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# ASSESSMENT OF THE EFFECTIVENESS OF FINANCIAL SERVICES CONSUMER PROTECTION MECHANISMS IN THE IRAQI STOCK MARKET IN THE CONTEXT OF DIGITALIZATION

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## ABSTRACT

Today, the development of the financial services market in the context of digitalization dictates the need to develop an effective system for protecting the rights of both investors and consumers of financial services. This study examines the effectiveness of mechanisms for protecting consumers of financial services in the Iraqi stock market in the context of digitalization. The purpose of this study is to quantitatively analyze the risks of investing in the Iraqi stock market, taking into account current specifics. This will enable the development of recommendations on risk management for both investors and consumers interested in new financial instruments. The main research methods used were: analysis of statistical data on the depth, accessibility of financial and insurance services, as well as the effectiveness of the stock market and the level of digitalization in Iraq, and expert assessments of the prospects for further development of digitalization processes. According to the results of the study, the security of the stock market in Iraq is weak, requiring the development of new tools that will increase the level of insurance protection for both investors and consumers in the stock market. One of the tools and factors that attracts small retail investors to the capital market may be a compensation fund for an individual investment account. In the future, the regulation of digital financial assets will make it possible to significantly reduce risks and increase the transparency and liquidity of the stock market.

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**Keywords:** Financial services; Stock market; Digitalization; Consumer protection; Risk assessment; Compensation fund.

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## 1. INTRODUCTION

Consumer protection is currently of great importance in the financial services sector to ensure the fair treatment of individuals and to maintain trust in financial institutions. Like many other countries, Russia faces the challenge of creating reliable consumer protection mechanisms in this sector. Therefore, by developing effective mechanisms, it is possible to minimize consumer risk and increase confidence in financial services.

The Iraqi stock market, established in 2004, is managed by the Iraqi Stock Exchange, an independent government organization. Currently, more than 100 companies from various fields of activity such as oil production, banking, trade, and agriculture are registered in the Iraqi stock market. As a result, the trading volume on the exchange is relatively small because there is a lack of liquidity, transparency, and investor confidence in the market. The Iraqi stock market operates on the NASDAQ electronic trading system, which provides traders with the ability to remotely place orders.

It is also necessary to be aware of the role of technological progress in establishing and improving mechanisms to protect the rights of consumers of financial services. The emergence of digital financial services requires innovative approaches to ensure the confidentiality of users, their data, and the transparency of transactions. Modern technological developments such as electronic identification systems can enhance consumer protection by strengthening transaction security and tracking. In the context of effective consumer protection, the value of complaints should be emphasized as a tool for expressing customer dissatisfaction and finding ways to resolve problems. Indeed, complaints provide a reliable picture of the typical difficulties faced by consumers and suggest to regulators and policymakers which issues are recurring and which patterns of misconduct or immoral acts may occur in the financial environment.

When dealing with consumer complaints, an opportunity is created to restore justice and receive compensation for losses or compensation caused by illegal actions in the field of financial transactions. A systematic procedure for reviewing these appeals provides users of financial services access to institutional dispute resolution mechanisms, which gives them the chance that their objections will be heard and resolved objectively and fairly. Such measures demonstrate confidence in the financial system and guarantee the availability of fair and effective remedies.

The complaint-handling process activates consumers, expands their knowledge, and strengthens their rights and competencies. Informing consumers about their rights, legal protection mechanisms, and encouraging them to express their difficulties makes them more aware of and proactive in defending their own interests. This approach encourages the formation of a culture of responsibility and increases financial institutions' motivation to persistently and effectively protect consumers' interests and increase the transparency of the services provided to them.

## 2. A LITERARY REVIEW

The digitalization of financial services and the emergence of fintech companies have led to significant changes [13]. Fintech is a rapidly developing field at the intersection of finance and technology, where technology startups and other newcomers adopt innovative approaches to products and services currently provided by traditional financial institutions. An analysis of literature shows that the digital transformation of the financial market is accompanied by an increase in the risk of losses for both financial service providers and consumers of financial services. A decline in the pace of development of the financial market generates risks for the state in the face of market regulators [11].

However, according to postmodern portfolio theory, the study [12] found a clear discrepancy in the values of profitability and risk indicators compared to modern portfolio theory because of different philosophies and calculation methods when building a portfolio. This study also contributes to further research and investors looking forward to investing in the Iraqi Stock Exchange.

We agree with the research of Balychev and Sedykh, who believe that digitalization, in addition to its advantages, has several problems that should be considered when introducing digital technologies to avoid serious socio-economic consequences [6]. With the advent of new technologies and digitalization, new advantages and amenities have appeared, as well as risks that are actively being tried to combat at all levels [1]. These can be divided into the following groups:

Group 1. Emerging due to a special consumer perception (digital illiteracy, careless attitude towards virtual money, and behavioral problems).

Group 2. Due to imperfections in the digital financial services market (abuse of the user's "digital footprint" by companies, attempts to monopolize companies in various digital spheres)

[2].

Group 3. Presence of scammers. The digital space provides a wide range of opportunities not only for ordinary people but also for scammers, giving them the opportunity to realize themselves through phishing; pharming [3]; spyware that transmits all information to scammers, hacking, and financial pyramids, which are usually tried to pass off as advanced technologies.

Group 4. Negligent protection of digital financial services: insufficient attention of the company to the protection of citizens' data, weak analysis of possible ways to circumvent protection, and failures during international transactions.

Group 5. Related to the features of digitalization, digital failures cannot only interfere with the provision of financial services, but also "bring down the entire system. Coded decision-making can lead to a type of failure in which the program will offer an operation only under unfavorable and irrelevant conditions [4, 5].

It is well known that the increased interest in improving consumer protection of financial services underscores the importance of this area. A key result of past work is the identification of the problem of the spread of practices aimed at abusing consumer interest in the financial sector. Such practices, including the provision of loans on special terms, have led to financial difficulties among many consumers, especially among people with limited resources and older generations [14].

It is equally important to recognize the impact of financial education on the effectiveness of consumer protection of financial services. The limited knowledge of Russian consumers in the financial field increases their risk of becoming victims of malicious actions by sellers of these services. Thus, in addition to legislative measures, it is necessary to implement measures to educate consumers, which will allow them to take thoughtful financial action and defend their rights. Initiatives to improve financial awareness can significantly strengthen consumers' legal protection and reduce their vulnerability to crime.

Investing in digital financial assets entails significant risks, including credit, market, liquidity, technological, and legal risks. We agree that the main mathematical tools for assessing these risks are CAPM, VaR, and Monte Carlo [10]. These tools provide depositors with opportunities to minimize potential losses and make informed decisions. Digital assets definitely have significant advantages, but despite this, there is a need to develop a regulatory framework for their

regulation. Improving the regulatory framework for regulating digital assets will expand the use of digital assets among mass consumers, as well as professional investors.

### 3. RESULTS AND DISCUSSION

The Iraqi Stock Exchange is an important element of the country's economy, stimulating investment and financial transparency, and contributing to the diversification of the Iraqi economy by providing enterprises with access to the financial resources necessary for their development and innovative projects. The IX 60 index is the main index for stock market activity. It comprises 60 companies that are the most active and representative of the Iraqi stock market. In this case, it is calculated based on the market value of the companies that are a part of it. It was launched in 2006 at an initial cost of 100 points.

In recent years, the ISX 60 index has undergone significant fluctuations in relation to political and security developments. In 2011, it reached its highest level of 281 points, and then dropped to 92 points in 2014, after the emergence of the Islamic State and the decline in oil prices. By the end of 2020, it had recovered to 139. According to data provided by the Iraqi Securities Commission for 2019 and 2020, the number of investors in the Iraqi stock market increased by 25%, reaching 1.2 million people. At the end of 2010, the company's capitalization was approximately \$20 billion. This is about 7% of Iraq's total GDP. In 2023, it also amounted to \$20.02 billion.

Using the expert assessment method, a list of indicators reflecting a quantitative assessment of risks in the Iraqi stock market in the context of digital transformation was determined. The expert assessment was attended by 10 experts: representatives of the scientific community (five people), experts in the field of foreign policy (two people), and experts in the field of digital technologies (three people). Experts were asked to identify a list of stock market indicators closely related to digital technologies. As a result of the expert assessment, the indicators that received the highest rating in the rating of the received expert assessments were determined in the context of the five selected groups.

Let's present an algorithm for developing a methodology for quantifying risks in the Iraqi stock market in the context of digital transformation in Table 1.

**Table 1: Stages of the methodology for quantifying risks on the Iraqi stock market in the context of digital transformation**

Stage number	Stage name	Activities carried out	Methods used
Stage 1	Determining the development of the Iraqi stock market in the context of digitalization	Formation of a list of indicators for expert assessment and selection of indicators that have the greatest impact on risk assessment on the Iraqi stock exchange in the context of digitalization	The expert assessment method
Stage 2	Collecting indicators of the development of the Iraqi stock market in the context of digitalization	Based on data from the Iraqi Stock Exchange, a collection of indicators was carried out in the context of the last five years from 2019 to 2023.	The method of statistical analysis
Stage 3	Analysis of the dynamics of the development of the Iraqi stock market in the context of digitalization	The dynamics of the indicators is presented clearly in the form of figures	The method of dynamic indicators analysis
Stage 4	Calculation of the development of the Iraqi stock market in the context of digitalization	Selection of indicators to evaluate each component of financial accessibility and to compile a matrix of indicators. Calculation of average values. Calculation of the standard deviation. Calculation of standardized values of standards. Determining the reference value of a potential function. Calculation of the integral indicator	The method of integral estimation of multidimensional dynamic analysis

Compiled by the authors

In this regard, we propose a list of indicators in the context of the four groups, reflecting the

indicators of the development of the Iraqi stock market in the context of digitalization (Table 2).

**Table 2: Indicators of the development of the Iraqi stock market in the context of digitalization**

Indicators	2019	2020	2021	2022	2023
<b>The depth of financial services in the stock market</b>					
Stock market capitalization, million dollars (A)	531,22	1955,2	37921,71	22404,1	20023,99
<b>Availability of financial services on the stock market</b>					
Exchange trading volume in % of GDP, (B)	0,23	1,08	18,26	8,48	6,66
<b>Availability of insurance services on the stock market</b>					
Non-personal insurance premiums, % (C)	0,92	0,61	0,29	0,23	0,22
<b>Efficiency of financial services in the stock market</b>					
Stock market turnover ratio (shares traded/capitalization), (D)	0,73	0,14	0,55	0,83	0,53
<b>The level of digitalization of financial services in the stock market</b>					
ICT Development Index, (E).	53,0	54,1	55,8	62,0	69,5

Compiled by the authors based on the data [7]

When using the correlation analysis method, based on the data in Table 2, we calculate the correlation coefficient, which is used to determine the degree of correlation between the ICT development index and the stock market development indicators. Table 3 presents the results.

The stock market capitalization index and the digitalization index have a weak relationship because there is no significant increase in the volume of the stock market during periods of the rise in the digitalization index. At the same time, we are witnessing a decrease in the volume of capitalization of the stock market from 2021 to 2023, while since 2019, there has been a significant increase in this indicator. The digitalization index in Iraq has a stable growth trend.

The stock exchange trading volume in Iraq in the analyzed period has a cyclical nature of development, but in general, the trend line shows

positive dynamics despite significant fluctuations, significant growth in 2021 compared to 2020, and a decline in 2022 and 2023. In 2021, there was a significant increase in the volume of exchange trading, an increase of almost 18 times compared to 2020, due to the exit of enterprises from the COVID-19 pandemic. Despite the crisis caused by the pandemic and sanctions, the digitalization index in Iraq continues to grow throughout the analyzed period. The indicator of the volume of exchange trading is poorly integrated with the digital transformation index, which indicates a lack of connection between the indicators of the availability of financial services in the stock market and the level of digitalization in Iraq presented for analysis.

Data on the dynamics of the availability of insurance services in the stock market and the level of digitalization in Iraq indicate a decrease in the volume of premium bulging in the insurance

market, which is inversely related to the level of digitalization. This indicates a significant relationship between the presented indicators, since with an increase in digitalization, there is a decrease in the volume of premiums for non-personal insurance.

A significant decrease in non-personal insurance premiums is observed in 2021 compared with 2019, which is associated with a reduction in the volume of insured events. The turnover ratio of the stock market in Iraq in 2020 decreased by 81% compared with 2019, which should be noted as a period of low

demand for securities. Then, from 2020 to 2022, the indicator increased by more than five times, and in 2023, there was a decline of 36.2% again. The stock market turnover ratio has a weak relationship with the digitalization index.

When using the correlation analysis method, based on the data in Table 2, we calculate the correlation coefficient, which is used to determine the degree of correlation between the ICT development index and the stock market development indicators. Table 3 presents the results.

**Table 3: Correlation analysis results**

Indicators	Stock market capitalization, millions of dollars	Exchange trading volume as % of GDP,	The volume of non-personal insurance premiums, %	Stock market turnover ratio	The ICT Development Index, (E)
Stock market capitalization, millions of dollars	1				
Exchange trading volume in % of GDP,	0,980241	1			
The volume of non-personal insurance premiums, %	-0,80661	-0,6977	1		
Stock market turnover ratio	0,283399	0,213127	-0,11809	1	
The ICT Development Index, (E)	0,357868	0,173132	-0,7345	0,218301	1

Compiled by the authors based on the data in Table 2

The analysis of the correlation coefficient showed that, according to the Chaddock scale (Table 3), a high index of non-personal insurance premiums has a strong inverse relationship with the ICT development index (- 0.7345). The stock market capitalization index has a moderate correlation of 0.357. All other indicators are in the range of weak correlation with the ICT development index.

For a more objective assessment of the impact of digitalization on the Iraqi financial market, we propose to calculate the development of the Iraqi stock market in the context of digitalization using an integrated assessment of multidimensional dynamic analysis.

The algorithm for calculating a comprehensive assessment of the effectiveness of consumer protection mechanisms for financial services in the context of digitalization of each component presented in the first period includes the following stages:

: selection of indicators to evaluate each component of financial accessibility and compile a matrix of indicators  $x_{ij}$ ;

: calculation of the average values of the  $j$  indicator ( $\bar{x}$ ).

$$\tilde{x} = \frac{(x_1+x_2+\dots+x_j)}{n}, \tag{1}$$

where  $x_1, x_2, x_j$  are the indicators in a certain period;

$n$  is the number of periods.

: calculation of the standard deviation of the  $j$ th index ( $S_{xj}$ );

$$S_{xj} = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{(n-1)}}, \tag{2}$$

: selection of reference values of indicators characterizing this component in the observed period ( $x_j^*$ );

Calculation of standardized reference values ( $Z_j^*$ )

$$Z_j^* = \frac{x_{ij}}{S_{xj}}, \tag{3}$$

- determination of the reference value of the potential function ( $Y^*$ )

-Comprehensive assessment of the effectiveness of consumer protection mechanisms for financial services in the context of digitalization in the first period.

Based on the data presented in table 2, we calculate the components of the effectiveness of consumer protection mechanisms for financial services in the context of digitalization, and the results are presented in table 4.

For the calculation, we take the reference value of the comprehensive assessment indicator in the analyzed period, which is indicated in the designation (\*).

**Table 4: Calculation of financial accessibility components for investors in the financial market**

Indicators	2019	2020	2021	2022	2023	Growth rates, %	
						2023/2019	2023/2022
1	2	3	4	5	6	7	8
<b>The depth of financial services in the stock market</b>							
A*	22404,1					-	-
A	531,22	1955,2	37921,7	22404,1	20024	3769,43	89,38
Deviation, %	2,37	8,73	169,26	100,00	89,38	-	-
<b>Availability of financial services on the stock market</b>							
B*	18,26					-	-
B	0,23	1,08	18,26	8,48	6,66	2895,65	78,54
1	2	3	4	5	6	7	8
Deviation, %	1,26	5,91	100,00	46,44	36,47	-	-
<b>Availability of insurance services on the stock market</b>							
C*	0,92					-	-
C	0,92	0,61	0,29	0,23	0,22	23,91	95,65
Measurement, %	100,00	66,30	31,52	25,00	23,91	-	-
<b>Efficiency of financial services in the stock market</b>							
D*	0,83					-	-
D	0,73	0,14	0,55	0,83	0,53	72,60	63,86
Measurement, %	87,95	16,87	66,27	100,00	63,86	-	-
<b>The level of digitalization of financial services in the stock market</b>							
E*	69,5					-	-
E	53	54,1	55,8	62,1	69,5	131,13	111,92
Measurement, %	76,26	77,84	80,29	89,35	100,00	-	-

Compiled by the authors

Based on the data in table 4, we calculated the integrated assessment of each component; the results are presented in table 5.

**Table 5. Calculation of a comprehensive assessment of stock market components in the context of digitalization in Iraq**

Indicator	$\bar{x}_j$	$S_{xj}$	$x_j^*$	$Z_j^*$	$(Z_j^*)^2$	$a_j$	$a_j Z_j^*$
A	16567,24	5271,75	754,7	0,235	0,055	0,560	0,13181
B	6,94	2,45	33,24	0,134	0,018	0,182	0,02441
C	0,45	0,10	0,89	0,112	0,013	0,127	0,01431
D	0,56	0,09	41,44	0,108	0,012	0,119	0,01290
E	58,9	2,33	15,7	0,034	0,001	0,011	0,00038
Total	-	-	-	-	0,0988	-	-

Compiled by the author

The weight of the indicator in the comprehensive assessment  $a_j$  is determined using Equation 4:

$$a_j = \frac{Z_j^*}{\sqrt{\sum_{j=1}^n (Z_j^*)^2}} \tag{4}$$

Based on the data obtained, an equation of the integral indicator for assessing the level of the components of the effectiveness of consumer protection mechanisms for financial services in the stock market in the context of digitalization in Iraq ( $I_{oc}$ ) was obtained, which has the following form:

$$I_{oc} = 0,013181A + 0,02441B + 0,001431C + 0,01290D + 0,00038E$$

For a comprehensive assessment of the components of the effectiveness of financial services and consumer protection mechanisms in the stock market in the context of digitalization, standardized values of indicators characterizing the potential of individual components of financial service accessibility were calculated, and changes in the level of financial accessibility potential were analyzed.

Changes in stock market indicators in the context of Iraq digitalization (Table 6).

**Table 6: Integrated assessment of stock market performance in the context of digitalization in Iraq in 2019-2023**

Indicator	2019	2020	2021	2022	2023
a <sub>1</sub> A**	70,02	257,71	4998,35	2953,02	2639,30
a <sub>2</sub> B**	0,006	0,026	0,446	0,207	0,163
a <sub>3</sub> C**	0,013	0,009	0,004	0,003	0,003
a <sub>4</sub> D**	0,009	0,002	0,007	0,011	0,007
a <sub>5</sub> E**	0,020	0,021	0,021	0,024	0,026
I <sub>oc</sub> **	70,068	257,768	4998,828	2953,265	2639,499
Growth rates, %	-	367,88	1939,27	59,08	89,38

Compiled by the authors

According to table 6, the integral indicator of the financial accessibility potential in the Iraqi stock market in the context of digitalization is increasing in 2021 compared with previous periods.

#### 4. CONCLUSION

The results indicate weak security of the stock market in Iraq, which requires the development of new tools to increase the level of insurance protection for investors in the stock market. Such tools can be compensation funds for an individual investment account, which will become another factor in attracting small retail investors to the capital market. This fund should not protect against market risks and investors should not be deluded about. We agree with the opinion of the author [8] that further development of systems for protecting the rights of financial service clients is required.

Applying the theory of markets and the concept of a market ecosystem, we can say that new technologies (and changes in legislation) create opportunities for innovative fintech companies to challenge existing banks [15]. They act as catalysts in the transition to a more complex financial market ecosystem. Rather than forming an entirely new business domain or threatening to completely destroy existing participants and business models, fintech companies are integrating into this new market ecosystem, using shared digital infrastructure to develop a complex set of competitive, cooperative, and cooperative relationships with established participants – or, in a

nutshell, through "cooperative interdependence. [16].

In the context of the digitalization of financial services, stricter regulatory control over consumer rights protection is required, which should be expressed in the development of behavioral supervision. It is advisable to develop business standards for financial institutions that would prohibit unfair practices. The emergence of standards in the field of consumer protection provides an opportunity to determine the mechanism of all behavioral tactics and consolidate them in the corporate risk management standards of banking structures. In addition, the creation of basic standards for the protection of consumers of services minimizes unfair behavior in the financial services market and increases public confidence in this sector of the economy [9]. The implementation of stricter control over regulatory legal acts, increasing user awareness, expanding conflict resolution methods, strengthening oversight, and supporting the cooperation of stakeholders are key actions to create an integrated and effective protection system. The application of these measures will help the financial sector to better meet the needs and protect the interests of customers, raising the level of trust in the industry. In the future, the legal regulation of digital assets will make it possible to significantly reduce risks and increase the transparency and liquidity of the digital financial asset market.

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