

The Present and Future of Banking and New Financial Players in the Digital Space of the 21st Century¹

Ágnes Csiszárík-Kocsir, habil. Ph.D

Óbuda University, 1034 Budapest, Bécsi út 96/b, kocsir.agnes@uni-obuda.hu

Abstract: The advances in digitisation and the pressure to digitise in recent years have brought about significant changes in all areas of the economy. Players in the financial system, in particular traditional commercial banks, are no exception, either. Banks with relatively rigid and overregulated structures can only cope with the competition generated by Fintech firms at the expense of significant efforts. However, change is inevitable for them, as well. The need for digital platforms and services is becoming more and more prominent among customers and market players. In parallel with all these processes, a new concept has emerged in addition to the much investigated financial culture and financial awareness, namely the concept of financial inclusion and exclusion. In the case of financial players, digitalisation can be understood and tackled from the customer's point of view. The objective of this paper is to examine the impact of digitalisation on financial actors, in particular on banks' practices, from the customer's perspective, covering both the relationship and the impact of financial culture and awareness.

Keywords: financial awareness; financial consciousness; financial exclusion; digitalization; fintech companies; commercial banks

1 Introduction

Recent years have brought huge changes in the world, including in the life of financial institutions. These changes have been largely triggered by the recent crises, regulatory changes, the fall in profits as a result of the crises, and changes in customer attitudes. With the explosion of mobile phone use, digitalisation and the drive for digitalisation, innovation is increasingly taking place in all sectors of the economy, and this holds particularly true for the financial system. The use of digital platforms and mobile banking, which has become more common in recent years, is placing new demands on the players in the sector. The emergence of digital payment

¹ This paper was supported by the Széll Kálmán Public Finance Research Centre of the National University of Public Service.

solutions, applications and cryptocurrencies at the forefront of the market requires and offers new opportunities and solutions. The expansion and everyday use of digital services has a significant impact on our every day financial activities. Digitalisation has brought huge changes in the platforms and technologies used. New communication channels have enabled customers to manage their finances through other channels than traditional commercial banks. These new solutions bypass the distribution networks of banks, offering cheaper, more flexible and more convenient services. This type of technological development poses a significant risk for banks in the future, and could even lead to the reassessment or even the elimination of business models that were previously customary. Several researchers and studies have already addressed the competition between banks and the leading players in digitalisation. Some have looked at changes in lending [1] [2] [3], while others have examined the impact of other services and fintech and bigtech businesses on banks [4] [5] [6] [7].

2 Literature Review

2.1 Digitalisation and Financial Exclusion

Digitalisation and the phenomena that accompany it affect markets and market players in different ways. The processes and challenges of digitalisation do not exclude finance. The digitalisation of finance includes new technologies and solutions that can improve access to finance, offering new opportunities and tools [8]. Digitalisation has also brought greater freedom in accessing finance. Online spaces and platforms have emerged that are designed to match potential investors with savers (crowdfunding, P2P lending), bypassing bank intermediaries. This is also the area in which fintech firms are operating, with a significant capacity for innovation, competing with traditional commercial banks [9]. Traditional banking intermediaries have been on a cautious operating path since the 2008 crisis. They are looking in detail at the customer applying for a loan, which in many cases is pushing individuals and businesses towards digital channels. However, digitalisation can also be a huge source of risk in the absence of sound financial literacy [10].

Players in the financial sector, specifically banks, have always been geographically bound institutions. The role of banks in financial intermediation has always been crucial to the circulation of the economy. Their vertical intermediation role involves them in the transformation of size and maturity (transforming small and heterogeneous amounts of capital with heterogeneous maturities into larger capital items with uniform maturities) and due to their horizontal role they act as a bridge between depositors and borrowers. Over the past decades, the financial sector has given rise to a number of innovative initiatives, starting with credit rating,

securitisation, cash management (ATMs), telephone banking and then online banking [11]. Digital innovations in finance offer significant convenience features, which is an undoubted advantage from the user side, and also bring a number of indirect and direct benefits to supply-side players, such as broader data collection, data analysis, profiling, big data solutions, risk reduction [12] [13] [14]. Digital payment systems and solutions are the most commonly used and best known digital innovations from recent years. We use these systems mostly by using our mobile phones. This raises a very important question and concept of digital exclusion. Although we live in an Internet-based world, there are still areas and regions of the world that are not able to connect to these solutions of the digital financial world. The lack of awareness of mobile phone use, limited internet accessibility, and the high cost of using the internet are factors that work against these efforts [15].

Financial inclusion has become an increasing focus of research with the advance of financial digitalisation. Ozili [16] argues that promoting financial inclusion is important for several reasons. Reducing the number of financially excluded groups contributes to poverty reduction [17] to achieving sustainable development and, in turn, to further social and economic benefits. Households that are not financially excluded are able to increase their savings, invest in education and start businesses, which all contribute to the reduction of poverty [18] [19]. For these reasons, several researchers and studies have examined the positive impact of financial literacy on financial inclusion [20] [21]. It has also been found that the most financially excluded are those with low income and education [22], and that women are the most likely to be in these groups [23].

The concept of financial inclusion is very difficult to define in precise terms, but can only be outlined. However, all researchers and professionals agree that financial inclusion is about universal access to financial products, while reaping the economic benefits of using them [24]. It is also important to consider the price to be paid by potential users in return for this access [25]. The generalisation of digital solutions, the training and education to use them, and the provision of services at affordable prices will bring about huge changes in the way money is managed, and therefore in attitudes to finance and financial culture, over the next 10 years. Greater insight into finance can reduce poverty and lead to more effective financial decisions while ensuring the flow of information [26] [27]. These aspirations and needs have been reinforced by the corona-virus pandemic. All this suggests that the future of digital finance can be understood along three main pillars. Ensuring accessibility, affordability of services, and the level of digital skills and capabilities required to use them are all very important. We would add to the above the notion of attitudes and motivation towards innovation. The latter is not a matter of skills and abilities, but of the need and openness of the individual. This depends to a large extent on the financial literacy of the individual and the level of existing financial culture. These latter factors can be traced back to financial education and financial socialisation.

Attitudes towards digitalisation, including digital financial solutions, are significantly influenced by financial socialisation, the perceptions of one's

immediate and wider environment, which is significantly influenced by childhood experiences [28]. This motivational background can significantly influence the acceptance or rejection of innovations [29]. According to [30] there are three dimensions of financial inclusion: use, barriers and access. The concepts of financial culture and financial awareness are not included. It is important to examine this aspect of the issue, as financial awareness already incorporates the aforementioned financial socialisation. The adoption and widespread use of digital solutions opens up opportunities for individuals to go beyond the traditional commercial banks and open up to other players in order to maximise and increase profits. They can access new savings opportunities, find cheaper account management services and use more efficient and cheaper payment systems. However, this requires a basic level of financial literacy that will make them willing and able to use and take advantage of these innovative solutions. Therefore, it is not only important to increase financial literacy, but also to induce changes in attitudes under the auspices of financial education.

2.2 Digitalisation and Financial Exclusion

Financial culture and its aspects have been at the centre of research for years. Many researchers have addressed the knowledge, attitudinal, socialisation, motivational and literacy dimensions of financial culture. The importance of financial education has been highlighted by the 2008 crisis, which highlighted the shortcomings in thinking linked to over-indebtedness, imprudent borrowing, lack of knowledge or misunderstanding of basic financial concepts. Lusardi and Mitchell [31] define financial literacy as the ability to process economic information and make decisions related to financial planning, asset management, borrowing, and retirement savings.

It will take many years for financial thinking to become embedded in the everyday life of a society, i.e. for a change of mindset to take place and for the lessons learned to become available as a culture. The turbulent changes of recent years due to digitalisation have brought the issue of sound financial knowledge and openness to financial issues to the foreground even more. Many researchers and studies have looked at the benefits of higher levels of financial literacy. Individuals with higher levels of financial literacy are more attentive to retirement planning, more prudent in borrowing, more open to capital markets and other forms of investment, and able to achieve higher returns on their savings [32] [33] [34]. Renowned researchers have also shown that individuals who are at lower levels of financial literacy do not save, have fewer assets and thus do not even think about saving before retirement, putting themselves in insecurity in their old age.

The financial literacy of individuals can be affected by a number of factors. Socialisation, as a psychological process, leaves deep imprints on an individual's thinking. Education plays a major role, but sociodemographic factors also have a significant impact, which we refer to as financial socialisation. Within the latter, the most important is the family-mediated pattern [35], which has an intergenerational

impact [31] [36]. It is clear that young people who see their parents and grandparents as a family pattern of saving, being prudent in their purchases, considering their financial decisions, making the final decision along alternatives, will do so themselves. By teaching and enforcing the norms and rules taught by the family, and thus building financial literacy, the family can do much to create more financially aware generations. Among the attitudes towards certain financial products, attitudes towards risk should also be highlighted, as young people will perceive risk along the lines of inherited patterns [37]. It is also very important to note that the family, and especially the parents' education, occupation and income situation, should be a significant influencing factor. The social environment and the geographical location of the child's upbringing are also important.

Consideration of existing and future customers of different types and cultures is also important for financial service providers. Financial intermediaries, including banks, have been characterising customers since the 2008 crisis. To this end, the so-called MiFID tests have been developed, where the financial knowledge, skills, investment objectives and financial capacity of potential clients are assessed. It is important for financial intermediaries to have an accurate picture of their clients, so it is not enough to ask them how they rate themselves, but more in-depth knowledge is needed. Past and ongoing research can go a long way in helping providers to get to know their customers. This is even more necessary in the world of digitalisation, where individuals and households are able to carry out very high volumes of financial transactions using various online platforms with virtually no face-to-face contact [38] [39]. However, the advance of the online space also requires new competences on the part of customers. New concepts have been introduced into the thinking, which the education system is not yet prepared to understand. The influence of consumers with a low-level of financial literacy through the various online platforms can be a very damaging factor. Video-sharing portals and social media platforms, which are gaining ground, are capable of disseminating information at high-speed. However, we do not always know or want to check the authenticity of this information. Many influencers claiming to be advisors influence the financial thinking of individuals, especially young people. Without a stable socialisation background, this represents a huge risk to the financial system. The role of the education system and the family in preparing the younger generations is, therefore, of paramount importance. The young people of Generation Z and Alpha are the most exposed to the above dangers and harmful influences.

3 Material and Method

This study is based on a questionnaire survey carried out in spring-summer 2020, using a pre-tested standardised questionnaire. The questionnaire was preceded by a series of qualitative and quantitative studies, and the experience gained from them was used to develop the current questionnaire. The questions addressed in the

questionnaire focused on financial awareness and the impact of digitalisation, taking into account the impact of the coronavirus pandemic. Due to the survey, the study is based on 6804 evaluable responses. The questionnaire was administered online, ensuring respondents' anonymity. To segment the respondents, among others, previous financial studies, the level of subjectively assessed financial knowledge, and the highest educational level of the respondents were used. Respondents were asked to express their opinion on the future of the following items using a four-point scale, with a value of 1 indicating total devaluation and a value of 4 indicating total appreciation. The items measured were as follows:

- Online banking by a traditional commercial bank,
- Online account management by a traditional commercial bank,
- Online savings management by a traditional commercial bank,
- Traditional commercial banking services,
- Fintech products,
- Account management services offered by Fintech companies,
- Savings management services offered by Fintech companies,
- Online payment solutions,
- Digital payment instruments,
- Neobank services.

The questions included multiple choice questions as well as nominal and metric scaling questions. The sample is not considered representative, but it provides an opportunity to lay the groundwork for a future representative survey.

In this study, the relationships between the factors under investigation is shown using analysis of variance. Within the analysis of variance, one-way ANOVA method was selected to compare multiple sample means, where the mean of a metric dependent variable was compared between groups. To determine the differences, significance values were used to determine the existence of correlations, where it is less than 0.05. Internal correlations along the comparison of group means were also analysed using F values. Where the significance value was found to be less than 0.05, a correlation between the factors under investigation was confirmed. Data were analysed using SPSS 22.0 software. The sample composition is shown in Table 1.

The paper tests the following hypotheses:

H1.: Respondents with higher education are more open to financial innovation.

H2.: Respondents who have studied finances earlier are more informed and open to new trends and actors in financial markets.

H3.: A higher level of financial literacy tends to attract new financial actors to the demand side of financial markets.

Table 1
Composition of the sample

		N
Previous financial studies	yes	2934
	no	3870
Financial knowledge level	1 (insufficient)	376
	2 (satisfactory)	1615
	3 (moderate)	3127
	4 (good)	1325
	5 (excellent)	361
Education	primary	480
	secondary	3907
	tertiary - ba, bsc	1783
	tertiary - ma, msc	634

Source: own research, 2020, N = 6804

4 Results

The first step in analysing the questions is to find out how respondents rated certain items overall. It is clear from the responses received that almost a third of the respondents are not at all familiar with fintech companies and their activities, and were therefore unable to express an opinion on them. The same is true for neobanks. However, what is very striking is that respondents expect a clear upturn in the value of online solutions, which represents an overall two-thirds majority. Only online payment solutions and digital payment instruments show a more pronounced appreciation. The same can be seen for the average values. Since the number of respondents who did not express an opinion was very low for these questions, the average values are highest for these last two items. The next activities with high average values are the future online solutions and services provided by commercial banks. The lowest future appreciation was shown by fintech companies and their activities. All this suggests that there is a need for a significant increase in knowledge of financial culture. Both innovative digital solutions and new financial market players need to be introduced. This will require a major transformation and updating of the knowledge delivered. The results obtained will also have a message value for the banking system. It can also be said that respondents, regardless of their generational background, continue to prefer traditional commercial banks for their financial transactions. This suggests a significant future competitive advantage, provided that commercial banks can maintain this by innovations to meet the new digitalisation requirements (Table 2).

Table 2
Percentage distribution of responses to each item and sample average

		%	Mean
Online banking by a traditional commercial bank	does not know	13,1	2,615
	is fully depreciates	8,7	
	rather depreciates	16,3	
	rather appreciates	27,6	
	fully appreciates	34,3	
Online account management by a traditional commercial bank	does not know	12,2	2,675
	is fully depreciates	5,5	
	rather depreciates	18,1	
	rather appreciates	31,0	
	fully appreciates	33,2	
Online savings management by a traditional commercial bank	does not know	12,8	2,639
	is fully depreciates	5,8	
	rather depreciates	17,5	
	rather appreciates	32,3	
	fully appreciates	31,5	
Traditional commercial banking services	does not know	12,6	2,216
	is fully depreciates	13,7	
	rather depreciates	30,5	
	rather appreciates	25,7	
	fully appreciates	17,4	
Fintech products	does not know	30,8	1,940
	is fully depreciates	7,4	
	rather depreciates	17,4	
	rather appreciates	25,9	
	fully appreciates	18,5	
Account management services offered by Fintech companies	does not know	31,5	1,931
	is fully depreciates	6,7	
	rather depreciates	18,2	
	rather appreciates	24,1	
	fully appreciates	19,4	
Savings management services offered by Fintech companies	does not know	31,7	1,947
	is fully depreciates	6,6	
	rather depreciates	17,1	
	rather appreciates	24,1	
	fully appreciates	20,3	
Online payment solutions	does not know	14,1	2,825
	is fully depreciates	4,4	
	rather depreciates	12,2	

	rather appreciates	23,6	
	fully appreciates	45,7	
Digital payment instruments	does not know	14,8	2,764
	is fully depreciates	4,9	
	rather depreciates	12,4	
	rather appreciates	24,7	
	fully appreciates	43,2	
Neobank services	does not know	32,7	1,856
	is fully depreciates	8,3	
	rather depreciates	16,8	
	rather appreciates	25,1	
	fully appreciates	17,1	

Source: author's own research, 2020, N = 6804

Analysing the responses based on previous financial education, it is clear that the perception of all but one item is influenced by previous financial education. The only exception is the evaluation of the activities of neobanks. It can also be seen that in all cases, with the aforementioned exception, the item was rated more strongly, i.e. appreciated in the future, by respondents who had participated in previous financial training. All this suggests that financial literacy has a significant influence on future financial decisions, both on the perception of financial innovations and on their adoption. This shows that it is in the societal interest to develop the financial literacy and culture of a community and society, as they are more realistic about the present and future and more open to the changes brought about by digitalisation (Table 3).

Table 3

Perception of each item based on previous participation in financial education

		Mean	Std. Deviation	F	Sig.
Online banking by a traditional commercial bank	Yes	2,741	1,309	44,299	0,000
	No	2,519	1,409		
	Sample	2,615	1,371		
Online account management by a traditional commercial bank	Yes	2,785	1,254	36,653	0,000
	No	2,591	1,353		
	Sample	2,675	1,315		
Online savings management by a traditional commercial bank	Yes	2,743	1,255	31,856	0,000
	No	2,560	1,365		
	Sample	2,639	1,322		
Traditional commercial banking services	Yes	2,264	1,168	7,764	0,005
	No	2,179	1,298		
	Sample	2,216	1,244		

Fintech products	Yes	2,028	1,504	17,421	0,000
	No	1,873	1,524		
	Sample	1,940	1,517		
Account management services offered by Fintech companies	Yes	2,017	1,552	16,387	0,000
	No	1,866	1,511		
	Sample	1,931	1,531		
Savings management services offered by Fintech companies	Yes	2,038	1,541	17,905	0,000
	No	1,878	1,546		
	Sample	1,947	1,545		
Online payment solutions	Yes	2,941	1,379	35,505	0,000
	No	2,736	1,431		
	Sample	2,825	1,412		
Digital payment instruments	Yes	2,867	1,407	26,753	0,000
	No	2,687	1,435		
	Sample	2,764	1,426		
Neobank services	Yes	1,839	1,532	0,598	0,440
	No	1,868	1,510		
	Sample	1,856	1,519		

Source: author’s own research, 2020, N = 6804, analysis of variance, measurement levels: nominal and metric scale

The perception of financial literacy is clearly a subjective matter, depending on the individual's critical self-perception. With regard to the questions asked, I was also curious to what extent this subjective evaluation influences the perception of each item. Based on the significance values, it can be said that individuals' subjective financial knowledge evaluation has an impact and it affects the perception of the items under study. When comparing the means within the groups, it can be concluded that only respondents whose financial knowledge is perceived to be good or excellent are able to value products, account management services and savings facilities of fintech companies. These respondents monitor financial market trends, are interested in them and can interpret them. This is why the average perception of the future of fintech businesses is outstanding. For them, traditional commercial banks are not the only service providers, as they know that they can find all the services that fintech companies offer, be it account management, issuing digital payment instruments or even online innovations. The same can be said of the services offered by neobanks. Those who see themselves as "financial experts" can also make sense of the activities of the new financial players brought about by digitalisation, and they clearly perceive them as being valued. For all other items, which refer to online payment solutions, digital payment instruments, online service offerings of traditional commercial banks, the average score of individuals with medium to good financial knowledge is rather outstanding. Again, the conclusion that can be drawn from this is the same as the one already established earlier, namely that a modern financial literacy that keeps pace with innovations makes people more

open to innovations. This not only works against financial exclusion, but can also have a clear positive effect in pushing both existing and future customers towards maximising income (Table 4).

Table 4
Perception of each item based on subjective perceptions of previous financial knowledge

		Mean	Std. Deviation	F	Sig.
Online banking by a traditional commercial bank	1 (insufficient)	1,965	1,448	43,895	0,000
	2 (satisfactory)	2,466	1,371		
	3 (moderate)	2,701	1,352		
	4 (good)	2,853	1,294		
	5 (excellent)	2,330	1,414		
	Sample	2,615	1,371		
Online account management by a traditional commercial bank	1 (insufficient)	2,043	1,408	44,773	0,000
	2 (satisfactory)	2,491	1,350		
	3 (moderate)	2,778	1,284		
	4 (good)	2,877	1,229		
	5 (excellent)	2,515	1,313		
	Sample	2,675	1,315		
Online savings management by a traditional commercial bank	1 (insufficient)	2,053	1,485	36,453	0,000
	2 (satisfactory)	2,485	1,351		
	3 (moderate)	2,727	1,281		
	4 (good)	2,830	1,248		
	5 (excellent)	2,476	1,362		
	Sample	2,639	1,322		
Traditional commercial banking services	1 (insufficient)	1,891	1,390	13,746	0,000
	2 (satisfactory)	2,123	1,245		
	3 (moderate)	2,245	1,233		
	4 (good)	2,361	1,189		
	5 (excellent)	2,183	1,291		
	Sample	2,216	1,244		
Fintech products	1 (insufficient)	1,596	1,468	16,054	0,000
	2 (satisfactory)	1,798	1,478		
	3 (moderate)	1,945	1,537		
	4 (good)	2,135	1,524		
	5 (excellent)	2,169	1,413		
	Sample	1,940	1,517		
Account management services offered by Fintech companies	1 (insufficient)	1,505	1,435	24,780	0,000
	2 (satisfactory)	1,728	1,499		
	3 (moderate)	1,963	1,531		
	4 (good)	2,166	1,556		

	5 (excellent)	2,152	1,469		
	Sample	1,931	1,531		
Savings management services offered by Fintech companies	1 (insufficient)	1,561	1,439	20,876	0,000
	2 (satisfactory)	1,750	1,487		
	3 (moderate)	1,983	1,575		
	4 (good)	2,168	1,538		
	5 (excellent)	2,108	1,504		
	Sample	1,947	1,545		
Online payment solutions	1 (insufficient)	2,223	1,533	46,961	0,000
	2 (satisfactory)	2,628	1,451		
	3 (moderate)	2,945	1,374		
	4 (good)	3,053	1,283		
	5 (excellent)	2,446	1,530		
	Sample	2,825	1,412		
Digital payment instruments	1 (insufficient)	2,146	1,506	37,692	0,000
	2 (satisfactory)	2,583	1,460		
	3 (moderate)	2,892	1,378		
	4 (good)	2,923	1,376		
	5 (excellent)	2,535	1,487		
	Sample	2,764	1,426		
Neobank services	1 (insufficient)	1,593	1,419	13,266	0,000
	2 (satisfactory)	1,718	1,486		
	3 (moderate)	1,855	1,520		
	4 (good)	2,030	1,565		
	5 (excellent)	2,116	1,484		
	Sample	1,856	1,519		

Source: author's own research, 2020, N = 6804, analysis of variance, measurement levels: nominal and metric scale

Last but not least, I would also like to present the results by educational attainment. Here again, the significance values show that education has an impact on the future evaluation of each item. Overall, it can be said that, in general, respondents with a secondary and higher education rated the items higher. Those with a secondary education are members of Generation Z in the current sample, who are already part of the "always online" generation and thus open to all online solutions. With regard to fintech businesses, it should also be highlighted that here it was mainly respondents with more stable financial knowledge and clearly higher education who rated the future of the items above the sample average. Once again, it became clear that already established financial awareness and practical experience are very important. The results clearly show that higher education here also leads to more realistic and innovative thinking and future awareness (Table 5).

Table 5
Perception of each item by highest level of education

		Mean	Std. Deviation	F	Sig.
Online banking by a traditional commercial bank	Primary	2,265	1,381	11,748	0,000
	Secondary	2,650	1,361		
	Tertiary - ba, bsc	2,643	1,339		
	Tertiary - ma, msc	2,580	1,480		
	Sample	2,615	1,371		
Online account management by a traditional commercial bank	Primary	2,263	1,317	17,276	0,000
	Secondary	2,712	1,319		
	Tertiary - ba, bsc	2,686	1,297		
	Tertiary - ma, msc	2,729	1,288		
	Sample	2,675	1,315		
Online savings management by a traditional commercial bank	Primary	2,227	1,337	19,390	0,000
	Secondary	2,642	1,321		
	Tertiary - ba, bsc	2,688	1,295		
	Tertiary - ma, msc	2,793	1,335		
	Sample	2,639	1,322		
Traditional commercial banking services	Primary	2,079	1,314	5,514	0,001
	Secondary	2,260	1,271		
	Tertiary - ba, bsc	2,196	1,193		
	Tertiary - ma, msc	2,103	1,149		
	Sample	2,216	1,244		
Fintech products	Primary	1,854	1,361	5,853	0,001
	Secondary	1,887	1,521		
	Tertiary - ba, bsc	2,044	1,506		
	Tertiary - ma, msc	2,041	1,619		
	Sample	1,940	1,517		
Account management services offered by Fintech companies	Primary	1,873	1,403	4,136	0,006
	Secondary	1,885	1,529		
	Tertiary - ba, bsc	2,030	1,543		
	Tertiary - ma, msc	1,981	1,588		
	Sample	1,931	1,531		
Savings management services offered by Fintech companies	Primary	1,858	1,373	3,386	0,017
	Secondary	1,910	1,553		
	Tertiary - ba, bsc	2,029	1,528		
	Tertiary - ma, msc	2,017	1,657		
	Sample	1,947	1,545		
Online payment solutions	Primary	2,325	1,454	21,780	0,000
	Secondary	2,859	1,399		

	Tertiary - ba, bsc	2,864	1,414		
	Tertiary - ma, msc	2,880	1,390		
	Sample	2,825	1,412		
Digital instruments payment	Primary	2,260	1,444	22,980	0,000
	Secondary	2,807	1,403		
	Tertiary - ba, bsc	2,763	1,433		
	Tertiary - ma, msc	2,890	1,456		
	Sample	2,764	1,426		
Neobank services	Primary	1,981	1,404	2,716	0,043
	Secondary	1,825	1,518		
	Tertiary - ba, bsc	1,910	1,534		
	Tertiary - ma, msc	1,795	1,563		
	Sample	1,856	1,519		

Source: author’s own research, 2020, N = 6804, analysis of variance, measurement levels: nominal and metric scale

Summary, Conclusions

The results presented above clearly show that digitalisation has triggered inevitable changes in all areas of life, including finance. Digitalisation, online operations and the emergence of new market players are redefining the way traditional financial markets operate. The emergence of fintech companies and neo-banks is imposing and inducing huge competition on commercial banks. While commercial banks have to comply with a significant regulatory regime, new players are more flexible, more innovative and therefore able to bypass these rules for products and services much more easily. But it is also important to see how customers feel about their future. The results show that the respondents in the sample are clearly in favour of traditional commercial banks, but their online solutions and services are very important, so the hypotheses are confirmed. They are a priority as long as they can meet these customer expectations. The results also show that digitalisation and online operations are inevitable, and that there is not only a need but also a demand for them. Acceptance of new market players is not yet widespread, with only financially literate respondents and respondents with higher education levels supporting them. This suggests new directions for the development of financial literacy. There is a clear need to open up to the knowledge base required by the new way of operating, by restructuring the curriculum taught in schools, broadening knowledge and extending financial socialisation. It can also be seen from the Hungarian research presented in this paper that Hungarian consumers and customers are conservative-minded and reluctant to open up to new players and financial innovations. This gives banks a significant competitive advantage in the current situation, but it is only temporary. Generational characteristics should also be borne in mind. The entry of Generation Z and Alpha into the customer base will be a new challenge. The importance of financial culture and financial literacy has

been reiterated, and it is therefore clear that its enhancement and development is in the interests of society as a whole and is the way forward.

References

- [1] Claessens, S.; Frost, J.; Turner, G.; Zhu, F.: Fintech credit markets around the world: size, drivers and policy issues. *BIS Quarterly Review*, 2018/September, https://www.bis.org/publ/qtrpdf/r_qt1809e.htm (accessed: 02/02/2022)
- [2] Chava, S.; Paradkar, N.; Zhang, Y.: Winners and Losers of Marketplace Lending: Evidence from Borrower Credit Dynamics. *American Economic Association Conference*, 2019, <https://www.aeaweb.org/conference/2019/preliminary/paper/Sbr9rDZ5> (accessed: 02/02/2022)
- [3] Thakor, A.: Fintech and banking: What do we know?. *Journal of Financial Intermediation*, Vol. 41, issue C, 2020, 100833, DOI: <https://doi.org/10.1016/j.jfi.2019.100833>
- [4] Arner, D. W.; Barberis, J. N.; Buckley, R. P.: The evolution of fintech: A new post-crisis paradigm. *University of Hong Kong Faculty of Law, Research Paper No. 2015/047*, DOI: <http://dx.doi.org/10.2139/ssrn.2676553>
- [5] Clark, T.: Fintech and the battle against fraud. *PaymentsJournal*, 07/07/2017, <https://www.paymentsjournal.com/fintech-and-the-battle-against-fraud/> (accessed: 04/02/2022)
- [6] Navaretti, G. B.; Calzonari, G.; Pozzolo, A. F.: FinTech and banking: Friends or foes?. *European Economy: Banks, Regulation and the Real Sector 2017 (2)*, 9-30, https://european-economy.eu/wp-content/uploads/2018/01/EE_2.2017-2.pdf (letöltve: 04/02/2022)
- [7] Stulz, R. M.: FinTech, BigTech, and the Future of Banks. *Journal of Applied Corporate Finance*, 2019, Fall, 86-97, DOI: <https://doi.org/10.1111/jacf.12378>
- [8] Buchak, G.; Matvos, G.; Piskorszki, T.; Seru, A.: Fintech, regulatory arbitrage, and the rise of shadow banks. *Journal of Financial Economics*, Vol. 130, Issue 3, 2018, 453-483, DOI: <https://doi.org/10.1016/j.jfineco.2018.03.011>
- [9] Pintér, É.; Bagó, P.; Berényi, L.; Molnár, L.; Deutsch, N.; Pintér, T.: *How do Digitalization and the Fintech Phenomenon Affect Financial Decision-Making in the Younger Generation?* *Acta Polytechnica Hungarica*, Vol. 18, Issue 11, 2021, 191-208, DOI: <https://doi.org/10.12700/APH.18.11.2021.11.11>
- [10] Szádeczky, T.: Problems of Digital Sustainability, *Acta Polytechnica Hungarica*, Vol. 7, Issue 3, 2010, 123-136
- [11] Boot, A.; Hoffmann, P.; Laeven, L.; Ratnovski, L.: Fintech: what's old, what's new?. *Journal of Financial Stability*, 2021/53, 100836

-
- [12] Dobbie, W.; Liberman, A.; Paravisini, D.; Pthania, V.: Measuring Bias in Consumer Lending. *The Review of Economic Studies*, Vol. 88, Issue: 6, 2021, 2799-2832, DOI: <https://doi.org/10.1093/restud/rdaa078>
- [13] Cole, S.; Kanz, M.; Klapper, L.: Incentivizing Calculated Risk-Taking: Evidence from an Experiment with Commercial Bank Loan Officers. *Journal of Finance*, Vol. 70, Issue 2, 2014, 537-575, DOI: <https://doi.org/10.1111/jofi.12233>
- [14] Botsch, M.; Vanasco, V.: Learning by lending. *Journal of Financial Intermediation*, Vol. 37, 2019, 1-14, DOI: <https://doi.org/10.1016/j.jfi.2018.03.002>
- [15] Lyman, T.; Lauer, K.: What is Digital Financial Inclusion and Why Does it Matter?. CGAP Blog Consultative Group, 2015, <https://www.cgap.org/blog/what-digital-financial-inclusion-and-why-does-it-matter> (accessed: 04/05/2022)
- [16] Ozili, P. K.: Financial inclusion research around the world: A review, *Forum for Social Economics*. 50:4, 2020, 457-479, DOI: <https://doi.org/10.1080/07360932.2020.1715238>
- [17] Burgess, R.; Pande, R.: Do rural banks matter? Evidence from the Indian social banking experiment. *American Economic Review*, Vol. 95, No. 3, 2005, 780-795, DOI: 10.1257/0002828054201242
- [18] Beck, T.; Demircuc-Kunt, A.; Martinez P. M. S.: Reaching out: Access to and use of banking services across countries. *Journal of Financial Economics*, Vol. 85, Issue 1, 2007, 234-266, DOI: <https://doi.org/10.1016/j.jfineco.2006.07.002>
- [19] Dupas, P.; Robinson, J.: Why don't the poor save more? Evidence from health savings experiments. *American Economic Review*, Vol. 103, Issue 4, 2013, 1138-1171, DOI: 10.1257/aer.103.4.1138
- [20] Morgan, P. J.; Trinh, L. Q.: Determinants and impacts of financial literacy in Cambodia and Viet Nam. *Journal of Risk and Financial Management*, Vol. 12, Issue 1, 2019, 19, DOI: <https://doi.org/10.3390/jrfm12010019>
- [21] Klapper, L.; Lusardi, A.; Panos, G. A.: Financial literacy and its consequences: Evidence from Russia during the financial crisis. *Journal of Banking and Finance*, Vol. 37, Issue 10, 2013, 3904-3923, DOI: <https://doi.org/10.1016/j.jbankfin.2013.07.014>
- [22] Allen, F.; Demircuc-Kunt, A.; Klapper, L.; Martinez P. M. S.: The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation*, Vol. 27, 1-30, 2016, DOI: <https://doi.org/10.1016/j.jfi.2015.12.003>

- [23] Ghosh, S.; Vinod, D.: What constrains financial inclusion for women? Evidence from Indian micro data. *World Development*, Vol. 92, 2017, 60-81, DOI: <https://doi.org/10.1016/j.worlddev.2016.11.011>
- [24] Sarma, M.; Pais, J.: Financial Inclusion and Development. *Journal of International Development*, Vol. 23, No. 5, 2011, 613-628, <https://doi.org/10.1002/jid.1698>
- [25] FATF: Anti-money laundering and terrorist financing measures and financial inclusion - With a supplement on customer due diligence, FATF, Paris, 2017, <http://search.fatf-gafi.org/media/fatf/content/images/Updated-2017-FATF-2013-Guidance.pdf> (accessed: 07/03/2022)
- [26] Radcliff, D.; Voorhies, R.: A Digital Pathway to Financial Inclusion. Bill & Melinda Gates Foundation, 2012, DOI: <http://dx.doi.org/10.2139/ssrn.2186926>
- [27] Pande, R.; Cole, S.; Sivasankaran, A.; Bastian, G. G.; Durlacher, K.: Does poor people's access to formal banking services raise their incomes?. EPPI-Centre, Social Science Research Unit, Institute of Education, University of London, 2012
- [28] Grohmann, A.; Kouwenberg, R.; Menkhoff, L.: Childhood roots of financial literacy. *Journal of Economic Psychology*, Vol. 51, 2015, 114-133, DOI: <https://doi.org/10.1016/j.joep.2015.09.002>
- [29] Scott, J.: Social Network Analysis. *Sociology*, Vol. 22, No. 1, 1998, 109-127, DOI: <https://doi.org/10.1177/0038038588022001007>
- [30] Cámara, N.; Tuesta, D. A.: Measuring Financial Inclusion: A Multidimensional Index. BBVA Research Paper No. 14/26, 2014, DOI: <http://dx.doi.org/10.2139/ssrn.2634616>
- [31] Lusardi, A.; Mitchell, O. S.: The economic importance of financial literacy: theory and evidence. *Journal of Economic Literature*, Vol. 52, Issue 1, 2014, 5-44, DOI: <https://doi.org/10.1257/jel.52.1.5>
- [32] Lusardi, A.; Mitchell, O. S.: Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics*, Vol. 54, Issue 1, 2007, 205-224, DOI:10.1016/j.jmoneco.2006.12.001
- [33] Lusardi, A.; Tufano, P.: Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics and Finance*, Vol. 14, Issue 4, 2015, 332-368, DOI: <https://doi.org/10.1017/S1474747215000232>
- [34] Deuflhard, F.; Georgarakos, D.; Inderst, R.: Financial literacy and savings account returns. *Journal of the European Financial Economic Association*, Vol. 17, Issue 1, 2018, 131-164, DOI: <https://doi.org/10.1093/jeea/jvy003>

- [35] Lusardi, A.; Mitchell, O. S.; Curto, V.: Financial literacy among the young. *Journal of Consumer Affairs*, Vol. 44, Issue 2, 2010, 358-380, DOI: <https://doi.org/10.1111/j.1745-6606.2010.01173.x>
- [36] Grohmann, A.; Kouwenberg, R.; Menkhoff, L.: Childhood roots of financial literacy. *Journal of Economic Psychology*, Vol. 51, 2015, 114-133, DOI: <https://doi.org/10.1016/j.joep.2015.09.002>
- [37] Dohmen, T.; Falk, A.; Huffman, D.; Sunde, U.: The intergenerational transmission of risk and trust attitudes. *Review of Economic Studies*, Vol. 79, Issue 2, 2012, 645-677, DOI: <https://doi.org/10.1093/restud/rdr027>
- [38] Garai-Fodor, M.; Csércsa, K.: Perceptions of the digital generation and the millennials on online education during the pandemic. In: Szakál, Anikó (ed.) *IEEE 20th Jubilee World Symposium on Applied Machine Intelligence and Informatics SAMI (2022): Proceedings Poprad*, 187-191
- [39] Csércsa, K.; Viktor, P.; Garai-Fodor, M.: Egyetemi hallgatói tanulászervezési elképzelések a világjárvány idején. University students' learning organisation ideas during the pandemic In: Karlovitz, János Tibor (ed.) *Az ember és gazdagsága egészséges és biztonságos környezetben*, International Research Institute, 2022, 188-204