес-администрирования, Институт бизнеса Белорусского государственного университета, Минск, Беларусь
E-mail: y.nichkasova@gmail.com; https://orcid.org/0000-0001-7084-9235;
Садвокасова Куляш Жабыковна — доктор экономических наук, профессор, кафедра экономики и финансов, Казахский университет технологии и бизнеса, Астана, Казахстан
E-mail: ksadvokas@mail.ru; http://orcid.org/0000-0002-5410-9154;
Алпысбаева Айнур Кунанбаевна — кандидат экономических наук, доцент, кафедра бизнеса и менеджмента, Казахский университет технологии и бизнеса, Астана, Казахстан
E-mail: alpysbayeva.ainur77@mail.ru; https://orcid.org/ 0000-0001-6444-2148.

Аннотация. Цифровая революция стремительно развивается, увеличивая масштабы и скорость изменений во всех сферах жизни. Особенно заметно влияние прорывных инноваций в финансовом секторе, что значительно увеличивает конкуренцию между старыми и новыми игроками рынка. В статье исследуется уровень проникновения финансовых инноваций на финансовый рынок Казахстана, трансформирующих каналы взаимодействия с клиентами, повышающих доступность и эффективность услуг. Методология исследования выстроена в направлении от общего к частному, от глобального к локальному на основе шести основных секторов финансовой деятельности, выделенных экспертами Всемирного экономического форума. В результате проведенного исследования на основе эмпирических данных составлена карта финансовых инноваций и развивающихся практик применения цифровых технологий в финансовой отрасли Казахстана. Авторы пришли к выводу, что платежные сервисы и онлайн-кредиты являются основными драйверами инноваций, которые несут в себе определенные угрозы и риски для населения с низким уровнем финансовой грамотности. Казахстанские банки должны обеспечить трансформацию своих бизнес-моделей в ответ на конкуренцию со стороны почтовых и мобильных операторов, которые активно используют технологии Big Data и распределенного обслуживания для успешного роста и удовлетворения покупательской способности молодого населения страны. Альтернативное

кредитование является одной из ключевых прорывных тенденций в сфере депозитно-кредитных услуг в Казахстане и будет сбалансировано нормативными требованиями по защите интересов пользователей таких услуг. Однако авторы не нашли достаточных доказательств явного проникновения инноваций в сектор страхования, привлечения капитала и управления инвестициями.

Ключевые слова: цифровая революция, прорывные инновации, онлайн-финансовые услуги, цифровая аналитическая платформа, Казахстан.

Introduction

The digital revolution has a fundamental impact on economic growth and its components: GDP, investment, consumption, employment, trade, inflation. Beyond changes in growth patterns, there is evidence that technology, which is driving the fourth industrial revolution, is having a profound impact on how we conduct, organize, and use resources. Creating "information goods" with zero storage, transport and copying costs changes the role of capital as it requires little or no funding (Schwab, 2016; 2017). Overall, the impact of the fourth industrial revolution on business represents an inevitable shift from the simple diffusion of digital technologies towards a more complex form of innovation, based on the combination of different technologies in new ways (IOSCO, 2017; WEF, 2017).

The main challenges for financial industry are business models reorganization and reshaping; new customer experience and expectations (customer-focused view); security and compliance challenge; competitions with disruptors – fintech and new financial players; digital culture implementation; crypto-assets and related technologies; mobility and fragility.

A brief review of the literature on digital technologies penetration

Disruptive innovations are a powerful way of thinking about innovation-driven growth. According to the theory of disruptive innovation, 'disruption' is defined as a process whereby a smaller company with fewer resources can successfully challenge established incumbent businesses (Christensen et. al., 2015). Breakthrough and disruptive was the emergence of Distributed Ledger Technologies, which are used to implement distributed ledgers and allow online payments to be made directly from one side to the other, without going through a financial institution. The potential applications of this method to finance can reduce payout and transaction costs, optimize activities, and completely transform the way the industry operates (Skinner, 2014; Accenture, 2017). Electronic trading revolutionized stock market that led to a global market consolidation, transparency, personalization, and speed (Rani, Srinivasan, 2015).

Studies conducted by the Massachusetts Institute of Technology's Sloan School of Management showed that 14 of the 30 largest global brands were companies focused on the format of the platform in which buyers, sellers, and a variety of third parties are connected in real-time (MIT, 2014). According to the McKinsey report, the largest technology players are breaking down the boundaries between industries as they strive to "be everything to all people". These companies pose the greatest

threat to banking because have far more experience than most banks in the areas of fast technology solutions, cloud computing, artificial intelligence, and Big Data (Beudelaar, 2015).

The widely used term 'technology company' in relation to Alphabet, Amazon, or Facebook is rather arbitrary, long gone beyond its original meaning, since every industry uses computers, software, and internet services. Their fundamental novelty lies in the fact that they not only use technology but also computing infrastructure to build enormous new businesses in other sectors. In this case, 'technology' might be meant as a generic term: manipulating one set of basic materials (information or services) to realize goals that exceed those materials. Analytical companies that successfully use customer experience and trust to expand their business can be named as Digital Analytic Platforms (Nichkasova, Shmarlouskaya 2020).

The digital age leads banks and credit unions to an unstable position, as in many respects banking has become more impersonal than ever, because, according to 71 % of customers, banking is a transactional rather than manageable, personalized, unique relationship (Macdonald, 2016; Guseva, 2019). This specifically poses the greatest threat to the banking business model, as the client can easily transfer his business to another bank, neo-bank or FinTech company that can offer them better conditions or better user experience. The increasing effect of disintermediation, by excluding the bank from the capital transfer chain, leads to lost earnings for banks and reorganization of the value-chain in favor of new actors as was shown above (Microsoft, 2017, Milovidov, 2017). Fintech-based business models outperform traditional banking systems (Pushmann, 2017).

Therefore, the financial industry is on dramatic transformations according to "Disruptability Index 2019", which assesses the level of susceptibility of various sectors of the economy to radical transformations under the influence of disruptive technologies (Accenture, 2019; EY, 2019). Thus, banks, insurance companies and financial brokers are entering a phase of dramatic changes today, showing the index in the range from 0.7 to 0.8, with a median for the aggregate of industries of 0.57.

Kazakhstan is the largest rapidly developing economy in the Central Asian region and the second-largest economy in the Commonwealth of Independent States according to the World Bank with a nominal GDP of $163.9 billion in 2020 (OECD, 2016; OECD, 2017). Moreover, Kazakhstan is one of the most globally connected emerging markets: according to the World Bank, 76.4 % of the total population regularly used the internet in 2017, which was broadly in line with the USA and significantly above countries such as China, Turkey, and Brazil. Over the last 10 years, internet penetration in Kazakhstan soared from 11.0 % in 2008 to 79 % in January 2020 with 14.73 mln. users. Internet penetration development is supported by a high share of the adult working population living in urban areas: there were 25.45 mln. mobile connections in 2020.

The object of the study is Kazakhstan's national financial sector that exposed to the latest global trends aimed at disrupting existing value chains and fundamentally transforming the business models of financial intermediaries. The characteristic

features of this stage are the processes of commoditization, consolidation, decentralization of financial services against growing competition due to the rapid development of financial technologies and their providers in the market.

Methods and materials

The research methodology is built in the direction from the general to the specific, from the global to the local. World Economic Forum (WEF, 2015) experts identified six main sectors of financial activity in which the most significant technological changes have taken place: Payment and Settlement system; Insurance; Deposits and Lending; Investment management; Capital raising, and Market provisioning. Radical changes in classic business processes occur under the influence of 11 clusters of financial innovations (Table 1).

Table 1 - Overview of the latest financial innovations and their impact on traditional financial market services

Financial market segments	Innovation clusters	Key Disruptive Trends	Implications for a financial institution
payment and settlement system	Cashless World Meaningful changes in customer behaviour	Mobile Payments Streamlined Payments Integrated Billing Next generation Security	Losing control over their customer's transaction experience The default card among specific customer segments Reduced visibility Ability to Gain visibility to build a more holistic understanding of customers
	Emerging Payment Rails Cryptocurrencies may streamline the transfer of value	Cryptographic Protocols Mobile Money Peer-to-Peer transaction	The role of tradition intermediaries may diminish New sets of risks Expansion beyond money transfer to modernise financial infrastructure.
lending and deposits	Alternative lending Transforming credit evaluation and loan organisation; Opening up non-traditional sources of capital	P2P lending Lean, Automated Processes Alternative Adjudication	Decreasing profitability Traditional deposits and investment products erosion Alternative platforms make measuring creditworthiness difficult
	Shifting Customer Preferences Meeting customer demands more important	Virtual Banking 2.0 Banking as a platform Evolution of Mobile banking	Ability to collaborate with non-traditional players becomes essential Creation of customer experience Stand-alone basis financial products
insurance	Insurance Disaggregation Online insurance marketplace and homogenisation of risks	Disaggregated distribution Sharing economy Self-driving car 3rd Party capital	Creating loyalty through innovation Customers gain the ability to comparison-shop Insurers will need to increase their size

	Connected Insurance The ubiquity of connected devices leads to proactive personalisation insurance	Advanced sensors Wearables Internet-of-Things Standardised Platforms	Long-term advisory capturing becomes customers Become a hub for customer data The strategic value will increase Partnership with ecosystem participants will be critical
investment management	Empowered Investors Improving accessibility to sophisticated financial management by robot-advisors	Social Trading Automated Advice and Wealth Management Retail Algorithmic Trading	New entrants will place pressure and competition More advisory functions become automated Investment management for mass customers
	Process Externalisation Give access to the new levels of efficiency and sophistication	Advanced analytics Natural language Service as a process Sharing opportunities	The ability to access sophisticated capabilities Organisational agility will become critical
raising capital	Crowdfunding Give a widening access to capital raising activities, making ecosystem richer	Empowered Angel Investors Alternative Adjudication	Access to more diverse funding options Better Tailoring investment portfolio Fewer barriers to entering asset class To find undiscovered 'start' investments is important
market transactions organisation	Smarter, faster machines The focus of algorithmic trading may shift to smarter faster response to real-life events	Machine Accessible data Artificial intelligence and machine learning; Big Data;	The impacts are unclear. Small errors in data integrity will lead to a large impact Unregulated area
	New Market platforms Improving connectivity, increasing liquidity, accessibility and efficiency.	Fixed income. Fund of Funds; Private equity/ Venture capital shares; Private company shares Commodities &Derivative contract	The importance of advisory service will increase. IP will evolve the standards to more quantifiable and comparable metrics

Source: Author development based on World Economic Forum Report (2015)

This structure serves as the basis for the analysis of financial services sectors and clusters of financial innovations in Kazakhstan. Based on available sources and evidence of activity, the study also presents the most prominent and successful traditional and non-traditional financial market participants and the selected types of innovations, the level of penetration of which is most noticeable.

Results

According to the information posted on the official Internet portal of the financial market regulator as of January 1, 2021, Kazakhstan's banking system includes

25 second-tier banks, down 38% as of January 1, 2010 (National Bank, 2021). The banking system of the Republic of Kazakhstan is intensively adapting to global financial technologies, providing new types of financial services. The industry is experiencing dramatic shrinkage and consolidation effects, which, amid rising regulatory requirements and the pandemic, require a rapid digital transition.

Follow to the classical approaches of the theory of disruptive innovations, market participants can be subdivided into existing players (incumbents) and new ones (entrants). Concerning the banking sector of Kazakhstan, considering this projection from the standpoint of institutions, we believe it reasonable to conclude that there are no examples of a new type in the industry - neo-banks. Another way of structuring banks, proposed by Lipton, Shrier and Pentland (2016) includes Incrementalists, Digital hybrids and Digital natives, also indicates that the most active banks are transforming into digital hybrids, completely changing the business model, while the rest are limited to the digitalization of certain types of services. Therefore, all banks in Kazakhstan are at different levels and stages of transformation, while the leaders of these processes are Kaspi, Forte and Sber, which were able to gain the necessary speed and get the results of the strategy chosen 10 years ago.

Kaspi Bank is the largest Payments, Marketplace, and Fintech Ecosystem in Kazakhstan with a leading market share in each of its key products and services. Based on leveraging seamless customer experience, Bid Data analytics, a State-of-the-art technology Kaspi Bank provides a growing range of interconnected technologically advanced, seamless, and innovative products and services that transform the way people pay, shop and manage their personal finances. Kaspi Ecosystem has experienced rapid growth in recent years because of the mission to improve people's lives through developing innovative products and services that transform the way people pay, shop and manage their personal finances. Company's market share recently rocketed from 18 million people (in Kazakhstan) to 28 million people by entering Azerbaijan. More funding drives spending, more spending drives transactions, and more funding – constantly enrich data around customers – 5.7 million active customers which equate to approximately 31% of the total population in Kazakhstan.

Forte Bank is one of the five largest banks in Kazakhstan in terms of assets and holds the leading position in terms of capitalization and liquidity. ForteBank strives to create the best innovative customer services has implemented Augmented reality (AR) technology in its mobile application. Using AR, customers will be able to find the nearest ATM, branch, find interesting offers from the bank's partners, check their income and expenses from different angles.

Online lending service is available to Forte Bank clients. If the client has previously signed the necessary forms, then within 5 minutes he will find out the approved amount and will be able to get a loan on the same day without visiting a bank branch. The Forte Market online store will become a marketplace. Forte Kassa solution automates the point of sale and makes it possible to manage sales, warehouse accounting and employees throughout an application for sellers and a personal account for a business owner.

Despite the active development of incumbents, Kazakhstan's financial market experienced several different attempts to create digital native banks as a response to the global trend. Altyn-i being a subsidiary of Halyk Bank offered an innovative service of remote customer identification and provision of all types of banking services without coming to the bank. The Astana Bank was recognized as the best digital bank in Kazakhstan in 2017 by the version of Global Finance magazine (Global Finance, 2017; Forbes.kz, 2017). The strategic growth of the bank related to a creative approach in solving operational problems, the digitizing business by developing remote sales channels and strictly adheres to its policy of innovation, client orientation and financial stability. B1ANK as a brand of Capital Bank Kazakhstan develop P2P payment service and online loans. However, it is difficult to consider these cases as full-fledged examples of digital natives, since the tightening of prudential regulation and the need for additional capitalization led to the curtailment of this experience: Astana bank was liquidated. As far as Altynbank and B1NK are experimental platforms for the development of banking digital services Halyk Bank and Capital Bank Kazakhstan has the potential into Digital Hybrid's transformation.

After a quick review of the digitalization strategies of banks in general and of individual banking services, we present the results of the study of digitalization processes in individual segments of the financial market.

Payments and settlement system. Penetration of disruptive trends in Payment and Settlement system globally follow in four direction: (1) Cashless World: Mobile Payments, Mobile wallets, Mobile-based merchant payment solution; (2) Integrated Billing: Mobile ordering & payment apps; Integrated mobile shopping apps; (3) Streamlined Payments: Location-based payments (geotagging); Machine-to-machine payments (M2M); (4) Next Generation Security: Biometrics / location-based identification; Tokenization standards; Emerging Payments Rails - P2P Transfers; Cryptocurrency; Mobile Money. For Kazakhstan the most active is the first one.

There is 17 payment system in Kazakhstan, including a Payment card system, international money transfer system and National payment system. Payment market participants include 25 banks and 66 payment organizations. There are also 28 electronic money systems in Kazakhstan. Banks use different strategies for electronic money emission: there are own systems such as JSC «Kaspi Bank» and «Kazpost» JSC which have outsourcing solutions s: PAYBOX.money, ASIAPAY, LLC «Bloomzed.kz», «Halyk» for Halyk Bank JSC.

Internet banking, mobile applications, online lending, and interaction with the client in the mode of remote access are increasingly becoming an ordinary banking practice. The most dynamically developing direction of the provision of remote payment services through payment cards are Internet / mobile banking systems. All second-tier banks have Internet banking, but only 20 out of 25 banks or 80 % have their own mobile applications. Moreover 58.7 % Kazakhstan's residents ages 15+ constantly used mobile banking in 2017 with growth against 41.2 % in 2011. However, the penetration rate of such services is negligible. Through these systems, in 2017, only 39.5 % of the total amount of non-cash payments and money transfers

were made using cards of Kazakhstan issuers and 39.1 % of the total payments, which amounted to 91.8 million transactions for 1.2 trillion tenges (National Bank, 2021).

Banks compete for undeveloped and unbanked payment market segments. Kazkommertsbank JCS has become one of the few banks in the world that in 2017 mastered the payment service using QR codes based on the mobile solution of the international payment system Visa. So far, only a few countries, including India, Singapore, widely use QR payments. The bank started the introduction of the new service from the most difficult segment, where earlier it was impossible to imagine payments by card - grocery and clothing markets, street vendors. Since its launch in December 2017, QR payments have grown by 600 %. Today the bank connects several dozen merchants a week to the new mobile service.

Regulators also take an active position for digital transformation (E-Gov, 2021). In November 2018, with the active support of the National Bank of the Republic of Kazakhstan, and the International Financial Center of Astana Center Credit Bank launched the first payment service - Financial API - for managing tenge accounts (generating payments, viewing invoices, receiving statements, etc.). At the beginning of 2019, the service was supplemented with services for working with foreign currency accounts and conversion. Currently, the Financial API is functionally expanding following the needs and objectives of the AIFC.

The government launched instant mobile payment system "Sunkar" by using the mobile phone number as the identifier. The product concept includes online payments and money transfers by mobile phone number; instant crediting; any tools - from a bank account to a wallet and a payment card. Among the advantages: low transaction cost with a high speed no need to enter an account number and other classic bank identifiers.

The payment services market is oversaturated with small and active entrants that actively compete with incumbents, offering a range of convenient, mobile and fast P2P, P2B and B2B payment solutions. There is just a small list of such companies as payment service providers: Qiwi Wallet; Kassa24; Webmoney; Paybox.money; WoopPay; Walletone; MyPay; PayPoint; Allpay; Zenge; e-kzt.kz, Yandex.money. Kassa24 is an integrator of 27 payment services that provide replenishment, exchange and withdrawal of electronic money, including cryptocurrency (Citysmart coin) geographic coverage of services - Kazakhstan, Russia, Kyrgyzstan, Tajikistan.

WOOPPAY the technology and innovation company, challenging the traditional ways of delivering financial services: payments as a service (PAAS) – a single entry point for any business looking for any type of payments solutions for efficient money movement, payments Platforms as a service (PLAAAS) – a set of services to take away the pain from the business looking to develop and run fintech solutions, Wooppay Wallet, Mobile Commerce, Post Express, Salem Pay, Fin-Apps, Intervale Kazakhstan, RPS are examples of infrastructure solutions for banks and other types of finance intermediaries.

Insurance service. Over the past decade, many innovative practices such as digital channels and process automation have been gradually adopted by many insurers. It has been especially true in personal lines of business while large commercial lines have continued to focus on establishing a customer-centric high-touch service across the value chain. Distribution partnerships with banks and retailers through white-labelling and over-the-counter products have become increasingly popular. However, a number of emerging forces (Sharing Economy, Self-Driving Cars, e-aggregators, securitization, Third-party Capital) lead to pressure on the insurance industry across the value chain. As the result, the insurance service will be increasingly disaggregated but more connected (Smarter, cheaper sensors, wearables, IoT, connected cars, homes and lifestyles) in the future, changing the nature of the insurance business.

Despite this, as it follows from Report (WEF, 2015), insurance is typically considered one of the functions within financial services where the adoption of innovation has been the slowest. For Kazakhstan, the low rate of adoption of changes in the industry globally is complicated by low-level insurance industry development as a whole. Business entities have lack sufficient insurance coverage, with some insurance products being unavailable on equivalent terms to those available in economically developed countries, including insurance coverage for a business interruption. Highly likely it may lead to an uninsured loss of assets and face claims which are not covered or inadequately covered by its insurance policies. Any such losses or claims could have a material adverse effect on business, financial condition, results of operations or prospects.

As a result, we did not find sufficient evidence for clear penetration of innovation in the insurance sector. The main trend that is typical for Kazakhstan is functioning of banking conglomerates whose sphere of interest includes banking, insurance, brokerage and leasing services, allowing them to significantly diversify their activities. As of 02.01.2020, the number of banking conglomerates is 14 units, the number of participants is 77, of which 21 banks, 8 insurance companies, 8 brokerage companies, 19 companies acquiring doubtful and bad assets of the parent bank, 22 non-financial organizations. The total amount of assets was 22 trillion. tenge. The largest conglomerates are Almex Holding Group, Kaspi.kz having in their structure insurance subsidiaries companies ‘Halyk Insurance’, and “BASEL” consequently, acting autonomously. In some cases, insurance is integrated into the banking service system (JSC “Forte bank”). It means that the speed of insurance digitalization depends on banks or conglomerates needs.

Deposits and Lending. Alternative lending institutions are aimed to fill gaps in the traditional lending model. New industry players are emerging across the globe, showcasing a myriad of value propositions and strategies that are challenging traditional business models. Online and P2P lending platforms provide customers low-cost, fast, flexible, and more customer-oriented alternatives to mainstream retail banking that traditional financial institutions once dominated. Alternative lending platforms are creating competitive pressures on the savings and lending industry to become more transparent and customer friendly.

Alternative lending is one of the key disruptive trends in deposit and lending service in Kazakhstan driving by digitalization and the low standard of living of certain segments of the population. A sharp decline in economic growth, the devaluation of the tenge, the inflation rises and the decrease in real incomes of the population exacerbated the need for borrowed funds to cover current needs against the backdrop of the contraction of the banking consumer lending market led to the rapid development of online lending.

Peer-to-peer lending in Kazakhstan is characterized by a large variety of new entities: Moneyman.kz; Doskredit.kz; Ules.kz; Turbomoney.kz; and KazCreditLine. The aggregated service Topcredit.info is also present on the market, allowing the client to compare offers from several companies for decision making. Microlending - KREDIT24, MoneyMan.kz; CreditOn, CCloan.kz. It is one of the fastest-growing segments in the financial market. As of April 1, 2017, 15 companies were actively operating in Kazakhstan, the loan portfolio of which was estimated at 18.8 billion tenges, the number of loans issued in 2016 was 8.9 billion tenges, the average amount - 100 USD. Therefore, online lending is one of the main drivers of the development of Kazakhstan's financial technology market. At the same time, the rapid development of short-term loans at a high-interest rate in the face of a low level of financial literacy of the population is a significant risk channel.

Since January 1, 2020, the regulation has been introduced for organizations engaged in microfinance activities, provides for registration with the Agency of the Republic of Kazakhstan for the Regulation and Development of the Financial Market, as well as the obligation to comply with the requirements for microfinance activities - the maximum size of the annual effective interest rate, requirements for the contract on the provision of microcredit, providing information on the loan to the credit bureau, compliance with the debt burden ratio of the borrower, etc.

We believe that the benefits of alternative services targeted at unbanked population will be balanced by regulatory requirements to protect the interests of the users of such services. In this case, such trends as the evolution of mobile banking, virtual banking 2.0, banking as a platform (API) will allow the development of unregulated banking services and expand the segment of the population in need of credit.

Capital Raising. Alternative funding platforms provide an opportunity for businesses and entrepreneurs to interact directly with individual investors to widen options for raising capital, aggregate investment opportunities, provide a standardized view of the opportunities and facilitate legal structuring of equity or debt issued relying on the wisdom of the crowd or other seasoned investors in selection. Kazakhstan's financial market also offers alternative financial products. In particular, at least three sites function in the crowdfunding segment: Baribirge.kz; Startupper.kz; Start-time.kz. Now, the only active crowdfunding platform is BariBirge.kz. The site was open on August 1, 2016. Now the platform has three fully funded projects: the album of the musical group Lampa Orchestra, "Kindergarten for Grandparents" and Inspire. Currently, four more projects are actively raising funds. However, others are at the initial stage of development and can only declare the implementation of a small number of projects.

Investment management. The wealth management industry has suffered a significant loss of customer trust and increased regulatory scrutiny following the financial crisis Increased regulations on consumer protection require banks to advise customers in a more structured way, raising the bar for new entrants. Disruptive innovation in wealth management pressures the industry to improve the value delivered to more customers by increasing accessibility, transparency, control, convenience and decreasing cost. Key trends: Automated management and Advice, Social trading, Retail Algorithmic Trading.

There is some evidence of the presence of these investment management innovations in Kazakhstan. Freedom Finance JSC announced the launch of a fintech startup Freedom 24. The project is aimed at changing the work of the stock market in the country. This is an online store of shares, through which Kazakhstanis can buy securities of well-known companies without leaving their homes, 24/7. The main advantages of the project are the most simplified service, online payment by credit card, no commission on purchases during the first three months, as well as a wide range of securities. A robot consultant will select suitable stocks and help distribute investments.

SkyBridge Invest JSC has successfully launched the first-ever in Kazakhstan algorithmic trading fund "SBI Adamant Fund". Collaboration of SkyBridge Invest JSC and AIFC made it possible to create an unprecedented fund that uses algorithmic strategies for portfolio management. At its core, this unique locally developed algorithmic strategy is based on portfolio risk targeting, with the main components being S&P500 Index, Gold, and US Treasury bonds. Considering the market trends the algorithm's risk control logic automatically calculates the portfolio structure and proactively balances out overall portfolio composition by diversifying the portfolio exposures across uncorrelated assets. This allows the Fund not only to earn for its investors but also can significantly reduce losses during periods of large falls in the stock market.

There are several ways for investors to remotely and online access to the Kazakhstan Stock Exchange: T-Trade and S-Trade for individuals and legal entities, respectively. S-Trade is a trading terminal that allows exchange members and their clients to view trading information in real-time and make transactions to buy and sell financial instruments (stocks, bonds, buyback agreements and futures market) with one click with instant execution on KASE via the Internet. EQTY.kz provides a service for assessing the value of a business based on revenue, profit and other financial indicators within 24 hours based on valuation methodology specific to each sector and size of the business.

Centras Venture Fund is a group of companies that aims to introduce advanced technologies in the financial services market: Aida allows you to determine the location of subjects and objects in real-time, which makes it possible to use it in a digital format, automating processes and interaction within them.

Market provisioning. Better connected buyers and sellers have a great impact on financial market development. New information/connection platforms allow

smaller intermediaries to find counterparties, improving information flow among market participants, levelling the playing field between them and larger institutions and create benefits to the industry and clients. Several platforms have emerged in Kazakhstan to redefine how buyers and sellers are connected for various financial assets and products, improving the efficiency of those markets: prodengi.kz, finguru.kz, BAI.kz OLX.com, Market.com, InDriver, Naimi.kz, Krysha.kz These platforms embed the elements of social networks to facilitate the interaction among buyers, sellers and intermediaries automatically collect, analyse and standardise data through a set of sophisticated metrics to allow buyers to evaluate sellers more critically and make more informed decisions.

Bank Center Credit has launched a revolutionary open financial platform based on Open API technologies. This platform allows potential partners to integrate with the Bank without lengthy preparatory procedures and create innovative services for common clients of the partner company and the Bank. This innovation will be of interest to companies that own their own applications. For example, by logging into the application of the Bank Center Credit partner, customers will be able to make transfers, form payments, manage accounts, receive account statements, find out information about exchange rates, addresses of BCC branches in real-time without contacting a financial institution, and much more.

Discussion

An example of competition and integration in the financial segment the client non-banking platforms are the mobile operator Beeline Kazakhstan and postal provider Kazpost JSC. Beeline provided its customers with the possibility of withdrawing cash from their mobile phone balance through the offices of Kazpost JSC and Qazkom Bank ATMs throughout Kazakhstan. Further, Beeline together with Alfa-Bank issued the first payment card in Kazakhstan, which uses the balance of a mobile phone as an account. A unique financial product allows you to make any type of payment transactions, transfers, and withdrawals without commission at any ATM in Kazakhstan. Beeline Kazakhstan has been using many solutions for a relatively long time, such as Business Intelligence and Big Data for analyzing customer data. Over the years, the company has accumulated a significant client base that can be used to promote value-added services. To extract even more value from the data, in 2018 the company decided to centrally launch a project to implement DMP (Data Management Platform).

As the traditional business model of the postal business is becoming obsolete, Kazpost JSC development focus is on three key development priorities: digital transformation; creating an ecosystem for e-commerce; organizational transformation while maintaining all types of postal services. At the same time, postal services are integrated with banking services (payment cards, Internet banking for legal entities, transfers) and e-commerce (logistics, order picking, goods storage, payments). The transition to a service model provides for the outsourcing of all non-core activities (Contact Center, IT services, backbone logistics) in order to focus on key operations and improve the quality of services provided.

Kazpost JSC launched POS Mobile service for entrepreneurs based on Tap-X-Phone technology to provide an opportunity to increase the penetration rate of contactless payments in Kazakhstan. Today, for every 1000 inhabitants of the country, there are only 10 terminals for accepting payments, which is certainly not enough for a full-fledged transition to digital rails. Mobile acquiring allows to turn an ordinary smartphone with NFC technology into a payment POS terminal. Customers will be able to pay with a card, smartphone, or other smart gadgets by placing it on the seller's smartphone.

Conclusions

The development of the Kazakhstani financial technology market is primarily driven by three fundamental factors: the growing demand for financial services via the Internet or mobile communications, received by both the population and business; the activities of the regulator, as a result of which a single national fintech space and infrastructure is being formed; dynamic offer as a high sensitivity of fintech companies to growing demand (regular market entry of new products and services). The banking system of the Republic of Kazakhstan has performed a massive implementation of financial technologies to adapt to a changing ecosystem to preserve customers, profits, market share and business. The banking sector as the main player of the financial market continues with the introduction of long-term innovations, new marketing strategies, the analysis of huge data sets to project of the future.

The penetration of digitalization is especially active in the segment of payments and settlements, which has a positive effect on the development of the financial system, providing convenient and low-cost payment services for both individuals and legal entities. The next most important segment is online and micro-lending, which, given a low level of literacy among the population, is a tool with high risks. The insurance, investment management and capital accumulation sectors have the potential for development. We believe that the level of P2P lending and capital raising will grow after economic stabilization, increased confidence in the financial system and the level of financial literacy.

As a result we present a "digitalization map of the financial sector of Kazakhstan", which can be used for: 1) assessing the degree of penetration of digital innovations into the financial services market; 2) identifying the sectors most and least exposed to competition; 3) creation of conditions and "points of application of efforts" for the uniform development of the digitalization process and its management; 4) identifying "market leaders" and scaling their experience; 5) understanding possible risks and threats to prevent or reduce them through regulatory instruments; 6) development of both financial and digital literacy of the population of Kazakhstan. The use of these instruments should ultimately stimulate the availability of financial services, growth in the depth of the financial intermediation market, its efficiency and safety.

We claim that as innovation accumulates, quantitative changes will turn into qualitative: the classical model of the bank will be replaced by a new model of an effective digital bank based on a digital, modular, horizontally structured platform

with an intuitive personalized service based on the augmented reality of customer knowledge through context-sensitive services. Transparency, partnership, and trust will be the core values of the new relationships, which will fundamentally change the nature of banks. The shift to the platform-based business model creates a self-developing ecosystem around the bank as a trusted intermediary, creating new opportunities using intelligence, security, and interaction. At the same time, trust and clients will be gold assets and the main bank's competitive advantage.

The state expects from the industry in the period up to 2025 the formation of an effective bank of the future model and a change in the paradigm of interaction between the mobile and highly functional ecosystem of the financial market. According to the economic and social prerequisites, these changes are relevant and in demand in the financial intermediation market of Kazakhstan, which requires an accelerated introduction of innovations by banks. In general, the innovative transformation of the financial system will improve the financing of the economy and increase the level of accessibility and inclusion of financial services, as well as the financial literacy of the population of Kazakhstan.

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