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The Peculiar Features of Fintech Development in Japan

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Abstract. This paper shows that Japan, despite being the most technologically and economically advanced country in the Asia-Pacific region, is demonstrating slower adaptation rates of fintech. The country is currently at *fintech 1.0* stage and its banking system has only partially crossed the *bank 4.0* threshold. Thus, overall, fintech in Japan is catching up with the levels of other developed and emerging economies even though the speed of the catch-up has increased in recent years. The paper highlighted the fact that development of fintech in Japan remains heterogenous in terms of market segments and major financial institutions promoting fintech services.

The most developed segment of fintech in Japan is digital payments; neobanking and digital investment are raising in popularity even though they remain at the pre-maturing stages. Digitalisation of the financial sector is predominantly driven by the collaboration of large banks with fintech firms, which are establishing spillover effects and encouraging banks to further adopt digital technologies. The findings of this paper demonstrate that further promotion of DX in Japan's financial sector will require future reforms in its corporate culture and regulatory environment. The problem of double shortages (the lack of financing for ICT and the lack of digital talents) shall also be addressed. The government has a big role to play in this process and needs to proactively stimulate cooperation among the private and financial sectors and fintech firms.

Keywords: fintech, Japan, digital payments, central bank digital currency, alternative financing, alternative lending, market service providers

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Introduction

Fintech is defined as advanced technology to improve and automate the delivery of financial services and stimulate their usage by consumers and business. It encompasses a broad landscape of services ranging from digital currencies and digital payment systems, digital investment, and asset management to alternative lending and alternative financing.

Fintech is a rapidly developing global trend enhanced by the digitization, digitalization and digital transformation (DX) of the world economy. However, previous research has shown that there remains heterogeneity in the adaptation rates of fintech among developed, emerging, and developing economies [Feyen et al. 2021]. Developed countries have mature financial systems with a higher level of financial trust and, thus, access to credit utilizing traditional technologies and financial infrastructure in these countries is highly developed, which sometimes decelerates the adoption of new financial technologies. Conversely, emerging markets are regarded as leapfroggers in terms of promoting IT-solutions for their financial (banking and insurance) markets as fintech is recognized as a promising tool to promote financial inclusion, to enhance the transparency of domestic and international payments, and to prevent illicit money flows [Amstad et al. 2019]. Researchers have coined a special term *digitalizing emerging markets* [Ito 2020] to refer to the widespread adoption of digital technologies in emerging countries.

Comparing to Europe, fintech in Asia has been advancing at a significantly faster speed, which is particularly pronounced for countries such as the People's Republic of China (PRC), India, and Australia [Amstad et al. 2019]. Nevertheless, heterogeneity in the adoption rates of fintech in Asia is pronounced: for instance, Japan, despite being the most technologically and economically advanced country in the region, is demonstrating slower adoption rates of fintech. In fact, previous studies have shown that digitalisation is unevenly distributed among different sectors of the Japanese economy creating a sort of polarization effect among significantly digitalized manufacturing industries and less digitalized service sectors [Gorshkov 2022], which is partially explained by the disunity existing among the academic and business societies and the leading role of large corporations in the promotion of innovations [Kostyukova 2019, p. 527].

Heterogeneity among developed and emerging countries is also pronounced in the fintech institutions that serve as a driving force to promote fintech innovations. In emerging countries, *bigtech companies* have played a significant role in driving the digitalization and DX of the financial sector: for instance, large companies such as Alibaba and Tencent in the People's Republic of China (PRC) have been able to build a large customer base by promoting digital technologies that enabled them to further analyze their customers' big data, to assess their financial capabilities and to develop new financial and non-financial products. It is also no coincidence that China was one of the first countries to pilot the digital yuan, proving that emerging countries are gradually moving into the *fintech 2.0*[1] stage. Conversely,

[1] Two stages of financial technology development are conditionally distinguished in literature: *fintech 1.0*, which does not broadly change the concept of money and finance in the economy and aims to improve the efficiency and quality of already existing financial services, and *fintech 2.0* – financial technology that revolutionizes the existing perceptions of finance and promotes the creation of new financial products, such as cryptocurrencies, stablecoins, and central bank digital currencies (CBDC) [Sato 2017].

in developed countries, traditional financial institutions and *fintech companies* are involved in the promotion of fintech [Feyen et al. 2021].

Japan is a typical example of a developed country with a significant digital divide in its financial sector due to a number of factors. The financial sector has long been heavily regulated, there has been little foreign competition, and its conservatism and archaic nature is also due to the remnants of the *convoy system* and the *main bank system*. Consequently, the financial system has long been one of the least efficient sectors of the economy in terms of productivity, and this trend persists. The *Galapagos syndrome*[2] of Japan's economy is clearly observed in the financial system, especially in the development of digital (cashless) payments, neobanking[3] and the creation of new and innovative financial products.

Nevertheless, fintech has been gradually developing in recent years. The scale of the fintech market has been steadily growing since 2017. In 2019, it was estimated at 3.3 billion USD, and Japan is well ahead of the average of other Asia-Pacific, European, and North American countries[4] in terms of the growth rate of investment in fintech development.

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[2] The term originates from the Galapagos Islands, which are known to have undergone a unique evolutionary transformation away from the mainland. The *Galapagos syndrome* explains the existence of many unusual, often inefficient, business practices in Japan non-conforming with the generally accepted global standards. Extremely low level of digital technology penetration in the Japanese economy is often regarded as one of the causes of the Galapagos syndrome, and it is caused by such factors as conservative business practices, the inability of small and medium enterprises (SME) owners and consumers to quickly adapt to technological innovations due to demographic factors, such as aging of the population, the legacy of the developmental state, and the presence of political influence groups of big business (political lobbying) [Watanabe 2020].

[3] Also referred to as internet, online, or digital banking in literature.

[4] The FinTech Market in Japan. Monthly Market Report, 1. FinCity. Tokyo. 2020, November. https://fincity.tokyo/wp-content/uploads/2020/11/1604888710-7041ae1e28863fe098eab163e812bf4f.pdf

In this paper, we provide an overview of fintech development in Japan, analyze its development by market segments and by major market actors. In addition, we identify the peculiar features of fintech development in Japan in comparison to other developed and emerging economies.

This study contributes to the existing literature in two ways. First, it provides a comprehensive analysis of different market segments of fintech, namely, digital currencies and digital payments, neobanking, digital investment, alternative lending, alternative financing, and other fintech services. Second, it identifies the peculiar features of fintech distinguishing Japan from other countries. Examining these features helps better understand the underlining reasons accountable for Japan's catching-up in terms of adoption of digital technologies in the financial sector.

Fintech Landscape in Japan

In April 2016, the Bank of Japan (BOJ) established the *FinTech Center* within its Payment and Settlement Systems Department with the aim of linking financial practices with advanced technologies and research, as well as to meet the demands of the digitalization of the world economy [Amstad et al. 2019, p. 207]. In May 2017, the Ministry of Economy, Trade and Industry (METI) published *Japan's Fintech Vision*, where it outlined the first comprehensive policy recommendations for the promotion of financial technologies [Gorshkov 2018]. It was highlighted that *new finance* was needed in order to support the *Fourth industrial revolution* and the construction of the *Society 5.0*. In order to generate innovative fintech services, the government aimed to implement the following core policies:

1) to lay the institutional background for fintech by creating rules and processes that will enable individuals to manage and use their personal data and stimulate the promotion of digital (cashless) payments;

2) to facilitate the smooth flow of money in the economy by building a framework enabling fully digital personal identification

and promoting open application programming interfaces (APIs) by banks and credit companies;

3) to promote the usage of fintech among SMEs, in particular in spheres such as the use of cloud services for back-office operations and digital (internet) banking, support of electronic data exchanges between financial and commercial sectors of the economy, and the improvement of cash conversion efficiency across the supply chains;

4) to establish a *regulatory sandbox* to promote fintech innovation; to establish a globally competitive fintech hub in Tokyo and to cultivate a labor pool to support the development of fintech.

Three key development indicators were established to measure the progress of the above-mentioned initiatives:

1) digital (cashless) payment ratio was to be increased from 18.3 percent in 2017 to 40 percent by 2027;

2) adoption rates of cloud services for SMEs back-office operations (finance and accounting) were to be increased from 9 percent to 40 percent by 2022;

3) supply chain cash conversion cycle planned to be improved by 5 percent by 2020.[5]

The above-mentioned government initiatives triggered the rapid expansion of fintech market in Japan particularly since 2018. Especially, the cross-industry regulatory system was revised and the barriers to new entries into fintech from other industries were lowered. In addition, the government removed restrictions that prohibited banks to hold more than 5 percent of the voting rights in a domestic company (10 percent in case of insurance companies) and stimulated the inflow of investment to fintech companies from financial institutions.

Thus, while fintech markets in other countries are maturing, the Japanese fintech market is still catching-up and is expected to maintain its high growth rates in the coming decade. The enhanced digitalization

[5] Japan's Fintech Vision. First policy recommendations. METI. 2017. https://www.meti.go.jp/english/press/2017/pdf/0508_004b.pdf

in Japan due to the COVID-19 pandemic is also expected to further drive the demand for fintech.[6]

The fintech transaction volume by segment is presented in Table 1. The fastest growth is pronounced for the segment of digital payments, which includes mobile POS payments, digital remittances, and digital commerce. The segment of digital payments is expected to increase by 4.6 times from 147.1 billion USD in 2017 to 679.4 billion in 2026. This segment also has the largest number of users (Table 2).

Table 1

Fintech transaction volume by segment, billion USD

Fintech segment	2017	2018	2019	2020	2021	2022 (forecast)	2026 (forecast)
Digital payments	147.1	165.8	189.1	226.9	305.6	364.4	679.4
Neobanking	2.91	7.04	16.2	35.33	70.83	124.2	337.5
Digital investment	7.91	15.36	27.91	44.23	70.83	82.13	113.4
Alternative lending	0.42	0.44	0.47	0.48	0.51	0.53	0.6
Alternative financing	0.04	0.04	0.05	0.06	0.07	0.09	0.11

Source: compiled by the author from: https://www.statista.com/outlook/dmo/fintech/japan#transaction-value

Neobanking had a moderate 2.91 billion USD in 2017, but it is expected to become the second largest fintech segment by 2026 with a projected annual growth rate of 28.4 percent in 2022–2026, as more and more banks have been rapidly adopting API technologies, even

[6] The FinTech Market in Japan. Monthly Market Report, 1. FinCity.Tokyo. 2020, November. https://fincity.tokyo/wp-content/uploads/2020/11/1604888710-7041ae1e28863fe098eab163e812bf4f.pdf

though there remains high heterogeneity among large and regional banks. The number of users is expected to amount to 6.23 million people (Table 2).

Table 2

Users by fintech segment, million

Fintech segment	2017	2018	2019	2022	2021	2022 (forecast)	2026 (forecast)
Digital payments	87.20	90.89	93.98	97.08	100.48	102.5	118.18
Neobanking	0.18	0.36	0.70	1.32	2.29	3.54	6.23
Digital investment	1.07	1.92	3.07	4.20	5.22	5.90	6.97
Alternative lending	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Alternative financing	0.01	0.01	0.00	0.01	0.01	0.01	0.01

Source: compiled by the author from: https://www.statista.com/outlook/dmo/fintech/japan#transaction-value

Digital investment with the use of neobrokers and robo-advisors is expected to become the third largest segment by 2026 with an annual growth rate of 8.4 percent in 2022–2026, while this is yet a significantly lower amount in comparison to other developed and emerging economies.

The most underdeveloped segments of Japan's fintech are alternative lending, which includes crowdlending for business and market lending for consumers, and alternative financing (namely, crowdinvesting and crowdfunding). Both segments have low levels in terms of financial transaction volume (Table 1) and in the number of users for each sector, which is approximately 10,000 people (Table 2). However, in terms of average transaction per user, the alternative lending remarkably stands out among other market segments (Figure 1), indicating larger volumes of finance (capital) procurement through this mechanism.

Fintech Institutions in Japan Promoting Fintech

Japan has a bank-based financial system and even though market finance has been rapidly developing, the banks continue to play the predominant role in the financing of the Japanese economy. Unsurprisingly, traditional financial institutions remain a major driving force of fintech in Japan; the development of original fintech solutions by bigtech firms remains limited and fintech firms, the number of which has significantly increased in recent years, are primarily financed by traditional financial institutions, which clearly reflects the positive outcomes of policy changes implemented by the Japanese government. The dominance of traditional financial institutions in the promotion of fintech is also explained by the high level of trust towards the financial system from customers, who prefer to avoid sharing personal (financial and non-financial) information with other market participants offering financial services. However, digitalization of the banking sector in Japan is rather slow, and there are significant discrepancies among large and regional banks, with the former successfully entering the stages of *bank 4.0*[7] and *fintech 2.0*, while the latter are still struggling with the stages of digitization rather than digitalization or DX.

Personalization is one of the trends of financial market nowadays. The introduction of digital technology allows banks to reach a wider client base, which consequently helps improve the well-being of the

[7] Previous research highlighted the fact that the banking industry has gone through four stages in its development: 1) *bank 1.0* (1472–1980) – the history of the establishment of the banking system in the 12th century by the Medici family; the provision of traditional banking services in banks and bank offices; 2) *bank 2.0* (1980–2007) – the emergence of self-service banking services and the development of the ATM network; 3) *Bank 3.0* (2007–2017) – the development of mobile payments and banking transactions driven by the advent of smartphones; 4) *bank 4.0* (2017–present) – banking services firmly intertwined and embedded in digital technology. For more details, see [King 2018, pp. 319–320].

whole population and stimulate economic growth. Conventionally, the digitalization of financial institutions is implemented through management efficiency, streamlining of existing operations, reformation of old systems, and reduction of excessive branches and ATMs. The use of artificial intelligence (AI) allows importing and analyzing big data and extracting necessary information for customers; the ability to contact customers daily through mobile communication and improved APIs is regarded as an important benefit of DX for the banking sector, as it allows collecting data needed to assess the creditworthiness of customers more efficiently [Kostyukova 2021, pp. 441–442].

Japan has a rather developed financial system, and Japanese banks traditionally enjoy a high level of trust due to their reliability, extensive network of branches and ATMs, and customer-oriented approach. Nevertheless, demographic, socioeconomic, and digital challenges force Japanese banks to significantly reduce their costs. According to the BOJ, a larger number of financial institutions in Japan are showing interest in adopting digital technologies, as evidenced by the increasing trend of financing allocated for information technology adoption, with large banks adopting ICT at a higher speed (Figure 2).

The majority of Japanese regional banks are still at the stage of digitization and digitalization of their businesses, and many of them are prioritizing the reduction of costs, improvement of management efficiency, and freeing up excessive personnel. Thus, only a small number of banks digitally transform their financial services (Table 3) and actively promote fintech. For regional banks and credit cooperatives, there remains a problem of double shortages: the lack of available funds for digitalization and the lack of digital staff. Consequently, the risk of uneven provision of financial services between different groups of banks persists.[8]

[8] Ginkō, shin'yō kinko ni okeru dejitaraizeeshon e no taiō jōkyō. Ankēto chōsa kekka kara [Response and Measures of Banks and Credit Cooperatives to Digitalization: The Results of the Survey]. Financial System Report-Annex, 1-36. Nippon ginkō [Bank of Japan]. May 2019. https://www.boj.or.jp/research/brp/fsr/data/fsrb190524.pdf

Table 3

Examples of digitization, digitalization and digital transformation (DX) in the banking sector of Japan (regional banks)

Business segment	Digitization and digitalization of financial services	Digital transformation of financial services
Management efficiency	business process reengineering; robotic process automation; optical character recognition	–
Retail customer services (individual customers)	using tablets at the office; using smartphones and internet; digital (cashless) payments services; open API; e-contracts; data marketing; robo-chats	regional payment systems; regional currencies; neobanking
Wholesale customer service (legal entities)	using tablets for presentations at customer's offices; assistance and support for the digitalization of customer's business	big data consulting; AI investing

Source: compiled by the author with reference to: Dijitaru jidai no chiiki kin'yū. Kin'yū shisutemu repōto. Besshi shirīzu [Regional Finance in the Digital Era], Financial System Report-Annex, 1-9. P. 3. Nippon ginkō [Bank of Japan]. March 2021. https://www.boj.or.jp/research/brp/fsr/data/fsrb210329.pdf

In addition, personal visits and personal contacts are regarded as the major channel of communication by many Japanese banks, thus, impeding digitalization of financial services.

Overall, the development of fintech services solely by banks remains insufficient and unevenly distributed within different groups of banks. Following the mitigation of the regulatory systems, large banks tend to finance fintech companies and thus jointly participate in the development of new fintech products and solutions.

The rapid development of fintech firms offering services using financial technology to individual customers and SMEs is pronounced

(Table 4). Many of these fintech firms were established by foreign investors, and many are financed by the Japanese traditional financial institutions. Chronologically, many of the fintech firms appeared since 2012 and new market entries were frequent following the reforms initiated by the Japanese government.

Table 4

Leading fintech companies and primary fintech areas in Japan

Fintech segment	Business lines	Fintech companies
Digital payments and digital currencies	Payment systems	Paidy (2008); Paypay (2018); Kyash (2015); Coiney (2012); Payme (2017); Crowd Cast (2011); SBPS (2004); Another lane (2002); bitFlyer Holdings (2018); ANA Digital Gate (2016); BitMile (2018); Credit Saison (1951); jPortal (2005)
	Cryptoassets; coin economy; blockchains	Liquid Global (2014); Orb (2014); Chaintop (2016); techBureau (2014); GVE (2017); FGC Group (2015); Proportion (2019): CXR (2018); Cross Bridge (2010); BlockTec (2018); LCNEM (2018); Bitcrements (2015)
	Remittances and e-wallets	PayPay; Line Pay; Rakuten service on Facebook
Digital investment and asset management	Online (digital) banking	Kyash (2015); Fukuoka Chuo Bank (1951)
	Robo-advisers, AI-investment, AI-stock movements	Alpaca Japan (2013); Robot Fund (2016); xenotada lab (2016); efit (2017); Invast Securities (1960); ZAISAN Net (2015); Japan Digital Design (2017); MILIZE INVESTMENT (2018)
	Cryptoasset (digital asset) trading; risk-trading platforms	BitFlyer (2014); Coincheck (2012); Huobi Japan (2013); CoinJinja (2017); Global Risk Exchange (2018); Proportion (2019); CurrencyPort (n.d.); Digital platformer (2020); Bitcrements (2015)
	Personal financial (wealth) management	Money Forward (2012); Moneytree (2012); Wealthnavi (2015); OsidOri (2018); Prance Gold Holdings (2019); Milestone Consulting Group (2005); STAGE Japan (2015); Nishi-Nippon (1944); DMM FinTech (2012)

Digital investment and asset management	Cloud-based accounting service; loan accounting and monitoring	Moneytree (2012); Mikatus (2009); INORU (2006); Profit Cube (1984); enigma Japan (2016); Nishi-Nippon (1944); THS (2013)
	Real-estate services	FINOLAB (2019); RENOSY FINANCE (2018)
Alternative financing and lending	Crowdfunding	BitFlyer (2014); Crowd Credit (2013); FinTech Global (1994); Kibidango, Inc. (2013); Crowdloan (2018); Miraicrowd (2015)
	Online balance sheet lending; salary services	BANQ (2015); Money Forward Line (2016)
	Lending platforms	Credit Engine (2016); REASE Inc. (2018); Emerada (2016)
	Microlending	Gojo&Company (2014); Resona Capital (1988)
Insurance	Instech, health	JustinCase (2016); Aisys (2013); The Fukuoka Chuo Bank (1951); Nextage (2007)
Miscellaneous	Decentralized authentication	Keychain (2016)
	Online platform for investors; Fintech platforms and solutions; consulting; Fintech research	Smart Trade (2016); Braincat (2016); SMART IDEA Japan (2016); ISI (1989): Fintech Association of Japan (2015); Health Media (2010); cyberplus (2010); Digital Service (1993); T&I Innovation Center (2016); BlueSoft Inc. (2002)
	M&A advisory services for SMEs	BIZVAL (2018)

Source: compiled by the author with reference to : https://www.fintech.coffee/research/89-japan (accessed April 30, 2022).

Financial technology adoption is the highest in the Japanese banking sector, for which the market size in 2019 was 1.4 billion USD, followed by the insurance (USD 900 million) and the security (USD 350 million) markets. Fintech firms provide a wide range of services, such as digital payments, neobanking, alternative lending, alternative financing, financial asset management (including digital investing), personal financial management, business management and corporate financial efficiency services, among others. Below, let us consider some of these fintech segments in more detail.

Digital Payments Systems and Digital Currencies in Japan

The most popular fintech firms providing digital payment services are Coiney, Kyash, Link Processing, Liquid, paidy, PAY.JP (PayPal), ROYALGATE, SPIKE[9] and others (Table 4). Fintech firms are offering technical solutions to increase the efficiency of the payment system using mobile phones, QR codes, and e-money. Payment services added to social media systems are also rising in popularity, with Line Pay, Pay-Pay, and d-Payment applications being developed.

Regional banks have also shown interest in the cashless payment market. For instance, the Bank of Kagoshima Prefecture developed its own Pay-don cashless payment system and organized cashless payment for goods and services in all shops in the Yokado Kagoshima shopping center, located on the ground and first floors of its head office. The bank actively promotes the implementation of a cashless payments to revitalize the regional economy and holds training seminars to promote its new products to customers [Uchiyama 2021, pp. 180–181].

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9 Fintech in Japan. Exploring new avenues. Switzerland Global Enterprise. https://swissbiz.jp/wp-content/uploads/2017/12/sge_fintech_infographic.pdf

Nevertheless, the development of cashless payments in Japan has been slower than in other countries. The government plans to increase the share of digital (cashless) payments in final consumption to 40 percent by 2027, which is still a rather low target compared to other countries. For instance, in 2019, the share of cashless payments in final consumption was 26.9 percent, which is behind PRC (2019.0 percent), Russia (116.3 percent) and the Republic of Korea (ROK) (98.1 percent). Thus, Japan remains one of the countries with the highest cash turnover, which is due to the presence of country-specific features, peculiarities of financial market development, as well as restraints on the implementation of non-cash payments by businesses and consumers [Gorshkov 2021a].

The share of cashless payments by payment instrument is shown in Table 5. Credit cards are the most popular payment instrument (89.7 percent of all cashless payments), which is typical of most developed economies in the world. Simultaneously, in recent years, there has been an active development of QR-code payments, which grew by 512.5 percent in 2018–2019.

Table 5

Digital (cashless payments) by instrument in percentage

Payment instrument	Share of digital (cashless) payments			Growth rates in percentage	
	2017	2018	2019	2018	2019
Debit cards	1.7	1.8	2.1	18.4	28.2
Credit cards	90.2	90.5	89.7	14.2	10.1
E-money	8.0	7.4	7.0	5.4	5.0
QR-codes	…	0.2	1.2	…	512.5
Growth rate of digital (cashless) payments				13.9	11.1

Source: Cashless Road Map. 2021, p. 5.

Technologically, the digital payments market in Japan is rather developed and includes competing technologies from banks, fintech companies, large transport service providers, and other players

(Figure 3). Nevertheless, digital payments have not yet reached maturity, and excessive competition among different payment service providers creates chaos for consumers, who often do not understand the fundamental differences in products and functions, which serves as a disincentive to a more rapid promotion of cashless payments.

For individual consumers, fintech and bigtech companies offer money transfer services, which are particularly popular with customers of social networks (Facebook) and user-to-user messaging systems (LINE). For example, the Facebook messaging payment service is provided by Rakuten, part of the Rakuten Group, a Japanese e-commerce and online retail company. The PayPay and LinePay apps also allow users to send digital remittances, digital payment orders, and automatically calculate the average amount per person, as they incorporate the warikan (割り勘) function, an extremely popular system among the Japanese for splitting the total bill for a visit to a restaurant, organizing a joint event, and other social events.

The promotion of cashless payments is also enhanced by the development of digital currencies, cryptoassets, and coins based on the blockchain technology. The fintech companies offering such services include Liquid Global, Orb, Chaintop, techBureau, GVE, FGC Group, and others (Table 4). However, these digital currencies have not yet achieved the widespread circulation in Japan. Likewise, the development of digital yen is also slow. The BOJ has been conducting feasibility studies of the digital yen since spring of 2021. Unlike cryptocurrencies, the digital yen is planned to be backed by the legal tender of the Japanese yen, in order to legitimize its value, yet it will only exist as data on electronic networks. Due to frequent natural disasters in Japan, the BOJ is considering adding offline payment functionality. In contrast to emerging economies, where CBDCs are conventionally introduced to compensate for an underdeveloped payment infrastructure, in Japan, there is no such urgent need.[10] The BOJ is following the incremental

[10] Will Japan introduce a digital yen? The Japan Times. February 2, 2022. https://www.japantimes.co.jp/news/2022/02/02/business/digital-yen-introduction/

approach in the introduction of digital currency, gaining knowledge from the Swedish example of the Riksbank, namely, smaller-scale technical research including a pilot test, rather than large-scale pilot tests that are being conducted in emerging countries such as the PRC.[11]

Digital Investment and Asset Management

Digital investment and asset management is provided by such fintech firms as Anomaly Research, Capitaloco, FPCafe, One Tap Buy, Okane no Design, WEALTHNAVI[12] as well as by other firms mentioned in Table 4. The interfaces of these firms have built-in automated chatbots that communicate with the client, collect information about their age, income level, amount of financial assets, planned monthly investment volume, investment objectives, and other data. On the basis of the information obtained, various investment products are offered to the client. Contracting and reporting is implemented entirely online. There are free (evaluation) chatbots and more advanced paid solutions (such as robo-advisers), which provide professional advice on digital investing. Chatbots are also being actively adopted by many Japanese banks, which are trying to withstand cost-competition for advisory services with fintech firms.

The demand for personal financial management services has also been increasing in Japan. These services are offered by firms such as Dr. Wallet, Money Forward, Moneytree, zaim.[13] and other firms (Table 4). In particular, there is a growing demand from individual consumers for household expenditure record-keeping services that graphically represent the family's cash flow by automatically processing

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[11] Japan to model digital yen tests on Sweden's approach, not China's. The Japan Times. April 19, 2022. https://www.japantimes.co.jp/news/2022/04/19/business/economy-business/digital-yen-interview/

[12] Fintech in Japan. Op. cit.

[13] Ibid.

information from bank accounts, bank card transactions, and other financial transactions. An example thereof is the Money Forward Me app. MUFG Bank has also launched its own household financial accounting application, Mable, developed by the fintech firm Moneytree, the shareholders of which include Japanese investment firms.

Alternative Lending

Major firms providing alternative lending services are Crowdbank, GreenInfraLending, LuckyBank, maneo, SBI social lending[14] and others (Table 4). It should be noted that, under the existing legislation, the P2P lending in Japan is implemented indirectly via platform companies that connect lenders and borrowers.

The most popular type of alternative lending in Japan is social lending (crowdlending), where lenders offer loans not to specific firms, but to finance specific socio-economic projects.

Transactional lending, where service providers offer loans to consumers based on their purchase history, payment experience on online platforms, customer feedback (e.g., Rakuten Super Business Loan, Rakuten Super Business Loan Express, Amazon Lending, JNB Store Loan) is also gaining popularity. Often, information about the possible loan volume is displayed automatically in the online platforms of these companies [Wada 2016, p. 92–93].

A few Japanese fintech firms are trying to improve existing lending systems by offering loans to a broader segment of the population, including people with low income or no credit history. However, this type of lending is prevailing in developing countries rather than in Japan itself. For example, Global Mobility Service, Inc. is actively promoting Mobility as a service (MaaS) in markets in Southeast Asia, particularly the Philippines, where buying a car and applying for an automobile loan remains a significant challenge for the general population. The service

[14] Ibid.

is based on IoT combined with financial technology. An automobile loan is provided to a customer based on a more flexible method of assessing their ability to pay. A GMS device is installed in the purchased car, which allows the car's engine to be turned off if the borrower defaults on the automobile loan. Thus, loans are encouraged for people who actually have no chance of getting a loan through the traditional lending system.[15]

Major Japanese banks are also developing technologies similar to alternative lending: they enter international markets in developing and emerging countries with low availability of financial services by partnering with local companies with their own online platforms. MUFG Bank, for example, has entered into a strategic partnership agreement with Grab, the largest food delivery and private transport service platform in Southeast Asia, and is currently providing loans to taxi drivers and restaurants registered on the platform. With access to the Grab database, MUFG can analyze the behavior of its registered users and assess their creditworthiness and financing needs more effectively.

In the domestic market, banks also provide lending services through intermediary non-financial firms, which allows them to collect and analyze financial and commercial information about users to better assess their creditworthiness. Examples here include the services of the intermediary company JAL Neobank, which was established by SBI Sumishin Net Bank in partnership with Japan Airlines (JAL) and the smart money lending service provided by cell phone company NTT docomo together with Shinsei Bank.[16]

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[15] Global Mobility Enterprise. https://www.global-mobility-service.com/en/business.html

[16] Digital Transformation of Japanese Banks. Bank of Japan Review. 2021-E-2, 1-8. https://www.boj.or.jp/en/research/wps_rev/rev_2021/data/rev21e02.pdf

Alternative Financing

Japan's crowdfunding ecosystem has demonstrated notable growth in recent years: In 2016–2020, the market's growth was approximately 157 percent from a starting point of 647 million USD. The most popular fintech firms providing alternative financing services, in particular crowdfunding, are A-port, CAMPFIRE, Crowdban, firstflight, GREENFUNDING, JAPANGIVING, kibidango, Makuake, Readyfor.[17] The crowdfunding market in Japan has increased from 72 billion yen in 2016 to 184 billion yen in 2020, but its development lags far behind that of other developed countries due to the low level of development of equity, debt and equity-based crowdfunding due to existing legal restrictions. Despite the fact that restrictions on raising alternative funding sources by start-ups in Japan have been abolished, crowdfunding is still predominantly used for charitable and socially oriented projects.

Other Fintech Services

Fintech firms also actively provide innovative services to SMEs, such as cloud servers, online inventory services, bookkeeping and sales data storage, accounting and tax reporting, investment plans, and data analysis services. Examples of such firms are A-saaS, board, Crowdcast, freee, MakeLeaps. MerryBiz, MFCloud, Shares, STREAMED, Readyfor[18] and others. The adoption of cloud servers by SMEs is one of the targets set by the Japanese government for the adoption of financial technology, with the number of companies using cloud servers for back-office operations in finance and accounting set to reach 40% by the end of 2022 [Gorshkov 2021b, pp. 144–145].

Based on the analysis of company data, some fintech firms provide alternative lending to SMEs, which, however, is not widespread due to

[17] Fintech in Japan. Op. cit.

[18] Ibid.

the fact that the amount of financing required for this group of borrowers is small and most loans are short-term. Therefore, fintech firms are not always able to cover the costs of evaluating clients' creditworthiness and advertising services.

On the contrary, Japanese banks are actively searching for the opportunities of alternative lending. In particular, SMFG Bank, in cooperation with Komatsu, a Japanese construction equipment manufacturer, has access to a data platform containing information on current construction equipment operations, ongoing construction progress, as well as order and delivery systems, enabling it to offer Komatsu supplier lending services in a timelier manner. Many banks are installing electronic data interchange systems to improve the efficiency of corporate management of SMEs and are trying to link these with settlement platforms that will allow companies to monitor both commercial and financial ordering information in real time. Such interaction can strengthen the links between banks and SMEs.[19]

Fintech companies also provide services for the collection and analysis of financial information (NOWCAST, OFFICELIFE, SPEEDA, ZUUonline), insurance (DRIVEON), security (BankGuard, capy), and the implementation of blockchain technology (bitFlyer, BITBOX, coincheck, mijin, Techbureau).[20]

Peculiar Features of Fintech in Japan

The analysis of the market landscape of fintech in Japan by market segment and market actors allows us to identify the following peculiar features of its development.

First, Japan is currently catching up in terms of general level of digitalization of its financial sector in comparison to other developed and emerging economies.

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[19] Digital Transformation of Japanese Banks. Op. cit.

[20] Fintech in Japan. Op. cit.

Second, the rapid development of fintech in recent years is attributable to the government's policy of reforming the existing legal system, which had significantly hindered the development of fair competition between financial and non-financial institutions.

Third, the development of fintech by segment in Japan remains highly unbalanced: and digital payments demonstrate high levels of growth (even though low as measured by the standards of other developed and emerging economies), neobanking and digital investing grow moderately, while alternative lending and alternative financing are demonstrating extremely low levels of growth due to high availability of the credit on the domestic market and high levels of financial inclusion.

Fourth, unlike the case of emerging countries, bigtech firms have limited role in promoting fintech, and most technological advancements are initiated by fintech firms and their cooperation with predominantly large banks. Thus, the penetration of fintech in the financial system of Japan remains uneven.

Fifth, fintech firms have established a sort of *spillover effect* and triggered many Japanese banks to consider a broader digitalization of their business. Major Japanese large banks have significantly improved their APIs, promoted neobanking and expanded other digital services, such as digital investment, asset management, and other services. Nevertheless, banks themselves, with a few exceptions of large banks, are not actively investing in the development of new digital products. Regional banks and credit cooperatives are still in the digitization stage; thus, full digital transformation of the country's banking sector is slow, and the banking sector as a whole is far from reaching *bank 4.0* stage. To better serve their customers and add value to their services, Japanese banks should be more proactive in embracing DX. Currently, they are mostly relying on fintech firms' technology, and while they possess large data on their customers, they are reluctant to share this information with non-financial institutions.[21]

[21] Digital Transformation of Japanese Banks. Op. cit.

Consequently, the sixth feature of fintech in Japan is the *hidden delegation of powers* by banks to fintech firms (BaaS, Banking as a Service), which then provide these services to customers. Banks such as Mizuho Financial Group, Shinsei Bank Group, SBI Sumishin Net Bank offer deposit services, issue regional gift certificates, conduct currency exchanges, issue mortgage loans, and provide other services through fintech firms.[22] Moreover, large banks and fintech firms are penetrating other Asian markets to provide these services.

Seventh, another peculiar feature of fintech in Japan is also reflected in the fact that fintech firms do not provide services to large businesses, as this market segment has traditionally been serviced by large Japanese banks through the main bank system. Large corporations generally do not have shortages of funds, and in the case of capital financing, the amount of funding they need is extensive and cannot be provided fully by fintech firms. Large corporations in Japan generally lack online platforms, however, in the future, it is possible to assume that, in order to unify the management of cash and commodity flows, companies will be interested in establishing their own online platforms to improve administrative efficiency, reduce costs, and improve financial efficiency [Kostyukova 2021, p. 445].

Overall, DX of the Japanese economy in general and the financial sector in particular has been lagging behind due to Japanese society's high concerns about the usage of personal data by private companies, i.e., there is a lack of trust towards digital technologies caused by a traditionally conservative approach to any kind of change. Digital financial services require well-protected user identification systems, which are not currently available to all banks and non-bank credit institutions for financial, technological, and other reasons. A national digital identification system has not been developed at the national level, so the burden is on banks and non-bank financial institutions themselves to secure personal data.[23] The issue of cybersecurity of financial and non-financial banking institutions is also a serious problem.

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[22] Ibid.

[23] Digital Transformation of Japanese Banks. Op. cit. P. 7–8.

Conclusion

Japan, despite being the most technologically and economically advanced country in the Asia-Pacific region, is demonstrating slower adaptation rates of fintech. Japan is currently at *fintech 1.0* stage, and its banking system has only partially crossed the *bank 4.0* threshold. Thus, overall, fintech in Japan is catching up with the levels of other developed and emerging economies even though the speed of the catch-up has increased in recent years.

The development of fintech in Japan remains heterogenous in terms of market segments and major financial institutions promoting fintech services. The most developed segment of fintech in Japan is digital payments, while neobanking and digital investment are rising in popularity even if they are far from entering maturing stages. Digitalization of the financial sector is predominantly driven by the collaboration of large banks with fintech firms, which are establishing spillover effects and pushing banks to further adopt digital technologies. In the banking sector, digitalization is developing unevenly: while large banks actively promote digital transformation in cooperation with fintech companies, regional banks and credit cooperatives are still at the digitization stage.

Further promotion of DX in Japan's financial sector will require future reforms in its corporate culture and regulatory environment. The problem of double shortages (the lack of finance and the lack of digital talents) will also have to be addressed. The government has a big role to play in this process and needs to proactively stimulate cooperation among the private and financial sectors and fintech firms.

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