

12-1-2021

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Recommended Citation

Abdurakhimova, Dilora PhD (2021) "THEORETICAL AND PRACTICAL FOUNDATIONS OF BANKING INNOVATIONS' IMPACT ON ECONOMIC DEVELOPMENT OF COUNTRIES," *International Finance and Accounting*: Vol. 2021 : Iss. 6 , Article 14.

Available at: <https://uzjournals.edu.uz/interfinance/vol2021/iss6/14>

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THEORETICAL AND PRACTICAL FOUNDATIONS OF BANKING INNOVATIONS' IMPACT ON ECONOMIC DEVELOPMENT OF COUNTRIES

Abstract. The answers to the questions "if banks influence countries' economies" and "if innovations influence countries' economies" are unambiguous, but how does banking innovation affect the economic development of countries? In the article, it is discussed theoretical and methodological approaches to obtain an answer to this matter. Using theoretical concepts and comparative analysis, the author substantiates the impact of bank innovations on the economy.

Key words: innovative banking products, digital banking, FinTech, remote banking service, financial inclusion, financial sustainability, economic growth.

Introduction

In the context of the global coronavirus pandemic and as its consequences, the instability of the economies of the world in order to reduce the impact on the weak segments of the population, reduce production, slow down the dynamics of countries' economic growth and others reforms in the country, it is necessary to accelerate macroeconomic reforms aimed at supporting promising investment projects, as well as small business and private entrepreneurship for increasing real money income and purchasing power of the population. At this stage, the scientific and practical problem is to determine the next steps to accomplish these tasks effectively. Is the penetration of financial products using financial technologies, based on international experience, to implement these reforms with the help of public and commercial banking funds for quick financing, with a wide scope and without the negative impact of corruption, fraud or other human factors?

In the article it is considered the impact of banking innovations on economic development to determine this issue. In particular, it is revealed both positive and negative impact of banking innovations on the economies of countries. Correlation between banking innovation and macroeconomic indicators is also studied using World Bank indicators in 160 countries based on Spearman's rank correlation, and relevant conclusions have been drawn.

Literature review

The solution to this problem should be based on modern digital banking products and a special methodological base, new for the science of Uzbekistan, which require to see the national banking system and the real economy in interconnection. At the same time, the best opportunities and prospects were identified by the President of the Republic of Uzbekistan Sh. Mirziyoyev.

Mirziyoyev's fundamental works [6, 7, 8, 9] and socio-economic systemology, which studies economics on the basis of a multi-scientific systems approach, present it as a complex, regulated socio-economic-political-legal-technological integral system with the types of entities and relations corresponding to their provisions [11].

It should be noted that only on the basis of such a toolkit and special methodology it is possible to develop laws and rules of conduct that correspond to the modern banking system, which offers innovative digital banking products to solve a particular issue. This has become a great incentive for the development of a digital banking and financial system in Uzbekistan to finance investments in digital banking products.

However it is necessary to study not only innovation, but also the impact of systemic financial innovation, an analysis of the impact of innovation at the macro, meso and micro levels is required. Based on Schumpeter's theory of innovation, it can be seen that innovation at all levels has a positive impact on economy and its development [11].

The founder of the theory of "diffusion of innovations" E. Rogers believes that "diffusion is the process of diffusion of innovations through certain channels between members of the social system over a certain period of time." He believes there are 3 main elements to this, namely communication channels, time and social system. From the essence of E. Rogers' theory of "diffusion of innovations", it can be concluded that the process of introducing and using innovations is a process that depends on the environment and time [5].

Research conducted by international companies Huawei and Oxford Economics has shown that there are vertical and horizontal effects of digitization. From the point of view of socio-economic systemology, the theoretical rules for representing the economic system, which is regulated as a quasi-standard model of the banking and financial system under the influence of banking innovative products, have a balancing effect on the goal [12].

On the process of digital banking products penetration, the level of financial inclusion, which allows solving problems in the economy, is of great importance. There are many studies on its importance for the economy, as a result of which a relationship has been established in the country between macroeconomic indicators and the ability to use financial services [1, 2, 3]. This can serve as the basis for achieving the main purpose of this article.

It is worth remembering that innovative banking products can have both positive and negative impacts. and Schumpeter and Rogers list mostly positive effects only [11, 5]. It is given below, along with the positive effects of digitalization of banking services and negative ones in Table 1.

Table 1

SWOT analysis of the impact of financial technology and digital banking on economy¹

Strengths	Weakness
<ul style="list-style-type: none"> - can be used anywhere and anytime; - spending less time; - small cost effective fast transactions; - high profitability. 	<ul style="list-style-type: none"> - Low prevalence of digital technology use among adults over 45; - the need to fulfill technical requirements such as a computer, smartphone, Internet connection; - the presence of systemic deficiencies in the network.
Opportunities	Threats
<ul style="list-style-type: none"> - remote implementation of all banking services using digital technologies; - the choice of the right strategy by the government and the implementation of effective reforms will lead to the development of small and medium-sized businesses of digital banking products, to poverty reduction, to economic growth by accelerating economic processes; - the abundance of users of mobile smartphones allows Kengaitirishge to enter the market for these services; - continuous development in the field of information technology. 	<ul style="list-style-type: none"> - the ability to distribute a wide range of phishing, false information or misleading information; - the presence of problems with cybersecurity in the digital mode; - an ineffective wrong strategy or decision-making by the government or the head of the banking system can accelerate the complication of these decisions and send kengaytirib.

The SWOT analysis in Table 1 shows that there are also negative effects of these products. That is, the impact of the wrong strategy or decisions chosen in the country can lead to negative consequences of digital kengaytirib products. Experts from the International Monetary Fund believe that "countries are using the power of financial technology to promote economic growth and integration, as well as to reduce inequality[13].

Transfer of innovative products, its commercialization, the theory of "diffusion" in the economy, the "domino" theory [4], as well as the impact of innovation on the economy due to horizontal and vertical effects of innovation, the impact of innovative banking products on the economy can be expressed in a single model, shown in Figure 1 below. The models presented in Figure 1 can be interpreted as follows: the impact of banking innovations on the economy can be studied at 3 different levels, namely macro, meso and micro: banking innovations at the micro level can be viewed as a competitive effect from one bank to another, etc. due to their prevalence in the banking system, that is, their impact on the meso level, innovations in the banking system represent its impact on the economy, that is, at the macro level.

¹ The table was developed by the author as a result of the research carried out.

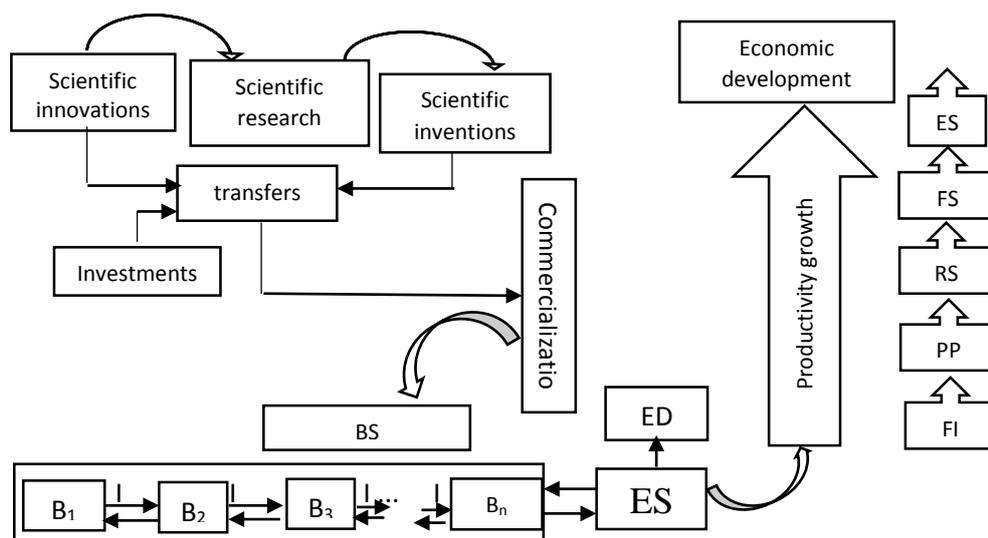


Figure 1. The basic model of the impact of IBM on the economy ²

This model proves once again the "theory of innovation" and demonstrates the importance of innovation for the economy using the example of a banking product.

Horizontal integration - digital banking products that appear in one bank (B_1), due to the competitive environment, in the second bank ($B_2, B_3 \dots B_n$) also begin to appear, which serves to accelerate the processes of digitalization of the economy (ir) due to the digitalization of the banking system (BS) and its integration with other sectors of the economy (ES).

Vertical effect from the introduction of an innovative banking product - this product is aimed at reducing the operational and time costs of operators (mi), a financial institution (FI), a regulatory supervisors (RS), a financial system (FS) and economic sectors (ES), accelerating investment flow and etc. The result is reflected in economic growth through increased productivity indicators.

Research Methodology

This study explores two methodological approaches: a systematic review of relevant scientific literature and analysis of data from database of the international organizations as the World Bank and IMF on the development of financial access and economic development.

The World Bank provides detailed indicators for 160 countries and economies around the world. As part of this work, main indicators of countries in the field of digital financial inclusion and economic growth in 2017 are analyzed.

Analysis and Results

Our analysis focused on studying the impact of the use of banking innovations on the indicators of a country's macroeconomic and financial stability. Based on a two-factor correlation analysis, we studied the correlation between macroeconomic indicators and indicators of the use of banking innovations in 160 countries and

² The figure was developed by the author as a result of the research carried out.

regions provided by the World Bank in 2017. Since this analysis only used 1 year metrics, it is worth investigating the correlation between them based on Spearman's rank correlation.

The following groups of indicators were used in this analysis:

1. The share of the population in which digital transactions are carried out or received – (RT) - GDP, GDP per capita, inflation and unemployment;
2. The share of the population who paid for or bought via the Internet (It) - GDP, GDP per capita, inflation and unemployment;
3. Percentage of population using a financial institution account using a mobile phone or the Internet (MPI) - GDP, GDP per capita, inflation and unemployment.

The results of the correlation analysis of the selected indicators are presented in Table 2 and are interpreted as follows.

Table 2

Analysis of the correlation between macroeconomic and innovative banking products of countries using the Spearman rank correlation method ³

	RT	It	MPI
GDP (157-160)	0.4233	0.5017	0.3715
High income counties (43та)GDP	0.3795	0.4775	-
GDP per capita(157-160)	0.8381	0.8768	0.6402
Low middle and low income countries (58-61) GDP per capita	0.3280	0.4378	-0.2732
High middle income countries (36) GDP per capita	-	0.4080	0.4245
High middle income countries (43) GDP per capita	0.7392	0.6660	0.4958
NPL (108-110)	-0.3282	-0.3736	-0.2924
Low middle and low income countries (58-61) NPL			0.3871
High income counties (40)	-0.4726	-0.4819	-0.5084
Inflation (149-153)	-0.3399	-0.3698	-0.2502
Unemployment (147)		-0.1693	

Source: World Bank

While the percentage of users of digital financial products in the population and the strong direct relationship between GDP and GDP per capita is weaker with the percentage of non-performing loans, which discourage inflation and underlying financial stability, there is an inverse correlation. In particular, RT, it, while the relationship with GDP was 31.2-50.2%, the relationship with GDP per capita of countries was 64.0-87.7%.

When countries are grouped by level of economic development, the relationship between these indicators changes. The relationship between GDP and the level of use of digital financial products in low-, low-middle- and high-middle-income countries is not statistically significant. But the correlation rate for 43 high-income countries is 38-48%.

³ The calculation was made by the author on the basis open data of the World Bank.

Annalysis of Table 2 shows that there is a close relationship between GDP per capita and digital banking innovation (up to 64.02-87.7%). However, their strength is 50-74% for high-income countries, 40-42% in high- and middle-income countries, and 33-44% in low- and middle-income countries. This is not statistically significant in the relationship between RT and GDP per capita in high middle income countries. In low-middle and low-income countries, there is an inverse correlation between the amount of MPI and GDP per capita (-27.3%).

There is a weak inverse correlation with inflation, which is 25-37%. The correlation between this indicator and the level of development is not statistically significant when grouped. Digital banking innovation has almost no effect on the country's unemployment rate. But there is an inverse correlation between the share of problem loans in the loan portfolio and banking innovations from 29.2% to 37.4%. In high-middle-income countries, the correlation between these indicators is not statistically significant. In low-average and low-income countries, there is only a weak correct correlation between MPI and NPL (38.7%). In high-income countries, there is a correlation between these indicators, and the correlation coefficient is close to 50% for all indicators.

Discussion

Infrastructural and technological factors associated with the problems of the availability of the necessary infrastructure (mechanism for the implementation of scientific research and experimental design work in the country, transfer and commercialization, financial and payment infrastructure) and technologies (smartphone, service centers, banking agent, mobile communication devices, Internet) to improve financial access [9].

Unfortunately, under the influence of the above factors, it is not easy to change the positive metrics of digital banking innovation, especially customer behavior. Financial technology cannot improve financial access. This requires an efficient payment system, a developed financial infrastructure, the implementation of consumer protection measures, etc. z. products. In order for these products to be highly effective, they need to be adapted for the passive groups of the economy, that is, for people with low financial literacy, women and the poor [14]. Also, as E. Rogers noted, for the successful implementation of innovation, the influence of traditions and values in this region is very great [5]. Scientific research has shown that increasing financial access has the right effect on its key indicators in the economy [1, 2, 3].

Conclusion and proposals

Based on the results of the above analysis, the following conclusions can be drawn:

1. In general, there is a link between digital banking innovation and GDP. The connection between these indicators is that it affects the level of economic development of the country.

2. There is a fairly strong link between digital banking innovation and GDP per capita. That is, the use of digital financial services serves to improve the well-being of the population.

3. Digital banking innovations may not always ensure the financial stability of a country. This was discussed using the example of NPL. With a highly developed financial system and infrastructure, the use of digital banking innovations serves to reduce non-performing loans, otherwise there is a risk that banks will also worsen their financial position.

Based on the foregoing, we can say that the methodological basis for the development and system analysis of the National Central Bank in the medium term, taking into account the global trend of harmonizing the macroeconomic policy of the developed state, is based on the fundamental work of the President of the Republic of Uzbekistan Sh. Mirziyoyev, as well as economic systemology. As a result, the created system will serve to increase the speed of cash flows in the economy, increase confidence in banks by reducing the risks of fraud, repairs and theft caused by the human factor, due to the participation of digital financial technologies, increase the rate of economic growth as a result of expanding digital financial access, and develop small business

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