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Innovations and Technological Development in the Financial Sector of Ukraine: SWOT Analysis and Comparison of Opportunities

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Abstract: In today's conditions, the competitiveness of the economy in the long term depends on sustainable economic growth, improvement of the quality of life and welfare of the population. Achievement of such results is facilitated by the efficient use of the resource, scientific, technical, and

financial potential, commercialisation of research and development, and active introduction of innovative goods and services into business practice. In this regard, there is a growing interest of the state and corporate structures in studying the experience of forming innovation systems; financing innovation activities on a global scale; and the country's transition to a new stage of development. Financing of innovation activity in the financial sector can ensure qualitative transformations in all spheres of economic life, so the relevance of this issue can hardly be overestimated. Given the critical relevance of the topic for the Ukrainian economy under martial law, the purpose of the article is to recognise the need to specify the strengths and weaknesses, as well as to diagnose the opportunities and threats to technological development of the financial sector. In order to achieve this goal, the following issues should be addressed: to outline the areas of the introduction of innovations and modern information technologies in the financial sector; to analyse statistical material on the introduction of innovations in the modern financial sector; to analyse the strengths, weaknesses, opportunities, and threats to technological and innovative development of the financial sector. As a result of the study, a statistical analysis was conducted, which showed that the modern financial sector has the potential for significant innovative development, but there are also significant risks in this area. The analysis revealed that the main risks in the area of innovative development of the financial sector are related to data protection and military operations in Ukraine. Therefore, the requirement for further development is a systemic nature and a comprehensive approach to introducing innovations in the financial sector.

Keywords: Innovative Development, Digitalisation, Innovative Technologies, Financial Sector, Financial Services, Threats and Opportunities, Strengths, Weaknesses, Data Protection.

Introduction

In today's world, amidst rapid change and unstoppable technological progress, the future of financial technology is transforming the way we manage money. The rapid development of digital innovations is rewriting the rules of the game in the financial sector, providing new opportunities for both consumers and businesses. However, the demand for innovation in the financial sector is uneven and closely linked to the development of the financial sector itself.

In view of this, in the modern scientific space, considerable attention is paid to the development of information technologies and the possibility of their application in the financial sector. For example, studies (Chen & Chan 2022; Dubyna et al., 2023; Hryhorash et al., 2022) note that with the advent of mobile applications and online banking, consumers can conduct financial transactions more conveniently and efficiently. This includes accessing accounts, transferring money, paying bills, and much more. The ability to access banking services quickly and remotely makes banking more convenient and accessible. Mobile apps allow you to conduct transactions anytime, anywhere. There is no need to visit a physical bank or branch. In addition, electronic transactions are much faster than traditional ones. This means that money can be credited or transferred in a matter of minutes. Also, modern apps provide a high level of data and transaction security, making them safe to use.

However, as data protection systems evolve, so do data collection and cybercrime systems (Ostropolska, 2021; Suprunenko et al., 2023; Buss et al., 2021). In this context, consumers should actively monitor the security of their data and choose reliable financial institutions and applications.

In general, most researchers (Goncharova, 2020; Kontokosta & Hong, 2021; Vives, 2019) agree that financial innovations and technologies bring many benefits to consumers, making it easier for them to access financial services, increasing security and providing a higher level of control over their finances. However, it is important to remember that with the development of technology comes new challenges, such as data privacy and cybersecurity (Fedyshyn et al., 2019; Kholiavko et al., 2021; Zhou et al., 2021). Consumers must therefore remain informed and cautious to maximise the benefits of

financial innovation and technology while minimising the risks. The financial sector continues to evolve, and its future promises even more innovation and convenience for consumers.

Research Problem

The basic problem of the study is to identify promising areas and difficulties that may arise in the process of introducing innovative technologies and high-tech solutions in the process of the formation and development of various financial services.

Research Focus

In the process of studying the problems of introducing innovations into the financial sector, it is worth focusing on the strengths and weaknesses, as well as opportunities and threats of using innovative technologies for the active development of the financial sector. Accordingly, the focus of the study should be on analysing the current state of innovation in the financial sector and conducting a SWOT analysis of the technological development of the financial sector.

Research Aim and Research Questions

Given the outstanding relevance of the research topic for the Ukrainian economy, the purpose of the study can be defined as the specification of strengths and weaknesses, as well as the diagnostics of opportunities and threats to the technological development of the financial sector. To achieve this goal, it is necessary to outline the areas of the introduction of innovations and modern information technologies in the financial sector; analyse statistical material on the introduction of innovations in the modern financial sector; analyse the strengths, weaknesses, opportunities, and threats (SWOT analysis) of technological and innovative development of the financial sector.

Materials and Methods

General Background

Innovations in the financial sector ensure a more efficient redistribution of resources, profitability, risks, liquidity, and information in order to obtain additional profit from such redistribution. The emergence and active implementation of financial innovations can be considered one of the development trends in international financial markets at the end of the 20th century. The process of introducing the latest technologies took place alongside deregulation, liberalisation, internationalisation, and globalisation.

In general, the following conditions have contributed to the emergence of financial innovations in the world:

- liberalisation of the financial sector and deregulation of the banking sector; relaxation of regulations, prudential supervision, and increased competition in the banking sector;
- increased uncertainty and risk in the global economy due to high and volatile inflation rates in developed countries. Imbalances in the international economy and high volatility in commodity prices;
- changes in the portfolio preferences of bank customers. Growth in consumer credit, changes in taxation and preferences for real estate investments (including due to changes in mortgage availability);
- changes in bank policy. Reorientation of the bank's development model from profit to growth (a long-term development plan with a focus on growth as opposed to short-term profit); transition of customers to self-service and automated systems; active use of derivatives; restructuring of bank branch networks, segmentation of banks' activities based on concentration in a particular type of banking

services, new forms and methods of dealing with banking risks (securitisation, development of new hedging instruments, etc.).

- changes in the structure of financial markets: growing demand for financial products with higher returns and greater risk;
- technological changes. Active informatisation and computerisation of the financial sector. As a result, the scope of financial services is expanding, and transaction costs are decreasing.

Accordingly, the above trends remain characteristic of the modern financial sector, but the need to protect customers' personal data and financial information is attracting increasing attention, which creates additional opportunities and threats that require more detail and deeper study.

Sample / Participants / Group

The participants of the study and those interested in the results are not only financial professionals who use information development tools for the financial sector, but also business owners who may understand the importance of using modern financial technologies, as well as private users of financial services.

Instrument and Procedures

The research tools are formed under the influence of the need to conduct a statistical analysis of the volume of innovation activity in the financial sector, as well as to identify opportunities and threats, as well as strengths and weaknesses of the innovative development of the financial sector. Accordingly, it is possible to systematise this using SWOT analysis, which can be considered one of the main tools for conducting the study and achieving its goal.

Data Analysis

The study used theoretical, analytical, and research materials of leading scholars (*Krylov et al., 2022; Popelo et al., 2021; Soltovski et al., 2020*), who focus on the use and development of innovations and modern technologies in the financial sector.

Results

The modern financial sector in any country, including Ukraine, is a high-tech and innovative industry. Therefore, modern information technologies open up additional opportunities for financial sector professionals to develop and provide new services. At the same time, it is important to understand what kind of new services can be provided using innovative technologies - Table 1.

Table 1

Developing financial services capabilities under the influence of innovative technologies

The direction of innovation in the financial sector	Characteristics	Additional opportunities and benefits of using innovative technologies
Decentralised finance and blockchain	On the one hand, the introduction of blockchain and cryptocurrencies has heralded the era of decentralised finance. This technology allows for safe	Transparency: All transactions are recorded in a public ledger, which eliminates manipulation and fraud.

	and secure transactions without intermediaries	Reduced costs: Eliminating intermediaries and bureaucratic processes reduces fees and simplifies transactions. Global accessibility: Cryptocurrencies allow you to send money anywhere in the world with minimal delays
Artificial intelligence and financial analysis	Artificial intelligence is revolutionising financial analysis. Machine learning algorithms are able to analyse huge amounts of data and identify trends that are difficult for humans to spot	Forecast accuracy: AI can predict risks and potential returns with high accuracy based on historical data. Automation of decisions: AI-enabled systems can automatically respond to changes in the market, reducing reaction times. Personalised approach: AI analyses customer behaviour to provide tailored financial advice
Robotic investing	Robo-advisors are another fruit of financial innovation that provides access to investing without the need for extensive knowledge and experience	Low entry thresholds: Even with small amounts, you can start investing through robot-advisors. Diversification: Robot algorithms distribute investments among different risk-reducing assets. Emotional neutrality: Robots make decisions based on data, minimising the influence of emotions
Financial education and technology	The way we receive financial education is changing as technology advances. Online courses, mobile apps, and learning platforms are making financial knowledge more accessible	Interactivity: Technology solutions make learning more interesting and engaging. Flexibility: Users can learn at a time and pace that suits them. Relevance: Courses can quickly adapt to changes in the financial sector. Security and cyber defence in financial innovation

Source: Compiled by the author based on (Beck, 2020; Cai et al., 2022; Kholiavko et al., 2021)

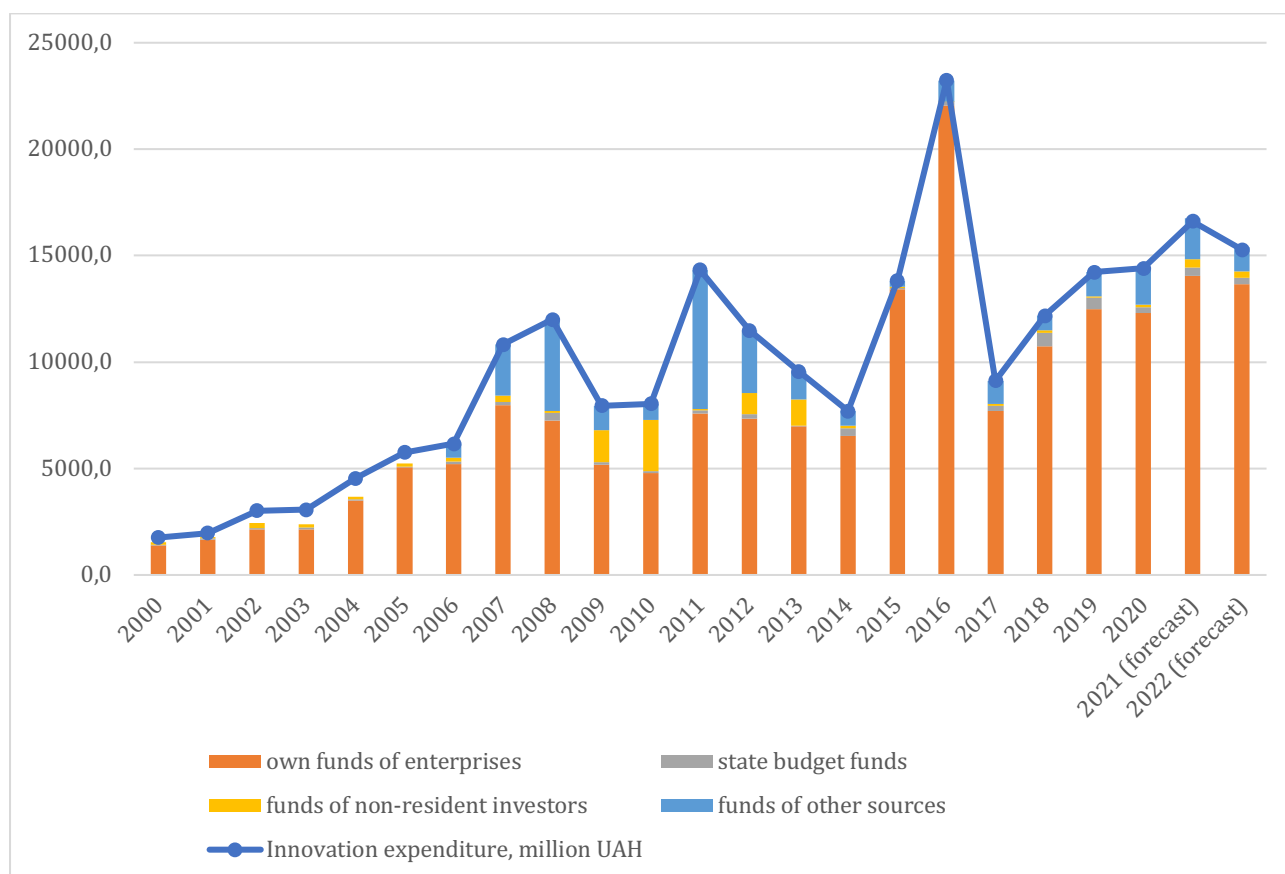
As financial innovation grows, so does the importance of ensuring the security of users' data and assets. Cybercriminals are increasingly targeting new technologies, and the financial sector is no exception (Kontokosta et al., 2021; Oneshko et al., 2021; Sermuksnyte-Alesiuniene et al., 2021). However, technology also provides the means to combat these threats.

Thus, financial innovations are significantly changing the paradigm of money management, making it more convenient, accessible, and efficient (Bataev et al., 2019; Chen et al., 2022; Kulkarni et al., 2021). Decentralised finance, artificial intelligence, robo-advisors, and educational technologies are all examples of how technological advances are driving the development of the financial sector and helping us to manage our finances more effectively.

Understanding the importance and multifaceted opportunities offered by innovative technologies for the financial sector, it is worth paying attention to the way in which innovations are used in Ukraine in the financial sector. Figure 1 shows the sources of funding for innovative development of the real economy.

Figure 1

Financing sources of innovation activities of industrial enterprises, million UAH



Source: (Economic statistics, 2023)

Figure 1 shows that the main sources of financing of innovations are own funds, and, accordingly, there is no system of financing innovations through the financial sector and no search for opportunities to stimulate investment activity of financial institutions. And here it is logical to move on to the analysis of the innovation activity of business entities in the financial sector - Table 2.

Table 2

Number of innovation active industrial enterprises by areas of innovation by type of economic activity

	Number of innovation active enterprises, units		Share of the number of innovatively active enterprises in the total number of enterprises, %.	
	2016-2018	2018-2020	2016-2018	2018-2020
Total	8173	2281	28,1	8,5
<i>Financial and insurance activities</i>	222	12	38,3	6,5

<i>Financial service activities, except insurance and pension funding</i>	135	5	40,1	4,2
<i>Insurance, reinsurance, and pension funding, except compulsory social security</i>	57	6	42,5	12,0
<i>Activities auxiliary to financial services and insurance activities</i>	30	1	27,5	5,9

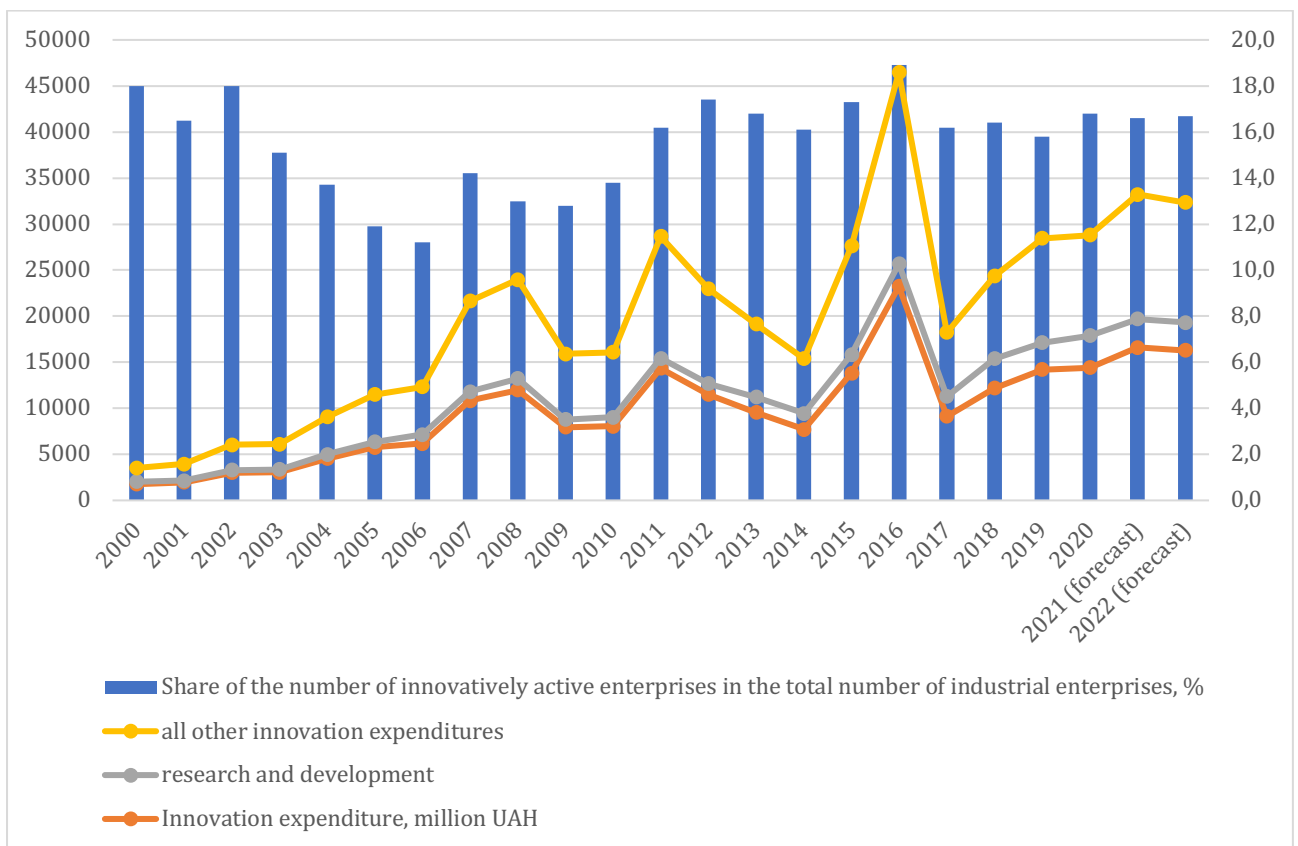
Source: (Economic statistics, 2023)

Table 2 shows that there has been a catastrophic decline in the number of innovative financial institutions. It is worth noting that the statistics are presented only until 2020, as some statistical material may not be published due to the introduction of martial law. Nevertheless, it can be assumed that during the period of military operations on the territory of Ukraine, the number of innovatively active financial institutions does not increase, as innovation development in non-military areas is not a priority.

To conclude the analysis of the statistical material, it is worth providing statistics on the volume of innovation expenditures of industrial enterprises to understand what kind of market for investment and financing of innovation projects may be open to the financial sector in the future.

Figure 2

Innovation expenditure of industrial enterprises, million UAH



Source: (Economic statistics, 2023)

Having analysed the innovation activity of the financial sector and the real sector as the main consumer of services, it can be noted that these sectors have innovative and technological potential for digital development, but the situation is developing rather slowly under martial law.

For a clearer and more complete understanding of the opportunities and threats to the development of innovation activity in the financial sector, it is advisable to conduct a SWOT analysis of this issue. Since one of the tools for analysing the strengths and weaknesses of an object is a SWOT analysis (Sousa et al., 2021; Tarasenko et al., 2022; Tulchynska et al., 2021), which allows assessing the real situation and development prospects of a particular object. SWOT analysis is a strategic planning method that allows you to develop certain recommendations based on in-depth analysis and with detailed arguments. Based on the results of a situational analysis, it is possible to assess whether a certain area has the internal strength and resources to realise opportunities and withstand threats, and what internal shortcomings need to be addressed as soon as possible.

The results of the SWOT analysis used to identify strengths and weaknesses, as well as opportunities and threats to the introduction of technological innovations in the financial sector of Ukraine are presented in Table 3.

Table 3

SWOT-analysis of the introduction of technological innovations in the financial sector of Ukraine

Strengths	Weaknesses
<ol style="list-style-type: none"> Potential for efficiency improvements. The introduction of technological innovations can help to increase productivity and optimise business processes in the financial sector. Increasing accessibility. New technologies can make financial services more accessible to businesses and individuals by reducing barriers to financial services. Cost reduction. The use of technologies such as artificial intelligence and blockchain can help reduce operational costs and risks 	<ol style="list-style-type: none"> Low technological readiness. Some companies may have a limited technical base or insufficient resources to effectively implement the latest technologies. Cybersecurity risk. With the development of technology, the threat of cyberattacks and data breaches is increasing, which can pose a serious threat to financial stability, and the number of cyberattacks has been increasing recently. Negative market reaction. The introduction of new technologies may cause resistance among users and customers who are not ready or willing to use new services
Threats	Features
<ol style="list-style-type: none"> Regulatory restrictions. Changes in legislation and regulation may limit the scope for technological innovation in the financial sector. Insufficient support from the government. Lack of government support and investment can slow down the development of technological innovation in the financial sector. Competition from global players. The emergence of foreign fintech companies may increase competition 	<ol style="list-style-type: none"> Development of the fintech ecosystem: The introduction of technological innovations can foster the development of fintech start-ups and new industries in the financial sector. Improving the customer experience: The use of the latest technology can help financial institutions improve customer service and provide personalised services.

for local market players and pose a threat to their business. 4. Power threats due to active hostilities in Ukraine. Increased shelling and the risk of asset loss may deter financial business owners from implementing innovations	3. Increased competitiveness: Companies that actively implement technological innovations can gain a market advantage and increase their competitiveness
Strategic challenges	Strategic objectives
Lack of a stable and predictable environment for the long-term development of the financial sector in the context of innovation	Finding an optimal action plan for the implementation of innovative technologies even under martial law and ensuring the protection of personal and corporate data

Source: Compiled by the author based on (Chen et al., 2020; Hurzhyi et al., 2022; Ionescu et al., 2023)

In general, it is worth noting that there are many more threats to the modern Ukrainian financial sector, especially given the active hostilities in Ukraine, but financial institutions continue to operate actively, and accordingly, the key components of the SWOT analysis were identified.

Discussion

Today's realities require modern financial institutions to take into account current trends in the digitalisation of the economy and stipulate that for the quality management of innovation activities, it is necessary to use modern information technologies, including not only data protection and the creation of preconditions for the rapid processing of financial information. The issue of information analysis and data protection is controversial in terms of who should deal with this issue and whether data protection is the sole responsibility of the financial sector or whether the state should also be involved in these processes. In the authors' opinion, it is innovation in the financial sector that should be stimulated and encouraged by the state, without its direct involvement.

However, it should also be recognised that the development of innovation activity in the Ukrainian financial sector during the war may raise various controversial issues that should be addressed:

- ensuring security and stability, it is therefore necessary to understand how to ensure the safety of financial innovation projects in a conflict zone or under the influence of military threats (Kholod et al., 2021; Ostropolska, 2021);
- creating a favourable investment climate even in times of war. The question of how to attract investment in innovative projects of the Ukrainian financial sector when the country is at war remains a matter of debate. The risks of such investment are extremely high, and investors willing to invest in such risks are difficult to find.

The literature (Kolinets, 2023) also suggests that it is necessary to determine which technologies can be key to the development of the financial sector in times of war and which innovations can help ensure the availability of financial services in all regions of the country. However, this question has not been answered, as for most financial institutions, active development in the innovation space and the implementation of the latest technologies is a matter of post-war development. However, it should be noted that today many large Ukrainian banks are implementing new data protection systems and successfully withstanding cyberattacks.

Another critical aspect of the innovative development of the financial sector is the development of financial education (Lucato et al., 2019) and training (Martin et al., 2022). Employers and financial institutions themselves should be involved in the process of training specialists and determine what

education and training programmes are needed to provide personnel who will be able to implement innovative projects in the Ukrainian financial sector, taking into account the peculiarities of the military and political situation.

These issues can be discussed to identify strategies and technologies that will help strengthen the financial system in times of war and facilitate its further development.

Conclusions and Implications

Financial innovations are a key driver of the modern economy. They are changing the landscape of financial markets, providing new opportunities for investors, entrepreneurs, and even ordinary consumers. Everything from digital currencies and blockchain to fintech start-ups, from decentralised financial platforms to innovations in mobile banking is contributing to the evolution of the financial industry.

An analysis of statistical data on the use of innovative technologies in the financial sector in Ukraine has shown that the amount of funding for innovation is declining, while the need to protect against cyberattacks is becoming increasingly acute. At the same time, it should be borne in mind that the country is at war, and therefore the risks of investing in any area are quite high.

A SWOT analysis to identify opportunities and threats to innovation in the financial sector, as well as the strengths and weaknesses of this area, has shown that the financial sector is unstable but has significant prospects for further development, especially in the post-war recovery period.

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Conflict of Interest

None.

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