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The effect of digital transformation on the performance of the banking sector in Kazakhstan

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Abstract

This paper examines the impact of banking digitization on the development of the banking industry, particularly on banking performance. This study aims to identify critical factors for the development of financial banks and factors for the development of banking digitization in the banking sector of Kazakhstan. Based on this purpose, the core of banking digitization and its definition will be examined. The study conducted a comprehensive analysis that provided quantitative and qualitative characteristics of the development of digital technology and its impact on the development of the banking industry. The problems set out in this paper are solved using quantitative and financial analysis methods. The point index method was used during the study. Data from Halyk Bank's annual reports from 2019 to 2023 were used to assess digitalization's penetration into the banking industry. A panel approach is also used, allowing for data analysis for individual banks. Our research concludes that bank digitalization clearly impacts bank performance, focusing on the number of digital banking users, digital banking transactions, and IT investment growth on bank performance (such as return on equity, RoAE). The research findings provide implications for the practice of digital transformation of banks, especially in terms of digital investment and performance improvement. This study lays a foundation for future research on the impact of digital transformation on bank performance and provides a reference for investment decisions in the Kazakhstan banking industry.

Keywords: digital banking, banking performance, digital transformation, digital banking users, digital transaction volume, investment, Kazakhstan, banking industry

Цифрлық трансформацияның Қазақстандағы банк секторының көрсеткіштеріне әсері

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Түйін

Бұл мақала банктік цифрландырудың банк саласының дамуына, әсіресе банк қызметінің тиімділігіне әсерін зерттейді. Бұл зерттеу қаржылық банктердің дамуының маңызды факторларын және Қазақстанның банк секторындағы банктік цифрландыруды дамыту факторларын анықтауға бағытталған. Осы мақсаттың негізінде банктік цифрландырудың өзегі және оның анықтамасы қарастырылатын болады. Зерттеу барысында цифрлық технологияның дамуының сандық және сапалық сипаттамалары және оның банк саласының дамуына ықпалы қарастырылған кешенді талдау жүргізілді. Бұл жұмыста көрсетілген мәселелер сандық және қаржылық талдау әдістерін қолдану арқылы шешіледі. Зерттеу барысында нүктелік көрсеткіш әдісі қолданылды. Цифрландырудың банк саласына енуін бағалау үшін Халық банкінің 2019-2023 жылдарға арналған жылдық есептерінің деректері пайдаланылды. Жеке банктер үшін деректерді талдауға мүмкіндік беретін панельдік тәсіл де қолданылады. Біздің зерттеулерімізге сүйене отырып, біз банкті цифрландыру цифрлық банкингті пайдаланушылар санына, цифрлық банктік транзакцияларға және банк өнімділігіне АТ инвестицияларының өсуіне (мысалы, меншікті капиталдың кірістілігі, RoAE) назар аудара отырып, банктің жұмысына нақты әсер етеді деген қорытындыға келдік. Зерттеу нәтижелері банктердің цифрлық түрлендіру тәжірибесіне, әсіресе цифрлық инвестициялар мен өнімділікті арттыруға қатысты әсер етеді. Бұл зерттеу цифрлық трансформацияның банк жұмысына әсері туралы болашақ зерттеулердің негізін қалайды және қазақстандық банк индустриясындағы инвестициялық шешімдерге анықтама береді.

Кілттік сөздері: цифрлық банкинг, банктік өнімділік, цифрлық трансформация, цифрлық банкинг пайдаланушылары, цифрлық транзакция көлемі, инвестиция, Қазақстан, банк индустриясы

Влияние цифровой трансформации на эффективность банковского сектора Казахстана

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Аннотация

В данной статье рассматривается влияние банковской цифровизации на развитие банковской отрасли, в частности на банковскую эффективность. Целью данного исследования является выявление критических факторов для развития финансовых банков и факторов развития банковской цифровизации в банковском секторе Казахстана. Исходя из этой цели, будут рассмотрены ядро банковской цифровизации и ее определение. В ходе исследования был проведен комплексный анализ, который предоставил количественные и качественные характеристики развития цифровых технологий и их влияния на развитие банковской отрасли. Проблемы, изложенные в данной статье, решаются с использованием количественных и финансовых методов анализа. В ходе исследования использовался метод точечного индекса. Для оценки проникновения цифровизации в банковскую отрасль использовались данные из годовых отчетов Народного банка за 2019–2023 годы. Также используется панельный подход, позволяющий проводить анализ данных по отдельным банкам. На основании нашего исследования мы приходим к выводу, что банковская цифровизация явно влияет на эффективность банка, уделяя особое внимание количеству пользователей цифрового банкинга, транзакциям цифрового банкинга и росту инвестиций в ИТ на эффективность банка (например, рентабельность капитала, RoAE). Результаты исследования дают выводы для практики цифровой трансформации банков, особенно с точки зрения цифровых инвестиций и повышения производительности. Это исследование закладывает основу для будущих исследований влияния цифровой трансформации на производительность банков и предоставляет справочную информацию для инвестиционных решений в банковской отрасли Казахстана.

Ключевые слова: цифровой банкинг, банковская эффективность, цифровая трансформация, пользователи цифрового банкинга, объем цифровых транзакций, инвестиции, Казахстан, банковская отрасль

Introduction

In recent years, the banking sector has undergone tremendous change, moving from automation to digitization, driving innovation and improving the efficiency of financial services. First, banks automated services through ATMs and smart cards, reducing manual operations and improving business processing efficiency. Later, the arrival of the electronic stage gradually popularized interbank transfers, mobile payments, online shopping payments, online lending, and other services, which significantly improved the financial transaction experience of customers.

Today, digitalization has become the core of the development of the banking industry, and the widespread application of technologies such as digital currency, innovative finance, and artificial intelligence customer service has improved financial service operations and promoted the transformation and upgrading of business models. The digital transformation of the banking industry not only accelerates the application of financial technology and improves the overall customer experience through innovative products and smart services. This trend represents the transformation of banking from traditional offline operations to a full range of online service models, laying the foundation for the intelligent development of the future financial system [1].

In this article, the focus is on the relevance of this digital transformation to Kazakhstan's banking sector. Given that Kazakhstan is developing its economy at a rapid pace and has a high demand for inclusiveness and modernization in the financial industry, the topic of banking digitalization has become an indispensable part of the growth and sustainable development of this industry. Kazakhstan is in a stage of rapid economic development, and the demand for modernization of the financial system is increasing.

Against this background, the digital transformation of the banking industry has become an indispensable factor in promoting industry growth and sustainable development. In recent years, with the popularization of digital technology in the global financial field, Kazakhstan's banking industry has also responded positively, accelerating the shift from traditional operating models to digitalization by introducing innovative financial services such as digital banking services, mobile payments, and online loans. Changes in service models [2].

From the Kazakhstan government's support policies for financial technology innovation, we can see that Kazakhstan has a highly inclusive financial environment. At the same time, more and more banks realize that digital transformation is not only a means to improve efficiency, but also enhance market competitiveness. Strategic choices to attract customers and meet diverse needs. Especially as consumer demands become increasingly diversified, the convenience of digital banking service models that enable customers to access financial services anytime and anywhere has greatly improved customer experience and also reduced banks' operating costs [3].

Against this background, this study aims to analyze the specific impact of digitalization on the performance of banks in Kazakhstan and to study the optimization of operational efficiency and customer satisfaction in the wave of digitalization. This not only provides digital transformation strategies for financial institutions to learn from, but also provides data support and practical cases for governments and relevant regulatory authorities to formulate policies to support the development of financial technology.

The purpose of this paper is the impact of digitalization of the banking industry on the operational performance of banks in Kazakhstan. To this end, after reading a large amount of literature on the digital transformation of the banking industry, learn and understand the current research and challenges on the digitalization of the banking industry. At the same time, based on the research purpose of this article, after reviewing the relevant documents of the Bank of Kazakhstan, the most representative Halyk Bank was selected as the research object, and various types of information were reviewed to find the required data.

By collecting and analyzing key indicators of digitalization, such as the number of digital banking users, transaction volume, and IT investments, this study aims to elucidate the impact of digital banking adoption on bank performance. It is worth mentioning that the article also includes research on Kazakhstan's macroeconomics to understand the basic premises on which bank digitalization is based, which can be used as random variables in the analysis process of this study. Of course, digitalization is a double-edged sword. While we enjoy the benefits it brings, we also need to pay attention to the corresponding hazards such as information security. At the same time, digitalization has certain requirements for infrastructure and other costs [4].

The results of this study provide further analysis and research on the digital development of the banking industry, make a certain contribution to the digital ecosystem, and can also provide certain valuable opinions for the formulation of corresponding rules for the Kazakhstan banking industry.

Literature review

The development of digital banking

Digital banks, also known as virtual banks, represent a new generation of financial institutions that have emerged to address the shortcomings of traditional banking systems. Unlike classic banks, digital banks rely on the latest financial technologies (fintech) to offer essential banking services - such as deposits, loans, and money transfers - through online channels. This removes the need for physical branches, significantly simplifying access to financial services for many users [5].

Today, these banks offer mobile applications, web platforms, and other digital tools, providing convenient, fast, and secure access to services anytime and from anywhere. Digital banks play a critical role in promoting financial inclusion, mainly by providing banking services to populations that previously had limited access to traditional financial products and services. This is especially important for residents of rural areas, where physical bank branches are scarce. Thanks to the simplicity and accessibility of digital banks, people in remote regions can obtain loans, make deposits, and conduct payments, which contributes to their integration into the economy. Thus, digital banks provide essential financial opportunities for previously underserved populations, making it easier to access necessary resources for everyday life and business. By supporting digital banks, we can all contribute to a more inclusive financial system [6].

The growth of digital banks is especially pronounced in emerging markets, where traditional banks can only sometimes meet the high demand for banking services. In regions like Asia and South America, large populations and limited traditional banking

structures drive the demand for alternative financial services. Digital banks, offering low-fee microfinance products and services, attract individuals and small businesses needing access to credit and financial tools.

Between 2009 and 2014, digital banks began to appear worldwide. Europe and North America became the first regions where such banks started to develop, driven by breakthroughs in fintech and regulatory support. In particular, European countries implemented regulatory policies aimed at increasing the transparency and accessibility of banking services, which facilitated the spread of digital banks. In North America, a strong focus on innovation and the presence of significant fintech companies also contributed to the rapid development of online banking (Figure 1).

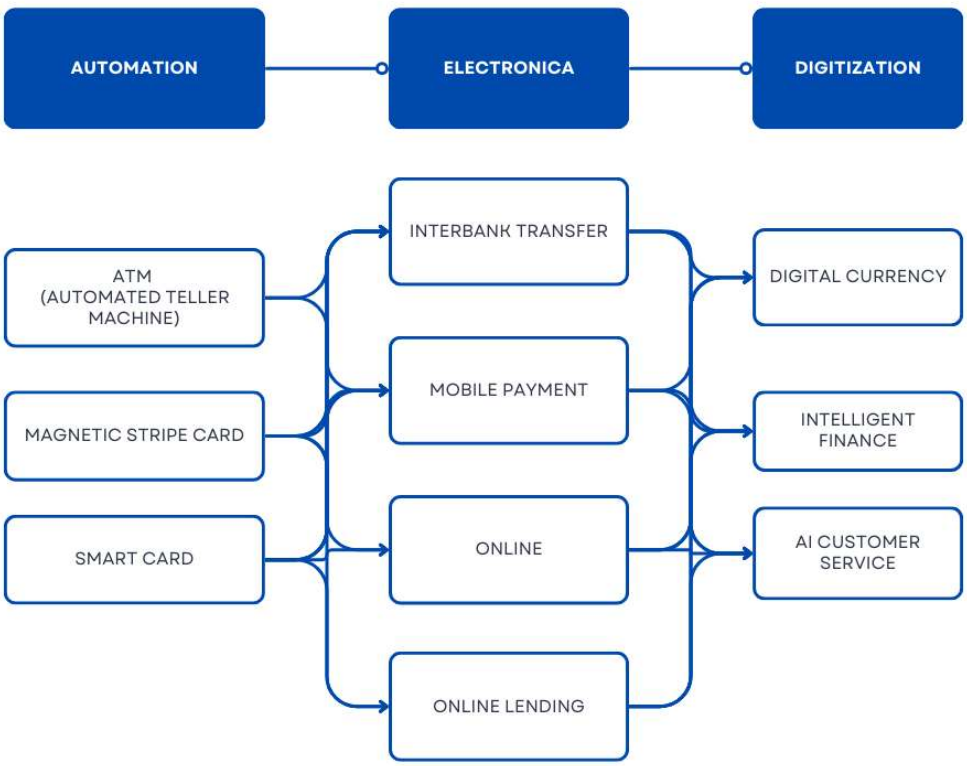

Figure 1. Technological Evolution Path in Banking Digital Transformation

Note: compiled by the authors

The global payment industry is trending towards digitalization and the development of cashless payments. Technology and fintech companies and the global digital ecosystem are increasing their role in developing innovative electronic and instant payments, such as QR code payments and mobile phone number payments [7].

Since 2019, digital banks have seen significant growth in customer base, asset size, revenue and market share due to improvements in core infrastructure such as cloud computing and mobile internet access. The COVID-19 pandemic has also accelerated this growth. By the end of 2023, the number of licensed digital banks will reach 235

globally, and the number of players offering a wide range of digital banking services will exceed 300.

Figure 2 only includes institutions that have obtained banking licenses from national regulatory authorities or have special "virtual bank" licenses.

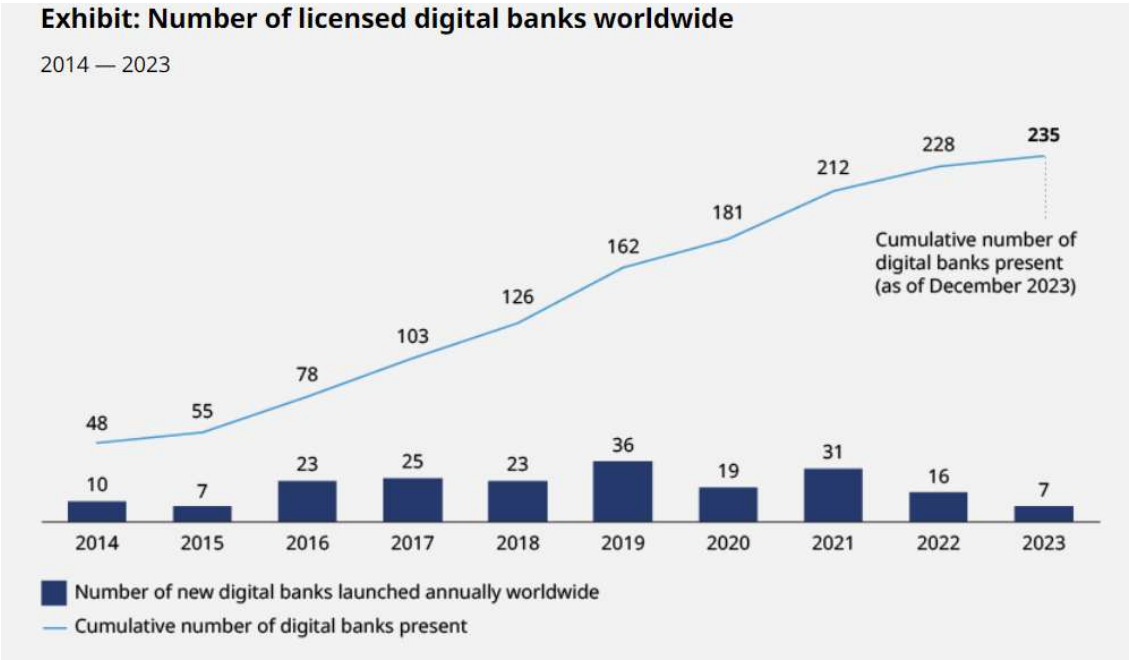

Figure 2. Licensed Digital Banks (the respective financial regulations of various countries and regions)

Note: compiled by the authors

Digital Banking and Its Operating Model

The digitization of banks is the basis for the realization of digital banking, which can be seen as a concrete manifestation of bank digitization. Digital banking is a broad concept often used to describe a banking model that utilizes digital technologies and innovations to deliver financial services. This concept includes fully digital and virtual banks, as well as various digital services and channels adopted by traditional banks in their digital transformation journey. With digital banking, users gain access to more personalized financial products, enhancing their engagement and satisfaction with services. Additionally, digitization enables banks to streamline processes, reduce costs, and accelerate transaction processing—critical advantages in the increasingly competitive financial services market [8].

Digital banks emphasize using technology to enhance customer experience, streamline business processes, reduce costs, and often have faster response times and broader service coverage. We chose digital-only banks as an example for analysis. Pure digital banking is a banking model that provides services based entirely on digital channels, with no physical branches. All banking transactions are processed and

completed through the Internet, mobile applications, or other digital platforms. This banking model typically has a high degree of automation and online transaction processing (Table 1).

Table 1. Digital and Mobile banking differences

Factor	Digital Banking	Mobile and Internet Banking
Registration	Fully online through pre-downloaded app; cards are sent directly to the customer (no contact with the bank employee)	Register through the bank and download the app
Physical Form	Branchless, has no physical bank	Has physical bank and branches
Account Verification	Digital sign, online and biometric verification	Physical and in-person verification by coming to the bank
Features (financial services) offered	Including investment account opening (i.e. mutual funds, bonds, time deposit, etc.); e-wallet with NFC top-up	Limited to day-to-day transactions

Note: compiled by the authors based on source [9]

The impact of digitalization on bank performance

The digitalization process of the banking industry has become a significant development trend in the global banking business. It is increasingly found that digital transformation not only affects banks' operating models but also significantly impacts their financial performance. The existing literature generally assumes that digital transformation will ultimately improve banks' overall financial performance by increasing operational efficiency, reducing operating costs, and increasing revenue streams [10].

Digital transformation enables banks to reduce manual costs and improve transaction efficiency through automated processes, increasing the flexibility and speed of operations and reducing errors and customer churn. Banks have expanded their business reach through digital channels and are no longer limited by branch opening hours and location restrictions. They can offer more flexible services to customers, expanding their customer base [11,12]. Some research also showed that the use of digital banking services can increase banks' revenues, especially by expanding banks' revenue sources by offering value-added services (e.g., electronic payments, investment platforms, online lending approval, etc.). Digital technologies also enable banks to more effectively manage risks and optimize credit risk assessment through big data analytics and artificial intelligence technologies, thereby improving loan portfolio quality and increasing lending operations' profitability [13].

However, although digitalization has led to significant improvements in bank performance, some studies also point to potential problems. In the process of digital transformation, banks need to invest heavily in technology upgrades, which may lead to

higher costs in the short term and may be accompanied by problems such as systemic risks. security risks. Therefore, the impact of digital transformation on banking operations may vary at different stages of development and in different market conditions [14,15,16]. Overall, current research shows a positive correlation between banks' digital transformation and their financial performance. Digitalization can directly or indirectly improve banks' financial performance by increasing business efficiency, reducing costs, and providing more service channels, but this effect may vary in different market conditions.

Technology Acceptance Model (TAM).

The Technology Acceptance Model named (TAM), which is rely on the theory of reasoned action model and is used as a link between perceived usefulness and ease of adoption to help predict consumer use [17]. IS technology. The technology acceptance model has received considerable attention in the information systems/information technology acceptance and use literature. Because it is the most correct and commonly used theory to describe people's perception of IT systems. Thanks to TAM, IT/IS usage behavior is related to the attitude toward using the system.

Methodology

Study Design

This section describes this article's research design and model, defines each variable, and details the data sources and analysis methods. This study uses quantitative analysis techniques to examine the impact of bank digitization on bank performance. It aims to analyze the relationship between relevant variables using regression models to explore the degree and direction of digitization's impact on banking performance. For this purpose, this study uses the panel data analysis method and conducts an empirical analysis based on the data on the digital development of banks in Kazakhstan.

Based on the theoretical framework of the existing literature, this study proposes the following research framework and model. The study's central hypothesis is as follows: the popularity and development of digital banking products and services have a significant positive effect on the efficiency of banks. This research model includes the following independent variables, dependent variables, and control variables:

Independent variables:

X1: Number of digital banking users (indicates the level of penetration of digital technologies in banks)

X2: Digital Banking Transaction Volume (indicates a bank's digital transaction activity)

X3: Banks' IT investment (indicates banks' investment in digital transformation)

Dependent variable:

Y: Bank performance indicators (e.g., bank profit margin, return on assets, and other financial indicators).

Control variables:

Macroeconomic factors (GDP growth rate, inflation rate, etc.)

The size of the bank (the amount of assets, the number of branches, etc.)

The model equation can be expressed as follows (1):

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \in \quad (1)$$

where,
β_0 - the intercept,
$\beta_1, \beta_2, \beta_3$ - the coefficients of the independent variables,
$\in$ - the error term.
Definition of variables
The variables selected in this study are defined as dependent and independent variables. Dependent variable: ыNumber of digital banking users (X1): The number of registered users using digital banking services per year indicates their popularity. The data source is Halyk Bank's annual reports (Table 2).

Table 2. Number of Digital Banking Users (X1)

Year	Home bank Monthly Active Users (MAU, million)	Home bank Daily Active Users (DAU, million)	Online bank Corporate Users (million)	Online bank Monthly Active Users (MAU, thousand)
2019	2.1	0.63	0.21	88
2020	2.6	0.79	0.34	156
2021	5.4	1.7	0.42	254
2022	7.8	2.6	0.67	418
2023	9.4	3.1	0.81	500

Note: compiled by the authors based on source [18]

This table shows the growth of digital banking users from 2019 to 2023 in Kazakhstan's Halyk Bank, including data for the Homebank (retail clients) and Onlinebank (corporate and SME clients) platforms. Digital Banking Transaction Volume (X2): The number of financial transactions completed annually through digital channels, reflecting a bank's digital transaction activity (Table 3).

Table 3. Digital Banking Transaction Volume (X2)

Year	Total Digital Transactions (trillion KZT)	Digital Loans for SMEs (billion KZT)	Halyk Market GMV (billion KZT)	Auto Insurance Policies (billion KZT)
2019	57	38	—	—
2020	65	52	15.7	2.1
2021	80	75	23.5	2.3
2022	91	112	27.2	2.6
2023	109.5	150	35.4	3.0

Note: compiled by the authors based on source [18]

This table summarizes the total volume of transactions processed through digital channels in Halyk Bank from 2019 to 2023. The data is in Kazakhstani Tenge (KZT) and reflects key digital transactions on the Homebank and Onlinebank platforms. Bank IT investment (X3): the sum of the bank's annual investment in digitization and IT, usually including expenditure on hardware, software, system maintenance, and security.

The source of this information is the bank's financial statements (Table 4).

Table 4. IT Investment growth (X3)

Year	The growth of IT Investment (%)	Digitization Transformation Initiatives	Increase in IT staff (times)	Agile Teams (% of the workforce)
2019	6.2	Introduction of digital products	1.2	10%
2020	8.5	Expansion of digital services	1.3	15%
2021	9.8	Introduction of new digital channels	1.5	25%
2022	11.7	Launch of Data Factory, digital loans	1.8	30%
2023	14.5	Further automation and digitization	2.0	35%

Note: compiled by the authors based on source [18]

This table describes Halyk Bank's IT and digital infrastructure investment growth from 2019 to 2023, reflecting its commitment to digital transformation and innovation.

Independent variable:

Bank efficiency (Y): Indicators such as return on assets (ROA) and net profit can be used to measure a bank's financial performance. The source of data is the annual financial report of the Halyk Bank (Table 5).

Table 5. Bank Performance Indicators (Dependent Variable - Return on Average Equity, RoAE)

Year	Return on Average Equity (RoAE, %)
2019	28.8
2020	25.5
2021	29.7
2022	31.7
2023	32.5

Note: compiled by the authors based on source [18]

This table records Halyk Bank's Return on Average Equity (RoAE) from 2019 to 2023, a vital indicator of the bank's performance. The data for the number of digital banking users (Table 2) and digital transaction volumes (Table 3) were collected from Halyk Bank's annual reports for 2019-2023.

The data on investment growth (Table 4) are taken from Halyk Bank's official financial statements and digital transformation program reports. The bank performance indicator (Return on Average Equity, Table 5) was sourced from Halyk Bank's performance reviews and key financial metrics published in the bank's annual reports and quarterly statements between 2019 and 2023. Supplementary data were gathered from Kazakhstan's National Statistics Bureau and relevant economic databases, where applicable [12].

Control variables:

Macroeconomic factors: GDP growth rate, inflation rate, etc. These variables control the external environment's influence on banking activity. Data sources are the National Bureau of Statistics and related economic databases. Following moderate growth in 2022, the Kazakh economy grew considerably in the last quarter of 2023, and GDP growth for the year reached 5.1%. The increased business activity in 2023 was driven by an unplanned injection by the National Fund of an additional KZT1.3 trillion in funds into the economy, a recovery in oil production, and a simultaneous rise in trade. In addition, the low base of the previous year's GDP growth, of just 3.2%, played a substantial role in the economy achieving record growth since 2013 (Figure 3).

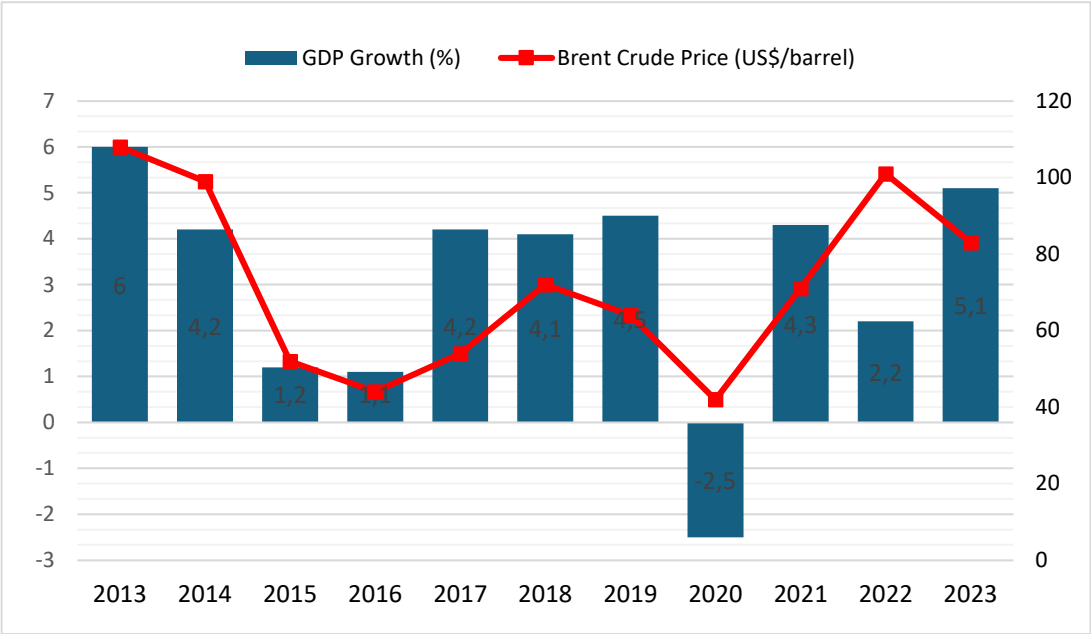

Figure 3. Economic Growth in Kazakhstan

Note: compiled by the authors based on source [19]

While revenues from oil sales declined in 2023, the oil sector contributed substantially to Kazakhstan's overall economic growth amid increased hydrocarbon production. We estimate the oil sector's contribution to GDP growth was around 0.5 percentage points. However, national oil production has been steadily declining since 2019, which has noticeably reduced the total output. In these conditions, the non-oil

sectors have been saved by continuous injections from the National Fund, averaging more than US$10 billion annually since 2020 (Figure 4).

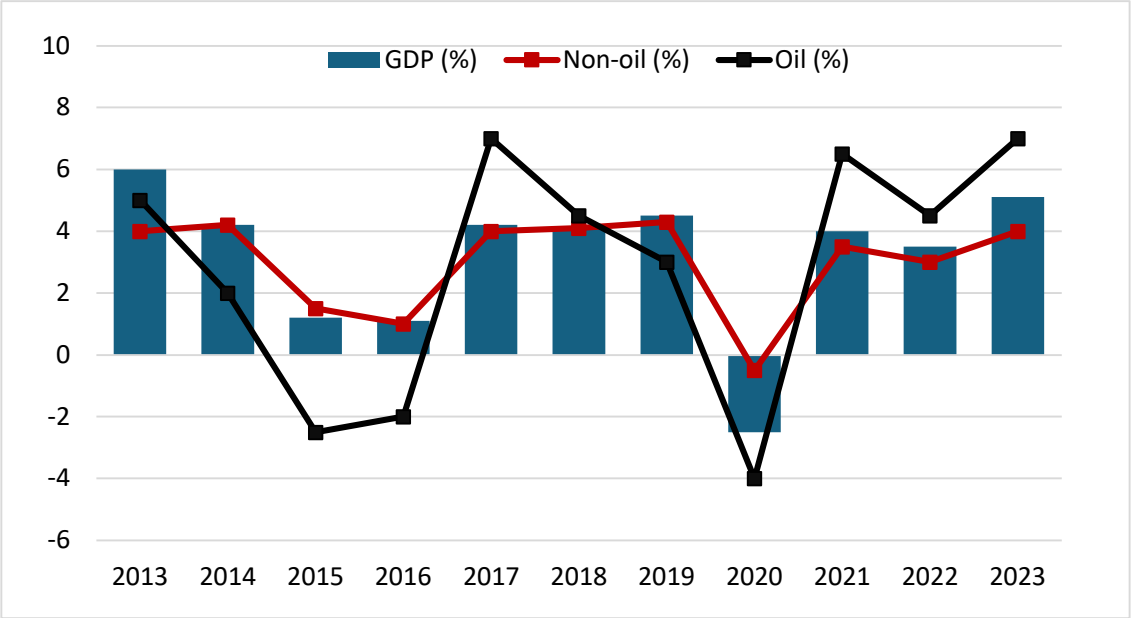

Figure 4. GDP by component

Note: compiled by the authors based on source [19]

Bank size: total bank assets or number of branches. These variables control for differences in the performance of banks of different sizes during digital transformation. The source of data is the bank's annual report.

Data collection methods

The data for this study is collected from various reliable sources, including qualitative and quantitative financial information. In particular, data on digital banking performance and related variables are obtained from Banks' annual reports provide detailed information on key variables such as the number of digital banking users, IT investments, and transaction volume. Banks usually disclose these figures in financial statements, management commentary, or performance reviews.

Reports of national banks and central banks. For example, reports from the National Bank of Kazakhstan or other countries' central banks typically include digital banking and fintech trends, mobile payment penetration rates, and industry statistics. Financial and market databases: Platforms such as Statista, World Bank, OECD, and Euromonitor provide macroeconomic data and industry statistics related to digital banking developments and technology investments.

Industry studies and white papers: Reports from consulting firms like McKinsey, Deloitte, and PwC provide broad context on global and regional innovation and adoption trends in digital banking. Government bodies and regulatory bodies: The Financial Market Supervision Service of Kazakhstan or similar government bodies can provide information about the national mobile payment system and regulatory framework.

Choosing a data model

The selection of the data model is based on the following criteria:

Time frame: The data covers a 5-year period (e.g., 2019-2023) to observe the long-term impact of digitization on banking.

Geographic coverage: Focuses on Kazakhstan, providing analysis using data from emerging markets.

Bank selection: The sample includes digital and traditional banks that have undergone digital transformation, focusing on banks with data on key variables such as customer base, transaction volume, and IT investments HALYK bank.

Industry Relevance: To ensure research relevance, the selected banks and financial institutions should be significantly involved in digital banking services such as online or mobile banking, digital payments, and IT infrastructure investments.

Appropriate search keywords for effective data collection may include: "Statistics of Digital Banking Users"; "Annual Report of Banking Investments in the IT Sector"; "Penetration level of mobile payments in Kazakhstan"; "Volume of Internet banking operations"; "Trends of digital banking in Kazakhstan 2019-2023". These keywords are available in Google Scholar, financial reports, and related databases.

Results and discussion

Regression analysis model

This study uses multiple linear regression analysis to estimate the effect of bank digitization (independent variable) on bank performance (dependent variable). The main idea of this model is to observe a linear relationship between several independent variables (such as the number of digital bank users, bank IT investments, mobile payment penetration rate, etc.) and dependent variables (such as the bank's net profit, profitability of assets, etc.). This analysis of the impact of digitization (Table 6).

Table 6. Regression Analysis Data

Year	Y: Return on Average Equity (RoAE) (%)	X1: Number of Digital Banking Users (million)	X2: Digital Banking Transaction Volume (trillion KZT)	X3: IT Investment Growth (%)
2019	28.8	4.5	57	6.2
2020	25.5	6.1	65	8.5
2021	29.7	7.8	80	9.8
2022	32.4	9.4	91	11.7
2023	32.5	10.2	109.5	14.5

Note: compiled by the authors based on source [18]

In this study, a linear regression analysis was conducted to assess the impact of digital transformation on the operational performance of the Kazakhstan banking industry. The dependent variable is Return on Average Equity (RoAE), and the independent variables include the number of digital banking users (X1), the number of digital banking transactions (X2), and the growth rate of IT investment (X3). Table 1

summarizes the regression output. The model achieved a high R-squared value of 0.9246, indicating that the independent variables can explain about 92.46% of the variance in RoAE. This shows that the model has strong explanatory power.

Conclusions

Analysis of the Impact of Digital Products on Banking

By analyzing a large amount of literature and data related to the banking industry in Kazakhstan, it can be concluded that digital banking products have a significant positive impact on the performance of banks. First, the widespread adoption of digital products has significantly improved the operational efficiency of banks. Technologies such as online banking, mobile payments, and remote account opening have considerably reduced customers' time costs in banking transactions. For banks, these digital services reduce dependency on physical branches and manpower, reducing operational costs. For example, the popularity of online payments and mobile financial services has allowed banks to open fewer branches, reduce maintenance and operating costs, and increase gross profit margins.

Second, digital products have also greatly enhanced banks' customer service capabilities and customer satisfaction. Especially through mobile applications and e-wallets, banks can provide services to customers 24/7, and this flexibility greatly enhances the customer experience.

Finally, the use of digital technology also helps banks improve their risk management and compliance processes. With big data and artificial intelligence technologies, banks can more effectively identify and predict potential credit risks and improve risk control capabilities. Moreover, digitization also increases transparency and real-time data flow, which helps increase banks' responsiveness in terms of money laundering, compliance, and regulatory requirements.

Digital Characteristics of the Banking Industry in Kazakhstan

In Kazakhstan, the digitization of the banking industry is steadily progressing. According to local data, mobile payments, remote customer identification and contactless payment technologies have become very popular in the market in recent years. Data shows that since 2020, the volume of online payment transactions in Kazakhstan has grown at a double-digit rate each year, with the growth of mobile payments being particularly significant, reflecting the growing acceptance of digital banking.

Banks in Kazakhstan have also made extensive use of AI technology to provide customer service, such as using intelligent customer service robots to handle customer queries and daily transactions. This not only improves service efficiency, but also reduces labor costs. In addition, the introduction of remote biometric technology allows customers to complete account opening and identity verification without visiting a physical bank branch, greatly facilitating access to financial services.

However, the digital development of the banking sector in Kazakhstan still faces some limitations compared to other countries. Especially with regard to big data analytics and automated services, the Bank of Kazakhstan's technology implementation is still at a relatively early stage.

Although some leading banks are beginning to experiment with using big data to improve customer service and risk management, widespread adoption of these technologies will require further investment and infrastructure development. Overall, the process of digitizing the banking industry in Kazakhstan has made significant progress, but there is still a lot of room for future development, especially in terms of improving data analytics capabilities and fully automated services. Enhanced regulatory frameworks and stronger partnerships with fintech companies could also accelerate the adoption of advanced digital solutions across the sector.

From these results, it can be concluded that digitalization has played a positive role in improving the performance of Kazakh banks, but in order to achieve global leadership, further investment and innovation in using advanced technologies and building infrastructure are still needed.

Developing talent in data science and digital skills within the sector will also be critical to sustain growth and ensure a competitive edge on the global stage. Additionally, fostering collaborations with international fintech and tech firms could accelerate the adoption of best practices and new solutions.

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Emotions and cognitive processes in labor activity: the role of emotional intelligence

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Abstract

The article is devoted to the study of the problem of the relationship between emotions and reason, as well as the phenomenon of emotional intelligence (furthermore - EI), which combines the ability to recognize and manage one's own emotions and the emotions of others. This paper examines the critical components of emotional intelligence, such as self-awareness, self-regulation, motivation, empathy, and social skills, and their impact on the professional environment. A high level of emotional intelligence allows employees to more effectively cope with emotional stress, improve interpersonal relationships, motivate themselves and others, and make informed decisions in stressful situations. The article provides an overview of the main theories of emotions proposed in the context of analytical, cognitive, and domestic psychology, with the aim of expanding the understanding of emotional intelligence. The primary attention is paid to the analysis of theories that consider emotions as a result of physiological reactions or cognitive processes, as well as in the context of social learning and motivation. The critical aspects of the interaction of emotions with perception, motivation, and mental processes, as well as their role in the formation of the integrity of the personality and adaptation to the external environment, are considered. Essential accents are made on analyzing emotional reactions, assessing their significance for the subject, and searching for a connection between emotional states and cognitive activity. The article's conclusions emphasize the importance of EI as a critical factor in understanding emotional reactions, making it an essential element in psychological theory and practice.

Keywords: emotional intelligence, motivation, professional environment, cognitive psychology, social learning, work, theories of emotion

Жұмыстағы эмоциялар және когнитивті процестер: эмоционалды интеллект рөлі

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Түйін

Мақала эмоциялар мен ақыл - ойдың өзара байланысы мәселесін, сондай-ақ өз эмоцияларын және басқалардың эмоцияларын тану және басқару қабілетін біріктіретін эмоционалды интеллект құбылысын (бұдан әрі-ЭИ) зерттеуге арналған. Бұл жұмыс эмоционалды интеллекттің өзін-өзі тану, өзін-өзі реттеу, мотивация, эмпатия және әлеуметтік дағдылар сияқты негізгі компоненттерін және олардың кәсіби ортаға әсерін қарастырады. Эмоционалды интеллект деңгейі кәсіби және цифрлық дағдылармен қатар қажетті қасиет болып табылады. Мақалада эмоционалды интеллект туралы түсінікті кеңейту мақсатында аналитикалық, когнитивті және отандық психология аясында ұсынылған адамның эмоционалды күйінің негізгі теориялық аспектілеріне шолу жасалды. Эмоцияларды физиологиялық реакциялар немесе когнитивті процестер нәтижесінде, сондай-ақ әлеуметтік оқыту мен мотивация контекстінде қарастыратын теорияларды талдауға баса назар аударылады. Бұл жұмыс эмоциялардың қабылдаумен, мотивациямен және танымдық процестермен өзара әрекеттесуінің негізгі аспектілерін, сондай-ақ олардың жеке тұлғаның тұтастығын қалыптастырудағы және кәсіби ортаға бейімделудегі рөлін зерттейді. Эмоционалды реакцияларды талдауға, олардың субъект үшін маңыздылығын бағалауға және эмоционалды күйлер мен когнитивті әрекеттер арасындағы байланысты табуға маңызды назар аударылады. Мақаланың қорытындылары ЭИ-нің эмоционалды реакцияларды түсінудегі негізгі фактор ретіндегі маңыздылығын көрсетеді, бұл оны психологиялық теория мен практикада маңызды элемент етеді.

Кілттік сөздері: эмоционалды интеллект, мотивация, кәсіби орта, когнитивтік психология, әлеуметтік оқыту, еңбек, эмоция теориялары

Эмоции и когнитивные процессы в трудовой деятельности: роль эмоционального интеллекта

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Аннотация

Статья посвящена исследованию проблемы взаимосвязи эмоций и разума, а также феномену эмоционального интеллекта (далее - ЭИ), который объединяет в себе способность распознавать и управлять собственными эмоциями и эмоциями окружающих. В данной работе рассматриваются ключевые компоненты эмоционального интеллекта, такие как самосознание, саморегуляция, мотивация, эмпатия и социальные навыки, и их влияние на профессиональную среду. Уровень эмоционального интеллекта является необходимым качеством наравне с профессиональными и цифровыми навыками. В статье проведен обзор основных теоретических аспектов эмоционального состояния человека, предложенных в контексте аналитической, когнитивной и отечественной психологии, с целью расширения понимания эмоционального интеллекта. Основное внимание уделено анализу теорий, которые рассматривают эмоции как результат физиологических реакций или когнитивных процессов, а также в контексте социального научения и мотивации. В данной работе исследуются ключевые аспекты взаимодействия эмоций с восприятием, мотивацией и когнитивными процессами, а также их роль в формировании целостности личности и адаптации к профессиональной среде. Важные акценты сделаны на анализе эмоциональных реакций, оценке их значимости для субъекта и поиске связи между эмоциональными состояниями и когнитивной деятельностью. Выводы статьи подчеркивают значимость ЭИ как ключевого фактора в понимании эмоциональных реакций, что делает его важным элементом в психологической теории и практике.

Ключевые слова: эмоциональный интеллект, мотивация, профессиональная среда, когнитивная психология, социальное обучение, работа, теории эмоций

Introduction

Today, more and more attention is paid to the intriguing connection between feelings and reason, emotional and rational, their interaction and mutual influence. Managing one's emotional state and the impact on the emotional state of communication partners is necessary for personal and work relationships and is expressed in emotional intelligence (furthermore - EI). Different types of emotional intelligence help solve work problems depending on the situation. A high level of EI helps an individual reduce stress and make the right decisions in the workplace.

Employees with high emotional intelligence better understand and evaluate their emotions, which allows them to realize how the emotions they experience affect their behavior and productivity. The ability to control and manage your emotions helps to create a positive work atmosphere and prevent emotional burnout of individual employees. Among the factors that underlie the development of emotional intelligence, empathy, i.e., the ability to empathize, should be considered first. At work, this is expressed in the desire to help a colleague, take his place, and contribute to creating a solid team. Conflicts within companies are an inevitable part of the work process. Still, if the conflict involves employees with a high level of empathy, then such a conflict will be resolved faster.

On the other hand, when communicating with clients, more empathetic employees can build trusting relationships with clients. In interpersonal communication, too much empathy can lead to unnecessary stress since the inability to refuse colleagues can lead to overwork, burnout, and loss of control over the situation [1]. Therefore, a balance between the ability to penetrate the needs of others and your own is essential. When hiring, employees are tested not only for professional suitability but also for communication skills. Only the HR department most often needs to tell employees that emotional skills are equally crucial in productive work as digital ones. It is also noted that there is no gender dependence in determining the degree of development of emotional intelligence; on the contrary, there is a balance between the qualities of men and women, which together strengthens the team [2]. Company managers began to pay attention to selling goods and services and creating a suitable team. Therefore, studying the theoretical aspects of the human emotional state is a necessary component and is used in developing tests for employment [3]. Organizations that support the development of EI among their employees can expect increased productivity, improved teamwork, and reduced stress levels, ultimately leading to success for individuals and the entire organization.

Literature review

Emotion, a term with no single, universally accepted definition, is often described in relв итогemotions: anger, disgust, fear, joy, sadness, and surprise. This list expands when considering employees' emotional states, highlighting the diversity of definitions in the literature.

Applying the term' emotion' to reward and reinforcement in 1989 and its use in physiological psychology, sensations, and consciousness marks a significant historical

context. This historical context is crucial for understanding the evolution of the concept of emotions. A definition of emotions is needed: “Although there is a huge amount of literature on psychobiological effect, there is no single or even preferred definition of emotions in work” [4]. In 1981, Kleininna and Kleininna listed 92 different definitions of emotions, including their own, and nine skeptical statements compiled from the literature on emotions [5].

In the dictionary “Cognitive Psychology”, the term “emotion” is not formally defined, but the operational definition is derived from five pages devoted to emotions: emotion, a mental state sudden problem, acute experience of fear, surprise, joy and others. In the work process there are no identical clients and communication problems appear inside companies among employees and externally, which clients bring with them [6]. After “Cannon”, some authors believe that physiological reactions in emotional subjects characterize emotions. For example: “Although emotions have long been classified as purely cognitive, it is now clear that the mental representation of emotional experience includes motor and visceral components, as well as cognitive ones”.

Berekenova J. D. defines emotions as "a state of physiological activation” and cognition corresponding to this state of arousal. "Whether the preferred concept of emotion is James-Lange or Cannon, the common factor arises from these different sources: emotion is a mental state, even when somatic signals are involved in this mental experience [7]. For example, according to Scherer, all cognition involves emotions, and Griffiths considers emotion as "a destructive motivational complex in higher cognition." Problems begin when someone tries to determine further; dictionaries and specialists overcome difficulties by adding a list of emotions: anger, disgust, fear, joy, sadness, and surprise [8].

Various theories (classical, frustration, and need-motivational) provide a theoretical basis for understanding emotional intelligence. It's important to understand that emotional intelligence, as a communication process, is not limited to a single dimension of employee emotions. Instead, it's a complex interplay of various emotional dimensions. The development of the study of theoretical aspects has led to the emergence of various directions in the study of the emotional state of a person.

The author singled out emotions as elements of feelings, colored by shades and having a degree of impact. Continuity and the possibility of combination are the main factors in forming emotional intelligence. At the same time, intelligence develops, and various new situations contribute to the emergence of an emotional color of consciousness. Microsensors are combined into larger ones, larger ones into brighter ones, and this whole system has a three-level character. Such a system includes three bipolar directions (six in total): activity, strength, and evaluation. Activity is replaced by apathy, muscular tension can be replaced by calmness, and dissatisfaction and anxiety can be replaced by joy. Sometimes, one feeling can also have the most vivid character, which settles in the character [11]. Thus, emotional intelligence is also a complex evaluation of other people's positive, neutral, and negative emotions, including differences in time and intensity of emotions. [12]. Comparative analysis helps to compare the key elements of different theories of emotions with the understanding of emotional intelligence (EI). Emotional intelligence analyzes, evaluates, and manages emotional states in various contexts (Table 1).

Table 1. Comparison of the main theories of emotions and their connection with emotional intelligence

Theory	**The leading position is emotion**	**Communication with emotional intelligence (EI)**
Theory B. In Wund	Simple feelings combined into a single emotional structure: bipolar variables.	EI is the ability to analyze and understand various components of emotions and their interaction.
Theory James-Lange	The perception of stimuli causes the result of physiological changes.	EI helps to recognize physiological reactions and correlates them with emotional state.
Theory K. Jung	They form a psychological type connected with introversion or extroversion, affective complexes.	EI allows to analyze emotional reactions, determine personality type and relationships with affects.
Theory Z. Freida	Form of discharge of instinctive energy: Effect can be suppressed or discharged through actions.	EI is the ability to analyze mental trauma and manage defense mechanisms and emotions.
Theory J. Watson	They are divided into stereotyped and complex: stereotyped innate, and complex associated with learning.	EI helps to recognize primary and complex emotions and analyze the level of social adaptation.
Theory A.N. Leontieva	They reflect the relationship between motive and activity, which has a polydeterministic character.	EI is the ability to analyze the connection between motives and emotions and to evaluate the subjective perception of a situation.
Cognitive theory M. Arnold	The result of an instant situational assessment (sensory judgment).	EI allows you to analyze emotional judgments and evaluate how valuable emotions are for the subject.
Theory S. Shekhtera and D. Singer	They arise through a cognitive designation of physiological activation caused by a stimulus.	EI is the ability to estimate physiological activation and social influence on emotional experiences.
Differential theory K. In Izard	Cognitive, neurophysiological, and affective activators trigger system reactions.	EI helps to manage emotions and analyze their influence on perception and behavior.

Note: compiled by the authors based on sources [7], [8], [9], [10], [11]

Within the framework of functionalism, the theory of emotions, it is possible to see that they are represented as a trace or reflection due to the subject's interaction and adaptation to the external environment. According to James-Lange's peripheral concept,

emotion is defined by the experience of physiological changes in the body that follow the perception of a stimulus [13].

Relationship between emotional intelligence and theory of emotions

Emotions appear under the influence of external stimuli, and emotional awareness is also shown quite quickly. However, an individual's adaptation to different situations sometimes shows a low level. In stressful situations, employees get new experiences, but automatic reactions are often at the head of actions [14], [15]. Together with cognitive abilities and personal qualities, it is used to judge various emetogenic situations, which are subject to an assessment of adequacy, corresponding to the norm, and determination of the relationship between abilities, the level of motivation, and the manifestation of emotions [16].

Hypothesis F. Within the framework of psychological integrity, Kruger described emotions as the only original carrier of personal integrity, which represents integrity in a diffuse and organized unit of consciousness; prevents too strong isolation and disintegration of parts of a holistic personal worldview; is a unit of integrity; provides holistic experiences. Conscious structures can manifest in emotions; therefore, based on the results of the analysis of the manifestation of emotions, it is possible to judge the individual characteristics of an individual. This is especially important in work because emotions play a crucial role in interacting with colleagues, managing stress, and making decisions. An employee who can control his emotions in stressful situations will likely demonstrate high resilience and professionalism. Emotions can also signal the internal state of the employee: a high level of anxiety can indicate a lack of motivation or job satisfaction.

Kruger added these properties to emotions: depth (degree of decomposition), intensity, short-term, and liability ("fragility," loss of intensity, and expressiveness when concentrating attention on the breakdown of experiences) [9, pp. 108-120].

Emotional intelligence, when considered in different states, is a key factor in creating a harmonious working environment. Together with cognitive abilities and personality traits, it influences the relationship between emotional reactions and the individual's personal perception of the world, leading to the construction of a comprehensive judgment about the subject's character. Analyzing emotional manifestations allows employers to understand better their employees' personal qualities, motivation, and potential for professional growth. This understanding is beneficial during the selection of personnel and during the further development of the team, contributing significantly to the creation of a more effective and harmonious working environment.

J. Theory of Emotion. Within the framework of behaviorism, Watson tends to divide the manifestation of emotions into stereotyped, essential, and complex, caused by conditioned learning associated with society [17]. Regarding the author's point of view, the primary attention was paid to the interpretation of stereotyped emotions, which, according to the author, are hereditary template reactions to stimuli, the most profound changes in the state of the glandular and visceral systems at the level of behavior, are performed with the help of innate patterns of action, the situation in the conditions of

responsiveness of the general state of the organism to the stimulus this kind at a specific moment.

On the other hand, complex emotional reactions to external influences are determined by the almost absolute disappearance of the stereotyped pattern, except for situations of unique conditions and possible clinical pathologies. Some biased judgments can cause deviations and pathologies in behavior.

According to this theory, emotions are not just a biological phenomenon. They exist to bring diversity to the life of an evolved individual and contribute to integrative processes in society. This diversity makes life exciting and keeps us engaged with the world.

Within this theory, intelligence is not just a measure of cognitive abilities and personality traits. It is a tool that allows us to analyze complex social emotions and recognize basic ones. It enables us to make judgments about the subject's adaptation level in society and to find connections between manifestations of emotions and reactions to certain irritants. It is a measure of emotional tension and a direct personal measure of unstructured activity of emotions [18].

Emotions and their role in professional activity

Classical psychoanalysis of emotions is based on the theories of Freud and Jung, who have some contradictory views. On the one hand, emotions are the basis for building a personality's foundation; on the other hand, emotions are a consequence of character and are only manifested [19]. In addition, the scientist discovered the following pattern: the repeated repetition of situations that cause any negative emotional state accumulates an effect that can be discharged by a series of violent acts of behavior that cannot be controlled. This is called an affective explosion. There is an assumption that repeated reproduction of situations that involve positive emotional states can also accumulate affect, which is discharged by an affective explosion [20].

It is for this reason that emotional intelligence tends to be considered as a complex of cognitive abilities and personality traits, which contributes to the analysis of the role of the object in the context of emotional manifestations and the formation of the conclusion about the introversion or extraversion of the individual; building judgments about the degree of significance of feelings relative to other critical mental functions based on the presence or absence of emotional expression — that is, emotion is the leading, rejecting, or additional function; detection of a complex of affects by delayed reaction to speech, as well as disorganization of the process of associations; search for connecting elements between the original affect genic situation and the affective explosion that appeared [21].

Domestic psychological theory of emotions, emotional phenomena tend to be characterized by their relationship to an individual's activity. Emphasize that emotions develop and change throughout a person's life because of his interactions with society. This process allows emotions to go beyond purely biological bases and be formed under the influence of cultural and social norms. [6].

Types of emotional phenomena depending on conditions at work

Emotional phenomena at the workplace—affects, feelings, and emotions—manifest differently depending on working conditions, the degree of stress, and the characteristics of team relationships. These three types of emotional reactions can be interrelated but differ in intensity and duration.

Affects are short-term and intense emotional outbursts that respond to sudden events or stimuli. Work conditions can manifest when the employee faces unexpected stress, conflict, or the need to make an urgent decision. For example, a sharp reaction to criticism from the boss or dissatisfaction with unforeseen changes in the project. Such emotional states can be caused by overload, the pressure of deadlines, or sudden changes in the work process. Affects often lead to impulsive actions, which can negatively affect the team and lead to emotional burnout.

On the contrary, feelings are recognized as more stable and long-lasting emotional states associated with the employee's attitude to work, colleagues, or organizational processes. These emotional states are formed based on accumulated experience and perception of what is happening. For example, a feeling of satisfaction from the successful completion of a project or sympathy for colleagues can be formed over a long period. Feelings depend on constant interactions with the team, assessment of their role in the company, and perception of the career. Positive feelings can increase motivation and contribute to developing positive relationships in the team. In contrast, negative feelings can lead to decreased productivity and emotional distance from the work process.

Emotions are short-term but less intense than affected reactions to happening events. They reflect a subjective assessment of the current situation. For example, an employee may experience joy at completing a task, disappointment at difficulties, or resentment at criticism. Although these emotions are short-term, they can significantly affect the overall working mood and productivity. They depend on expectations, feedback quality, and satisfaction with current tasks.

Factors such as organizational culture, working conditions, and personal characteristics of employees significantly impact the manifestation of various emotional phenomena. However, the role of management stands out. When provided, a favorable atmosphere, support from management, and opportunities for self-expression reduce the likelihood of negative emotional outbursts and contribute to the formation of positive feelings. Conversely, overload, unclear tasks, and lack of resources can cause increased stress and negative emotions.

Thus, emotional phenomena at the workplace are not just interesting psychological concepts, but they have a direct impact on the productivity and satisfaction of employees. Understanding and managing these phenomena is crucial for maintaining a healthy and efficient work environment. It is emotional intelligence that is the factor of a company's competitiveness that has previously been greatly underestimated, especially levels.

The first level is devoted to manifestations of organic affective-emotional sensitivity, including physical feelings of displeasure or pleasure determined by organic needs. In this plane, specific sensations and the individual's general state can have an emotional color.

2. The second level, intricately interconnected, corresponds to a subject that is differentiated from a specific sphere (moral, intellectual, aesthetic). This interconnectedness underscores the complexity and depth of emotional intelligence.

3. At the third level, there are feelings of world perception, which convey the individual's general stable worldview attitudes (tragic, sublime, humor, etc.). Moods, passions, and effects in Rubinstein are separate from emotional manifestations but are all related.

Figure 1 describes levels of classification of manifestations of the sphere of emotions.

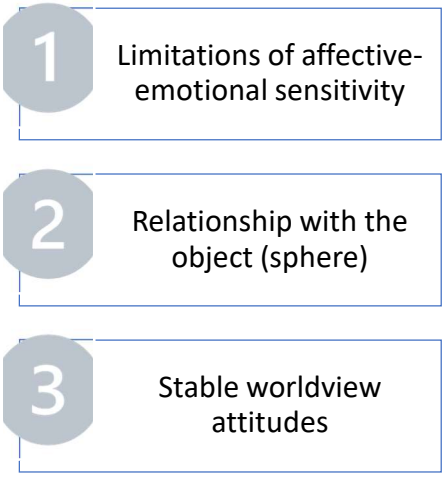

Figure 1. Classification of manifestations of the sphere of emotions by levels

Note: compiled by the authors

Emotional intelligence can be considered a complex of cognitive abilities and personality traits. It contributes to the search for a connection between the initial emotional judgment and emotional reaction by constructing judgments about how helpful the moment of experience will be for the subject, whether there is an interaction, and whether the subject considers mastery achievable object or ego avoidance [22], [23].

Cognitive and physiological aspects of emotional intelligence

In the cognitive-physiological theory of S. Shekhtera and D. Singer, emotions result from the activation of interaction, reflexive conclusions of the individual, or the activation of reasons based on the analysis of the situation, which releases emotions. The authors define this same activation as diffuse and require cognitive designation in the form of emotions. Such reasoning can lead to thoughts of a cognitive-emotional nature [24], [25].

The meaning of the theory of emotions in labor activity is presented in Figure 2.

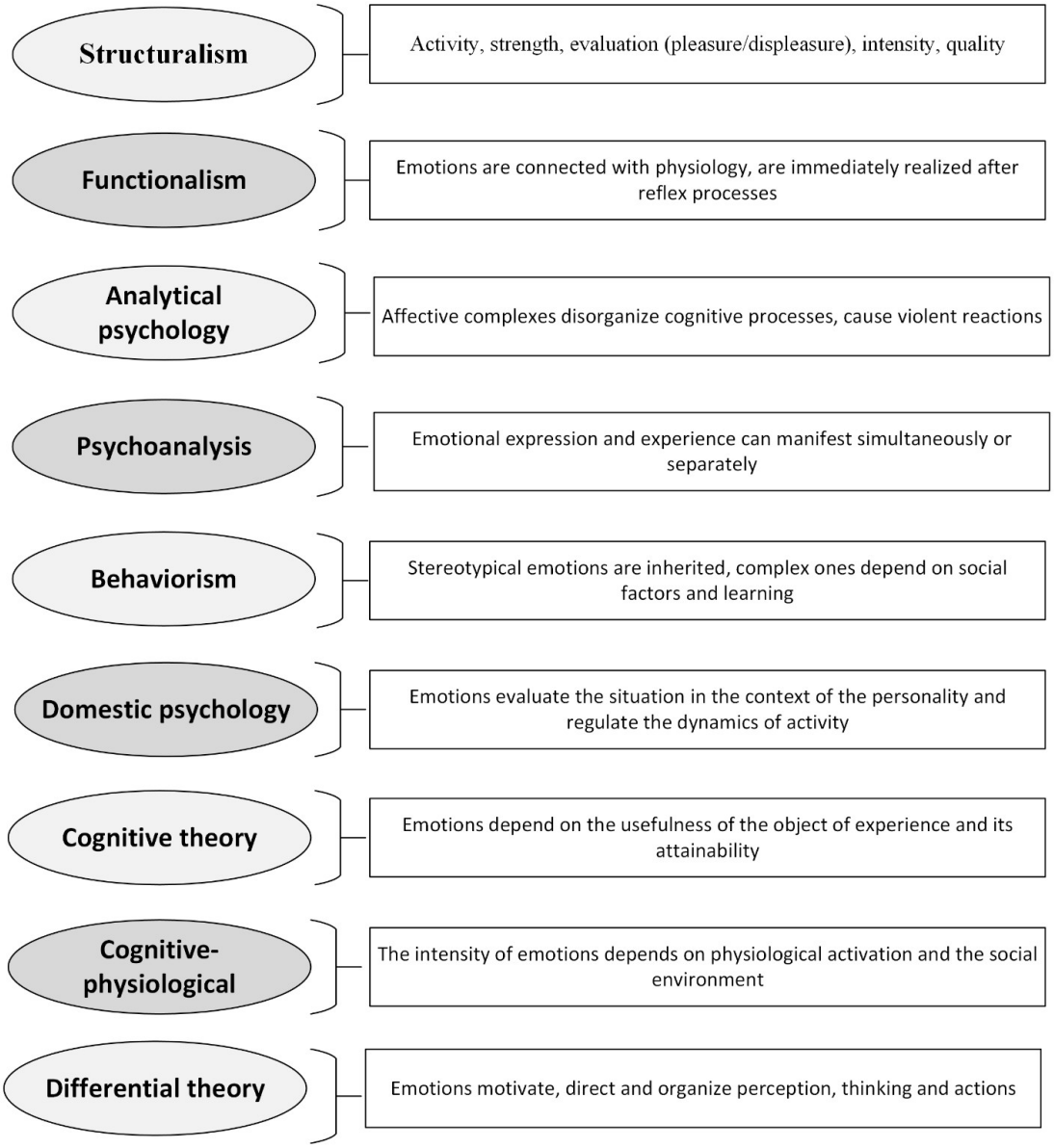

Figure 2. The meaning of the theory of emotions in labor activity

Note: compiled by the authors

Employees often face disappointment when obstacles appear on their way to achieving their goals. These can be objective difficulties, such as a lack of resources or time, and subjective factors, such as the lack of external tasks or support from management. When an employee's expectations of success or performance do not match reality, it causes emotional dissonance. Such disappointment can undermine motivation and reduce involvement in the process, ultimately affecting productivity and work efficiency.

Understanding the nature of these emotional reactions is vital for leaders and organizations. Realizing that the employee's disappointment is caused not only by external factors but also by his internal expectations allows managers to find more effective solutions. Timely support, goal adjustment, provision of necessary resources, and creation of conditions for personal and professional growth can help reduce dissatisfaction and prevent emotional burnout. Thus, attentiveness to the team's emotional state becomes an essential aspect of effective management.

Creating a supportive work environment that nurtures employees' emotional well-being is paramount for organizations. This goes beyond removing immediate obstacles and fosters a culture of openness, respect, and support. Regular goal discussions, feedback, decision-making flexibility, and the provision of necessary tools for task performance all reduce frustration and enhance job satisfaction. In return, employees who feel emotionally secure and confident in management's support demonstrate higher productivity and loyalty to the organization.

Therefore, leaders' primary role is not just managing work processes but also creating conditions that foster employee emotional well-being. This involves understanding the unique needs of each team member and making decisions that aim to eliminate potential sources of frustration. As a result, employees become more motivated and capable of effectively achieving their goals, positively impacting the organization's overall results.

Relationship between emotional intelligence and labor activity

Emotional intelligence plays a crucial role in the professional sphere, significantly impacting work efficiency and the quality of interaction between employees. The main aspects of the relationship between EI and labor activity can be considered through several essential directions:

A high level of emotional intelligence allows employees to better understand and control their emotions, which contributes to improving the team's psychological climate. Emotionally competent employees can cope with work stress, avoid emotional burnout, and maintain high motivation.

Emotional intelligence is critical to enhancing interpersonal interaction within a team. Individuals with high emotional intelligence have a better understanding of their colleagues' emotional states, which enables them to communicate more effectively, resolve conflicts more efficiently, and build stronger, more trusting relationships. Emotional intelligence is not just a desirable trait but a crucial quality for effective leadership. Leaders with high emotional intelligence can inspire and motivate their teams, manage their subordinates' emotional states effectively, and provide the necessary emotional support in challenging situations.

Conclusion

Emotional intelligence plays an important role in the working environment, helping employees understand their emotional reactions and interact effectively with colleagues. Understanding your emotions allows you to manage stress better, overcome difficulties,

and avoid the negative consequences of impulsive decisions. This, in turn, improves self-regulation, which is especially important in high-stress or conflict situations. The development of emotional intelligence is a crucial factor for successful adaptation in the modern world, where changes occur quickly and require people to be flexible and able to cope with stress. Emotionally literate workers have effective communication, conflict management, and leadership skills, which, in turn, contribute to increased productivity and overall team satisfaction.

From the point of view of labor activity, EI helps employees cope with emotional difficulties, find a common language with colleagues, and achieve high results in their professional duties. Thus, employers should consider emotional intelligence as a crucial element in the recruitment and development of personnel, implementing training programs and training aimed at increasing the emotional literacy of employees.

In conclusion, emotional intelligence is an integral part of personal growth and professional success. It opens new horizons for personal and professional realization, emphasizing its importance in modern society. The development of EI is an investment not only in an individual employee's success but also in the organization's future, contributing to creating a productive and harmonious working environment.

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A study of the dynamics of economic stability of West Kazakhstan's regions and recommendations for its improvement

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Abstract

The economic development of the West Kazakhstan's regions, despite their significant contribution to the country's gross regional product, is subject to various risks. To identify the main risks of economic sustainability and justify measures to overcome them, it is necessary to study the dynamics of economic indicators in these regions. The purpose of the article was to study the dynamics of economic stability of the West Kazakhstan's regions and develop recommendations for its improvement. To achieve the goal, the following tasks were solved: to analyze the dynamics of economic stability based on the main economic indicators, which characterize the scale of the regional economy, its structure, investment volume, research and development work; to identify the risks of achieving economic stability; to determine measures to overcome these risks. The hypothesis was the assumption that achieving economic sustainability for the development of the West Kazakhstan's regions is difficult due to imbalances in their economic structure. The methods of logical, economic and statistical analysis, analogies, comparisons, a systematic approach, generalizations are used. The result of the analysis was the identification of the main risks to the economic stability of the West Kazakhstan's regions, including the raw material nature of the economy, the low share of the manufacturing industry, insufficient budget provision, and the high vulnerability of the regions to natural disasters. Recommendations were developed to offset the negative impact of the identified risks and increase economic stability in West Kazakhstan's regions.

Keywords: region, economic stability, economy, economic structure, budget security

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Батыс Қазақстан аймақтардың экономикалық тұрақтылығының динамикасын зерттеу және оны арттыру бойынша ұсыныстар

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Түйін

Батыс Қазақстан аймақтады дамуының экономикалық тұрақтылығы, олардың елдің жалпы аймақтік өніміне қосқан елеулі үлесіне қарамастан, елеулі тәуекелдерге ұшырайды. Экономикалық тұрақтылықтың негізгі тәуекелдерін анықтау және оларды еңсеру жөніндегі шараларды негіздеу үшін осы аймақтардың экономикалық көрсеткіштерінің динамикасын зерттеу қажет. Мақаланың мақсаты Батыс Қазақстан аймақтардың экономикалық тұрақтылығының динамикасын зерттеу және оны арттыру бойынша ұсынымдар әзірлеу болды. Мақсатқа жету үшін мынадай міндеттер шешілді: аймақтік экономиканың ауқымын, оның құрылымын, инвестициялар көлемін және ғылыми-зерттеу және тәжірибелік-конструкторлық жұмыстарды сипаттайтын негізгі экономикалық көрсеткіштер бойынша экономикалық орнықтылық динамикасына талдау жүргізу; экономикалық орнықтылыққа қол жеткізу тәуекелдерін анықтау; оларды еңсеру жөніндегі шараларды айқындау. Батыс Қазақстан аймақтары дамуының экономикалық тұрақтылығына қол жеткізу олардың экономикалық құрылымындағы теңгерімсіздіктерге байланысты қиын деген болжам гипотеза болды. Логикалық, экономикалық және статистикалық талдау, аналогия, салыстыру, жүйелік тәсіл, жалпылау әдістері қолданылды. Жүргізілген талдау нәтижесі Батыс Қазақстан аймақтардың экономикалық тұрақтылығының негізгі тәуекелдерін анықтау болды, олардың қатарына экономиканың шикізаттық сипаты, өңдеу өнеркәсібінің үлес салмағының төмендігі, бюджетпен қамтамасыз етілмеуі, аймақтардың табиғи апаттардан жоғары осалдығы жатады. Анықталған тәуекелдердің теріс әсерін нивелирлеу және Батыс Қазақстан аймақтардың экономикалық тұрақтылығын арттыру бойынша ұсынымдар әзірленді.

Кілттік сөздері: аймақ, экономикалық тұрақтылық, экономика, экономикалық құрылым, бюджеттік қауіпсіздік

Алғыс: бұл зерттеуді Қазақстан Республикасы Ғылым және жоғары білім министрлігінің Ғылым комитеті қаржыландырады (№ AP23488456 гранты «Қазақстанның проблемалық аймақтардың экономикасы мен әлеуметтік саласының даму теңгерімсіздігі және олардың тәуекелдері: факторлар, бағалау, ықтимал сценарийлер, нивелирлеу тетіктері» жобасы бойынша қаржыландырды).

Исследование динамики экономической устойчивости Западно-Казахстанских регионов и рекомендации по ее повышению

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Аннотация

Устойчивость экономического развития Западно-Казахстанских регионов, несмотря на их значительный вклад в валовой региональный продукт страны, подвержена значительным рискам. Для выявления основных рисков экономической устойчивости и обоснования мер по их преодолению необходимо исследование динамики экономических показателей этих регионов. Целью статьи явилось исследование динамики экономической устойчивости Западно-Казахстанских регионов и разработка рекомендаций по ее повышению. Для достижения цели решались задачи: провести анализ динамики экономической устойчивости по основным экономическим показателям, характеризующим масштабы региональной экономики, ее структуру, объем инвестиций и научно-исследовательских и опытно-конструкторских работ; выявить риски достижения экономической устойчивости; определить меры по их преодолению. Гипотезой явилось предположение, что достижение экономической устойчивости развития областей Западного Казахстана затруднено из-за дисбалансов в структуре их экономики. Использованы методы логического, экономическо-статистического анализа, аналогий, сравнений, системного подхода, обобщений. Результатом проведенного анализа было выявление основных рисков экономической устойчивости Западно-Казахстанских регионов, к числу которых отнесены сырьевой характер экономики, низкий удельный вес обрабатывающей промышленности, недостаточная бюджетная обеспеченность, высокая уязвимость регионов от природных катаклизмов. Разработаны рекомендации по нивелированию негативного влияния выявленных рисков и повышению экономической устойчивости регионов Западного Казахстана.

Ключевые слова: регион, экономическая устойчивость, экономика, структура экономики, бюджетная обеспеченность

Благодарность: данное исследование финансируется Комитетом науки Министерства науки и высшего образования Республики Казахстан (грант № AP23488456 «Дисбалансы развития экономики и социальной сферы проблемных регионов Казахстана и их риски: факторы, оценка, возможные сценарии, механизмы нивелирования»).

Введение

Развитие экономики Казахстана характеризуется большими региональными различиями, обусловленными разнообразием природно-климатических условий и отраслевой специализацией регионов. Западно-Казахстанские регионы занимают особое место в пространственной структуре экономики, поскольку отраслями их специализации является добыча и в меньшей степени переработка нефти и газа. Сырьевой характер региональной экономики Западного Казахстана, с одной стороны, обеспечивает значительный вклад в создаваемый в стране валовой региональный продукт, с другой стороны, однобокая, слабо диверсифицированная экономика подвержена многим рискам и угрозам.

В числе этих рисков волатильность мировой конъюнктуры цен на добываемое сырье, колебания спроса на мировых рынках сырья, нарушение логистических цепочек вследствие влияния нестабильной геополитической и эпидемиологической обстановки, природных и техногенных катаклизмов и др. Более того, присутствие крупных газо-нефтедобывающих компаний с иностранным участием не гарантирует социальное развитие региона и рост благосостояния его населения. Даже ориентир крупных компаний, использующих ESG принципы, в частности в вопросах социальной интеграции с бизнес-структурами, не позволяет населению прямо избегать инфляционных рисков. Поэтому изучение динамики экономической устойчивости Западно-Казахстанских регионов имеет очень важное значение для выявления слабых мест в их развитии и достижения устойчивого экономического роста в стране.

Целью статьи явилось исследование динамики экономической устойчивости Западно-Казахстанских регионов и разработка рекомендаций по ее повышению. Для достижения цели проведен анализ динамики экономической устойчивости по основным экономическим показателям, характеризующим масштабы региональной экономики, ее структуру, объем инвестиций и развитие научно-исследовательских и опытно-конструкторских работ. Выявлены основные тенденции и риски экономического развития Западно-Казахстанских регионов, обоснованы меры по повышению устойчивости их экономики.

В качестве гипотезы выдвинуто предположение, что достижение экономической устойчивости в развитии областей Западного Казахстана затруднено из-за дисбалансов в структуре их экономики. Использованы методы логического, экономическо-статистического анализа, аналогий, сравнений, системного подхода, обобщений.

Результатом проведенного анализа было выявление основных рисков недостаточной экономической устойчивости Западно-Казахстанских регионов, к числу которых отнесены однобокая структура экономики сырьевого характера, низкий удельный вес обрабатывающей промышленности в структуре экономики, недостаточная бюджетная обеспеченность, высокая уязвимость регионов от природных катаклизмов. Разработаны рекомендации по нивелированию негативного влияния выявленных рисков и повышению экономической устойчивости регионов Западного Казахстана.

Литературный обзор

В последние десятилетия объектом внимания многих ученых стала проблема устойчивого развития. При этом, как подчеркивают исследователи, в каждой стране формируются национальные концепции и стратегии устойчивого развития [1]. Такие программные документы приняты и в Казахстане (Экологический Кодекс и Стратегия углеродной нейтральности) [2,3].

При исследовании проблем устойчивого развития учеными чаще всего поднимаются вопросы экологии, декарбонизации, сохранения биоразнообразия, поддержании системы жизнеобеспечения для выживания и удовлетворения основных потребностей человека [4]. Все эти вопросы очень важны с позиции дальнейшего мирового развития, однако их решение невозможно без устойчивости экономики. Важность этого вопроса, как показывает мировой опыт, увеличивается в период усиления влияния глобальных вызовов, природных и техногенных катаклизм, ухудшения эпидемиологической обстановки.

Многие ученые Kastelli I., Mamica L., Lee K. рассматривают проблему экономической устойчивости применительно к отдельным субъектам хозяйственной деятельности, все чаще исследователи стали рассматривать вопросы устойчивости экономики в региональном аспекте, с точки зрения развития отдельных территорий страны [5]. К примеру, ряд ученых Glinskiy, Serga L., Novikov A., Litvintseva G., Bulkina A., Tian L., Wang H.H., Chen Y. Считают, что неравномерное экономическое развитие регионов может повлиять на рост бедности, вызвать социальные конфликты и отрицательно повлиять на устойчивое развитие [6,7]. Этим вопросам уделили внимание ученые многих стран Европейского региона [8,9].

Ученые Kurbanova Z. и Yusupov M. также отмечают, что многие страны включают Цели устойчивого развития (ЦУР) в национальное законодательство, так как понимают опасность игнорирования негативного влияния стихийных бедствий и кризисных ситуаций по всему миру на экономическое развитие [10,11].

В круг вопросов, которые рассматривали отдельные исследователи, вошли такие, как определение ограничений для устойчивого развития, а также уровень готовности правительств к противостоянию ко внутренним и международным вызовам [12]. Такие работы изучают интеграцию технологий и политических ведомств, уровень развития и адаптации электронного правительства в специфичные регионы, где возможности применения должны учитывать особенности местных приоритетов власти [13]. Ориентир на решение потребностей своего региона, решению общественных проблем является для правительства первостепенным. Оценка уровня адаптации систем в регионах является частью развития моделей электронного правительства, что особенно важно в периоды экономических и геополитических кризисов. Еще одним важным аспектом является безопасность [13,14,15].

Результаты подобных исследований могут быть полезны правительствам страны и гражданскому обществу. Однако еще недостаточно изучены проблемы устойчивого развития экономики сырьевых регионов в растущих экономиках. Настоящее исследование направлено на восполнение этого пробела.

Методы исследования

Аналитическая часть исследований проведена с помощью экономико-статистического, аналогий, сравнений. Рекомендации разработаны при помощи логического анализа, системного подхода, обобщений. Информационной базой послужили научные труды, нормативно-правовые документы, официальные статистические данные Бюро национальной статистики Республики Казахстан, материалы сайтов акиматов Западно-Казахстанских регионов, крупных компаний квазигосударственного сектора, размещенных на территории данных регионов.

Исследование осуществлялось по следующему алгоритму (рисунок 1).

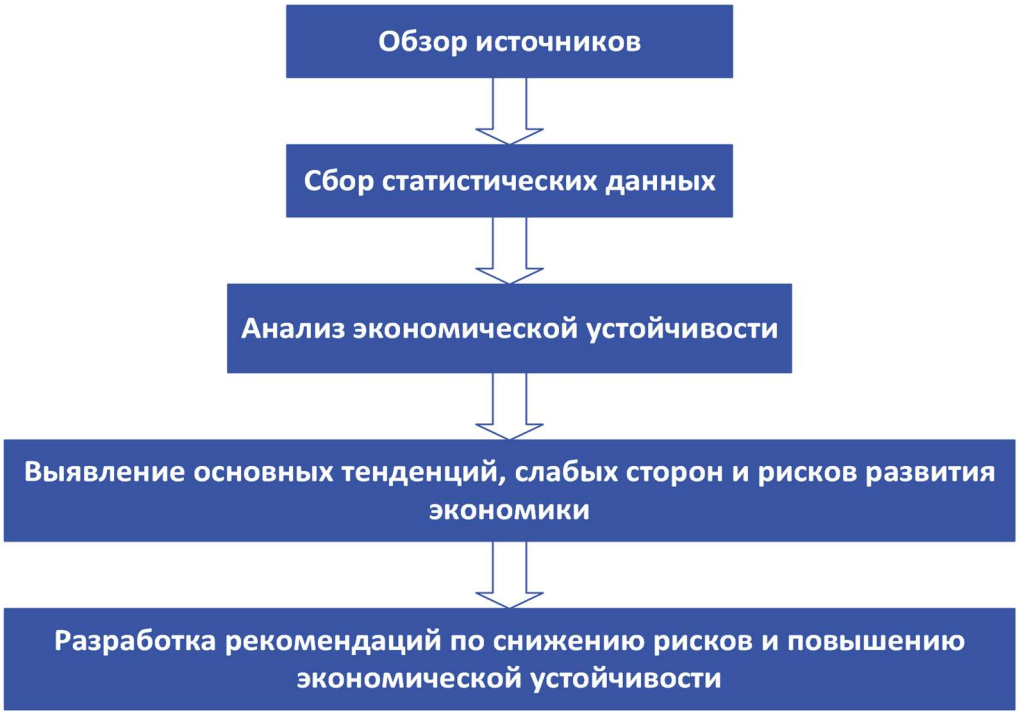

Рисунок 1. Алгоритм исследования

Примечание: составлено авторами

Анализ экономической устойчивости проводился по следующим показателям:

– валовой региональный продукт (ВРП) на душу населения, тыс. тенге;
– удельный вес регионов в валовом внутреннем продукте (ВВП), %;
– доля горнодобывающей промышленности, % к ВРП;
– доля обрабатывающей промышленности, % к ВРП;
– доля сельского хозяйства, % к ВРП;
– инвестиции в основной капитал, млн. тенге;
– внутренние затраты на НИОКР, млн. тенге.

Результаты

Регионы Западного Казахстана представлены Актюбинской, Атырауской, Западно-Казахстанской и Мангистауской областями, экономика которых в основном носит сырьевой характер. Разработка нефтяных, газовых и газоконденсатных месторождений, горнодобывающая промышленность, транспортировка нефти и газа в этих регионах являются приоритетными, все остальные сектора экономики находятся в прямой зависимости от состояния их развития. Эти регионы занимают особое место в экономической системе Казахстана, так как вносят наибольший по сравнению с другими регионами вклад в формирование валового внутреннего продукта (ВВП) страны. В этих регионах функционируют крупнейшие предприятия квазигосударственного сектора и иностранные компании. Так, основу экономики регионов Западного Казахстана составляет производство сырой нефти, сжиженного углеводородного газа, серы и осушенного газа такими компаниями, как ТОО «Тенгизшевройл», АО «Разведка Добыча «КазМунайГаз», «Карачаганак Петролеум Оперейтинг», Холдинг «Конденсат».

Согласно нашему предположению, достижение экономической устойчивости в развитии данных областей затрудняют дисбалансы в структуре экономики, поскольку снижают возможности всеохватного и неуклонного экономического роста, полной и производительной занятости и достойной работы для всех, что соответствует 8 ЦУР. Для подтверждения вышесказанной гипотезы проведен анализ динамики основных показателей областей Западного Казахстана, характеризующих структуру экономики и ее устойчивость (таблица 1).

Таблица 1. Динамика показателей экономической устойчивости Казахстана

№	Показатель	2015	2019	2020	2021	2022
1	ВРП на душу населения, тыс. тенге	2330,4	3 755,7	3 766,8	4 417,9	5 284,7
2	Удельный вес регионов в ВВП, %	100,0	100,0	100,0	100,0	100,0
3	Доля горнодобывающей промышленности, % к ВРП	12,65	14,43	12,17	14,20	Н. св.
4	Доля обрабатывающей промышленности, % к ВРП	10,28	11,47	13,07	13,60	Н. св.
5	Доля сельского хозяйства, % к ВРП	4,71	4,47	5,39	5,00	Н. св.
6	Инвестиции в основной капитал, млн. тенге	7 024 709	12 576 793	12 270 144	13 242 233	15 251 104
7	Внутренние затраты на НИОКР, млн. тенге	69 302,9	82 333	89 028,7	109 333	121 560

Примечание: составлено на основе источника [16]

В таблице наблюдается увеличение доли горнодобывающей промышленности с 10,28 до 13,60, что указывает на продолжающуюся зависимость от сырьевых ресурсов. За указанный период наблюдаются некоторые колебания, что может свидетельствовать о влиянии внешних факторов, таких как мировые цены на нефть и газ. Сильный рост наблюдается в количестве инвестиций в основной капитал: с 7 024 70 до 15 251 104 миллионов тенге. Можно отметить положительную тенденцию так же в показателях затрат на научно-исследовательские и опытно-конструкторские работы (НИОКР) почти в два раза. Оба последних показателя говорят об устойчивом росте экономики, однако необходимо стремиться уходить от сырьевой направленности.

Ниже на рисунке 2 рассматриваются показатели устойчивости Западно-Казахстанских регионов.

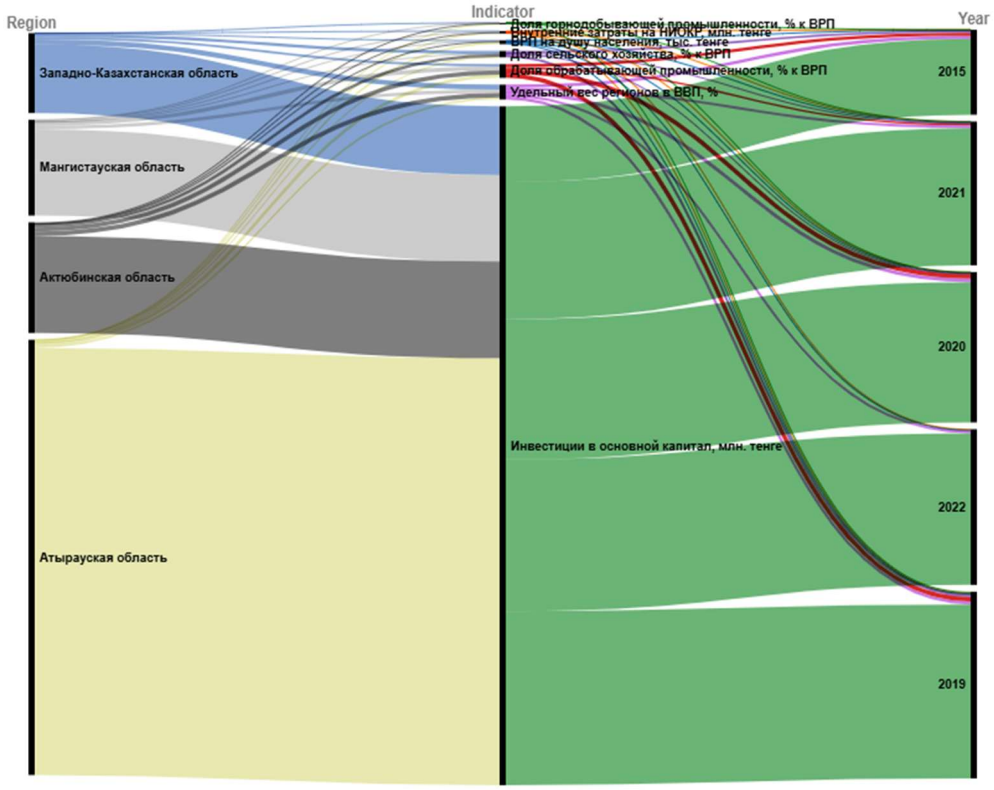

Рисунок 2. Динамика показателей экономической устойчивости Западно-Казахстанских регионов

Примечание: составлено авторами

Приведенные данные демонстрируют относительную экономическую устойчивость рассматриваемых регионов, подверженную негативному влиянию глобальных вызовов. Так, анализ динамики ВРП на душу населения свидетельствует, что в 2020 г. во всех газо-нефтедобывающих регионах наблюдался спад по сравнению с предыдущим годом. На наш взгляд, это

свидетельствует о негативном влиянии рецессии мировой экономики во время пандемии, в период которой резко снизился спрос на углеводородное сырье в силу снижения производства, соответственно уменьшились цены и доходы от экспорта, нарушились логистические и технологические цепочки. В то же время, в целом по Казахстану снижения ВРП не произошло, это означает, что в других регионах с более диверсифицированной экономикой спада не наблюдалось. Из этого можно заключить, что сырьевая экономика более уязвима к рискам и угрозам устойчивого развития.

Действительно в структуре экономики Атырауской области горнодобывающая промышленность занимает 43,9%, в Западно-Казахстанской области – 45,0%, а в Мангистауской области - 44,2%, то есть почти половину экономики, при этом в структуре промышленности Мангистауской области эта отрасль является преобладающей (86%).

В то же время в период пандемии во всех анализируемых регионах увеличились доли обрабатывающей промышленности и сельского хозяйства. В большей мере обрабатывающая промышленность развита в Актюбинской области, доля которой составила 10,98 %, что приближено к уровню среднереспубликанского показателя (13,6%). Экономика этой области имеет индустриально-аграрную направленность. Промышленность представлена не только добычей нефти и газа, но и хрома (АО «ТНК «Казхром», а также производствами их переработки (АО «Актюбинский завод хромовых соединений», производящий более четверти казахстанских ферросплавов, рентгеноаппаратуры), предприятиями машиностроения, металлургии, оборонной, горнодобывающей, швейной, переработки сельскохозяйственной продукции, строительства и другими. В структуре производства обрабатывающей промышленности наибольшую долю занимает производство ферросплавов (47 %), также производятся хромовые соли (14,2 %) и рельсовая продукция (9,7 %). В сельском хозяйстве области основными направлениями развития являются как животноводство, так и растениеводство.

В других регионах структура экономики регионов слабо диверсифицирована, доля обрабатывающей промышленности не превышает 4-5%. В Атырауской области имеется лишь Атырауский нефтеперерабатывающий завод, благодаря функционированию которого доля обработки в структуре ВРП составила 5,3%. Ярким свидетельством сырьевого характера Западно-Казахстанской области является структура экспорта в Италию, Францию, Нидерланды, Польшу, в котором до 99% занимают минеральные продукты (сырая нефть и нефтепродукты). Остальные товарные группы экспорта незначительны и представляют собой продукты животного и растительного происхождения, продовольственные товары и прочие. Но самой узкоспециализированной на добыче нефти является экономика Мангистауской области, где доля обрабатывающей промышленности не превышает 3,7%, а сельское хозяйство практически отсутствует (0,7%) и представлено в основном верблюдоводством.

Что касается инвестиций в основной капитал, то за анализируемый период они выросли по всем регионам, кроме Западно-Казахстанской области в 2021 году,

также снизились внутренние затраты на НИОКР в Западно-Казахстанской и Атырауской областях в 2022 году.

Помимо вышеприведенных показателей для характеристики экономической устойчивости регионов нами была проанализирован показатель бюджетной обеспеченности, показывающий, насколько регион способен покрыть свои расходы за счет собственных доходов, за исключением трансфертов республиканского бюджета. Анализ показал, что только в Атырауской области бюджетная обеспеченность достигает 84,4%, в Мангистауской области – 65,4%, а в Актюбинской и Западно-Казахстанской области показатель не достигает и половины требуемых расходов – 41,8% и 41,7% соответственно. Это положение свидетельствует о недостаточной экономической устойчивости регионов вследствие несовершенства бюджетно-налоговой политики и межбюджетных отношений. Так, по оценкам экспертов средняя бюджетная обеспеченность регионов страны за 2000–2020 годы снизалась в два раза – с 85,1% до 38,8% [17]. Иначе говоря, в Казахстане усилилась зависимость местных бюджетов от республиканского бюджета. Причиной явилась чрезмерная централизации большинства доходов на уровне республиканского бюджета в тот период.

Еще одним показателем, ярко характеризующим экономическую устойчивость, является продовольственная самообеспеченность региона. Для этого в предыдущих исследованиях нами был рассчитана степень обеспеченности социально-значимыми продовольственными товарами как отношение собственного производства продуктов за минусом экспорта к численности населения. умноженной на уровень потребления на душу населения. Расчеты показали, что Актюбинская и Западно-Казахстанская области обеспечивают свое население продовольствием на 73% и 71% соответственно. Намного хуже обеспеченность продуктами собственного производства в Атырауской области – всего на 52% и Мангистауской области – 46%. Приведенные цифры еще раз подтверждают, что экономическая устойчивость сырьевых регионов, несмотря на экономический рост, недостаточна, так как во многом зависит от экспорта продовольствия.

Большие риски для устойчивого развития страны и ее регионов несут природные катаклизмы. Так, в 2024 г. большой ущерб экономике и социальной сфере всех областей Западного Казахстана нанесли аномальные по мощности и скорости паводки. Ущерб от них**,** по оценкам эксперта, может составить до 200 млрд тенге или примерно 444 млн долл. США по текущему курсу, что превышает все совокупные убытки от водных бедствий за прошедшие 30 лет [18]. Более точные размеры ущерба, выразившегося в затоплении и разрушении жилых домов, производственных объектов, посевных площадей, производственной, транспортной и социальной инфраструктуры (автодороги, мосты, железнодорожные пути, линии связи, электропередач и водоснабжения и другое), потере рабочих мест, снижении поголовья скота, резком понижении благосостояния населения, еще только предстоит оценить. Специалисты страховой компании «Евразия» рассчитали имущественный ущерб населению в размере, превышающем 6 млрд тенге. Из этой суммы более половины пришлось на

Актюбинскую область, где были подтоплены 1,8% всех частных жилых домов в сельских населенных пунктах [19].

В расчеты были включены: вероятный ущерб недвижимости, утерянное и поврежденное имущество, в том числе предметы быта, транспорт и сельскохозяйственная техника, падший скот, принадлежавшие частным лицам. К сожалению, возмещение ущерба осуществляется государством, а также частично благотворительными организациями и за счет пожертвований, поскольку только менее 1% пострадавшего имущества было застраховано. Нужно отметить, что страхование имущества несет положительный эффект не только для людей, имущество которых пострадало, но и для состояния местных и республиканского бюджетов. Например, в результате наводнения Словении в 2023 году ущерб был оценен в 4,7 млрд. евро, но 43% были покрыты страховой защитой. Отсюда следует, что в Казахстане, по опыту зарубежных стран необходимо разработать и внедрить массовую программу страхования от катастрофических рисков.

Нужно отметить, что сырьевой сектор Западно-Казахстанских регионов не сможет компенсировать понесенные убытки, так как добыча нефти в период паводков сократилась на 1,8%. Исходя из этого можно утверждать, что природные и техногенные наводнения значительно снизили уровень экономической устойчивости Западно-Казахстанских регионов. Сложившееся состояние экономики свидетельствуют о недостатках регулирующего воздействия республиканских и местных властей и обуславливает необходимость его совершенствования.

Обсуждение

Таким образом, проведенное исследование позволили сделать следующие выводы:

1) Анализ выявил снижение объемов произведенного ВРП в период пандемии и падение добычи нефти и газа в период паводков 2024 года, что по предварительным оценкам несомненно отразится на объеме ВРП на душу населения и экономической устойчивости Западно-Казахстанских регионов.

2) Сложившаяся динамика экономических показателей подтверждает ранее выдвинутую гипотезу, что сырьевая экономика в большей степени подвержена всевозможным рискам и угрозам по сравнению с более диверсифицированной вследствие высокой зависимости экономики от мировой конъюнктуры цен на углеводородное сырье, а также от импорта продовольствия и других товаров.

3) Для повышения экономической устойчивости сырьевых регионов необходимо обеспечить развитие отраслей переработки добываемого сырья, производств по переработке сельхозпродукции, других секторов экономики, в том числе IT-сектора, а также содействие развитию малого и среднего бизнеса (МСБ).

4) В Казахстане необходима корректировка региональной политики с целью ориентации регионов на повышение самодостаточности и совершенствования системы мер по приоритетному развитию производств обрабатывающей промышленности на основе использования внутренних ресурсов (природных, производственного и человеческого капиталов, благоприятного географического

положения), а также включения превентивных мер по предупреждению вероятных глобальных экономических, геополитических и природно-климатических рисков и угроз.

Заключение

1) Для областей Западного Казахстана прежде всего необходимо внедрение механизмов стимулирования и поддержки малого и среднего бизнеса. В частности, в каждой области рекомендуется разработка и реализация Плана мероприятий по содействию развитию МСБ в реальном секторе (промышленное и сельскохозяйственное производство, транспортно-логистической инфраструктура, строительство и т.п.), а также в туристическом и гостиничном бизнесе.

2) В Мангистауской области с неблагоприятными условиями для земледелия рекомендуется развитие верблюдоводства и производства по переработке его продукции, что будет способствовать повышению самообеспеченности региона продуктами питания и другими товарами первой необходимости.

3) В целях повышения социальной ответственности бизнеса необходимо развитие государственно-частного партнерства (ГЧП), благодаря чему можно обеспечить совместные слаженные действия государства и бизнеса по предоставлению различных услуг и созданию новых рабочих мест.

4) Рекомендуется использовать преимущественно косвенные и дифференцированные механизмы стимулирования в зависимости от приоритетности задач, в том числе следующие:

- предоставление помещений для малого и микробизнеса на безвозмездной основе;
- предоставление льгот при аренде земель сельскохозяйственного назначения для фермеров;
- упрощение администрирования для субъектов МСБ при выдаче разрешений, сертификатов, лицензий на предпринимательскую деятельность.

5) С учетом передового зарубежного опыта необходимо совершенствование налоговой политики в следующих направлениях:

- максимально возможное налоговое послабление для микробизнеса;
- введение нулевых экспортных ставок для предприятий обрабатывающей промышленности, производящих продукцию с высокой добавленной стоимостью;
- уменьшение налога на добавленную стоимость (НДС) для стартапов и новых высокотехнологичных производств, создаваемых на проблемных территориях.

6) Многие проблемы в регионах Западного макрорегиона могут быть решены путем совершенствования межбюджетных отношений. В частности, рекомендуется повышение бюджетной самостоятельности регионов за счет передачи части налога на добавленную стоимость (НДС) на региональный уровень. Это позволит снизить большой объем трансфертов из республиканского в местные бюджеты с 50% при действующей системе налогообложения до 25%. В результате будут снижаться неэффективные встречные бюджетные потоки.

7) Чрезвычайная ситуация с паводками на западе и севере Казахстана в очередной раз поднимает вопрос о необходимости разработки и внедрения массовой программы обязательного страхования от катастрофических рисков по всей стране, как во многих других странах.

Рекомендуемые меры реализации региональной политики будут способствовать повышению экономической устойчивости газо-нефтедобывающих регионов.

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Interpersonal skills: a comparative study of the fitness industry and the technological sector

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Abstract

Today, with the trend of the development of the technical sphere and the increase in the need for the development of a healthy lifestyle, an essential factor when choosing a professional is not only a competent specialist but also a high level of emotional intelligence taken into account, as this is one of the main predictors of effectiveness in working with people for results. This study is relevant since managers of technical specialties directly focus on working with equipment, and the zone of emotional intelligence will be their zone for development; in turn, trainers concentrate on working with people who often hone the skill of emotional intelligence. The goal is to determine the level of differences in emotional intelligence among technical company managers and fitness trainers. The object is the managers of the technical company (TOO KN-Tel) and fitness trainers (FitnessB). The subject of research is the level of emotional intelligence. The research methodology was composed of the “Emotional Intelligence Test” (N. Hall) and the "EmIn Test". The data collected from the technical company managers and the fitness club trainers were processed using the IBM SPSS Statistics 22 statistical program package. Emotional intelligence plays an important role in the success of both groups, but it manifests itself differently depending on the professional environment. These differences must be considered when developing emotional competence development programs for different professional categories. The results of this work revealed the level of understanding of other people's emotions in both groups, and companies could use it to draw up training programs and events to develop emotional intelligence as a whole and in individual ego zones.

Keywords: managers, coaching, skills, emotional intelligence, competencies, professional competencies, personnel management

Тұлға аралық дағдылар: фитнес индустриясы мен технологиялық секторды салыстырмалы зерттеу

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Түйін

Бүгінгі таңда техникалық саланың даму тенденциясы және салауатты өмір салтын қалыптастыру қажеттілігінің артуы жағдайында маман таңдауда маңызды фактор тек құзыретті маман ғана емес, сонымен қатар эмоционалдық интеллекттің жоғары деңгейі де ескеріледі, өйткені бұл нәтижеге жету үшін адамдармен жұмыс істеудегі тиімділіктің негізгі болжаушылардың бірі. Бұл зерттеу өзекті болып табылады, өйткені техникалық мамандықтардың менеджерлері тікелей технологиямен жұмыс істеуге бағытталған және эмоционалдық интеллект саласы олардың даму аймағы болады, өз кезегінде тренерлер адамдармен жұмыс істеуге назар аудара отырып, эмоционалдық интеллект дағдыларын жиі шыңдайды. Мақсат – техникалық компания менеджерлері мен фитнес-жаттықтырушылар арасындағы эмоционалдық интеллект айырмашылығының деңгейін анықтау. Объектілер – техникалық компанияның менеджерлері («КН-Тел» ЖШС) және фитнес-тренерлер (FitnessB). Зерттеу пәні эмоционалды интеллект деңгейі болып табылады. Зерттеу әдістемесі «Эмоционалдық интеллект сынағы» (Н. Холл) және «Тест ЭмИн» болды. Техникалық компания менеджерлері мен фитнес-клуб жаттықтырушыларынан жиналған деректер IBM SPSS Statistics 22 статистикалық бағдарламалық пакетінің көмегімен өңделді. Эмоциялық интеллект екі топтың да табысты болуында маңызды рөл атқарады, бірақ кәсіби ортаға байланысты әртүрлі түрде көрінеді. Бұл айырмашылықтарды әртүрлі кәсіби санаттар үшін эмоционалдық құзыреттіліктерді дамыту бағдарламаларын әзірлеу кезінде ескеру қажет. Бұл жұмыстың нәтижелері екі топтағы басқа адамдардың эмоцияларын түсіну деңгейін анықтауға мүмкіндік берді және оларды пайдалануға болады. Компаниялары жалпы эмоционалдық интеллектті және оның жеке аймақтарын дамытуға бағытталған оқу бағдарламалары мен іс-шараларын жасау үшін.

Кілттік сөздері: менеджерлер, тренингтер, дағдылар, эмоционалды интеллект, құзыреттер, кәсіби құзыреттер, персоналды басқару

Межличностные навыки: сравнительное исследование фитнес-индустрии и технологического сектора

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Аннотация

Сегодня, при тенденции развития технической сферы и увеличении потребности в развитии здорового образа жизни, немаловажным фактором при выборе профессионала является не только компетентный специалист, но также учитывается высокий уровень эмоционального интеллекта, так как это один из главных предикторов эффективности в работе с людьми на результат. Данное исследование актуально, поскольку менеджеры технических специальностей непосредственно сосредотачиваются на работе с техникой и зона эмоционального интеллекта, будет являться их зоной для развития, в свою очередь как тренеры, сосредотачиваясь на работе с людьми, чаще оттачивают навык эмоционального интеллекта. Целью является определение уровня различий эмоционального интеллекта у менеджеров технической компании и фитнес-тренеров. Объектом являются менеджеры технической компании (ТОО KN-Tel) и фитнес тренеры (FitnessB). Предметом исследования является уровень эмоционального интеллекта. Методологию исследования составили «Тест эмоционального интеллекта» (Н. Холл) и «Тест ЭмИн». Собранные данные от менеджеров технической компании и у тренеров фитнес-клуба были обработаны с использованием пакета статистических программ IBM SPSS Statistics 22. Эмоциональный интеллект играет важную роль в успехе обеих групп, но проявляется по-разному в зависимости от профессиональной среды. Эти различия необходимо учитывать при разработке программ по развитию эмоциональной компетентности для различных профессиональных категорий. Результаты данной работы позволили выявить уровень понимания чужих эмоций в обеих группах и могут быть использованы компаниями, для составления тренинговых программ и мероприятий, направленных на развитие эмоционального интеллекта в целом и на отдельные его зоны.

Ключевые слова: менеджеры, тренерство, навыки, эмоциональный интеллект, компентенции, профессиональные компетенции, управление персоналом

Introduction

Solutions to many theoretical and practical ways of displaying emotional intelligence are revealed in theories of emotional-intellectual abilities, the theory of emotional competence, the non-cognitive theory of emotional intelligence, and others. Also, the volume of research devoted to the importance of interpersonal skills for successful leadership has been growing recently. Social intelligence is becoming critically important for managers, coaches, and mentors at various levels because their success increasingly depends on effectively managing teams, establishing strategic connections, and influencing others. The higher the level of the organizational hierarchy, the more problem-solving is associated with interpersonal interaction [1]. Employees who know how to resolve conflicts, motivate others, and adapt to changes often have higher emotional intelligence. Accordingly, organizations often seek to hire coaches or managers with the above skills. Awareness of the importance of interpersonal competencies has recently acquired the status of a company asset related to human capital. There is a shift in the understanding of soft skills: employees with high emotional intelligence are now perceived as valuable assets [2].

For coaches, the ability to empathize and understand is essential, but more often than not, relationships in sports are long-term, and the coach must be a leader. There are many leadership theories, but there needs to be more research in sports leadership. Researchers have developed the Coach Behavior Assessment System and the Sports Leadership Scale, which allow us to assess the influence of coaches' communication with athletes on their confidence levels and performance. More often, high performance in competitions was associated with the style of training, a reflection of the coach's competence, the level of satisfaction with training, the self-esteem and motivation of the athlete, and other communication factors during preparation [3,4]. Boardley, Kavussanu, and Ring, in their study of transformational and transactional leadership theories, found similarities in the effectiveness of business models, coaching, and sports. Both found support for the relationship of these leadership behaviors to training effectiveness [5]. It has been theoretically substantiated and experimentally proven that emotional intelligence is a set of personal abilities that ensure identification, understanding of the causes, and management of one's own emotions and other people's emotions to successfully achieve goals and objectives in activities (professional activities, communication). It includes an intrapersonal component - understanding and managing one's own emotions and an interpersonal component - understanding and managing other people's emotions.

The article aims to determine the level of differences in emotional intelligence among managers of a technical company and fitness trainers. The object is managers of a technical company (TOO KN-Tel) and fitness trainers (FitnessB). The subject of the study is the level of emotional intelligence. The hypotheses of the study are related to the specifics of work and leadership:

Hypothesis 1: Fitness trainers have higher emotional intelligence than managers of a technical company.

Hypothesis 2: Managers of a technical company have higher emotional intelligence than fitness trainers. The article includes a literature review, data collection, methodology, statistical analysis, and conclusions.

Literature review

Theoretical analysis of emotional intelligence in managers

Modern conditions have changed the requirements for managers. One requirement is emotional leadership, where you must skillfully manage people, relying on emotional intelligence. Emotional leadership leads companies to success, unlike the rational approach, which is already outdated.

Emotions seriously affect an individual's health and behavior, but social emotions have only recently begun to be studied. They affect the ability to cope with stress, resolve conflicts, regulate mood and performance, etc. Motivation, the effectiveness of the organization, and professional activity depend on how well a person can manage his emotional state.

While defending his doctoral dissertation, Physiologist Reuven Bar-On introduced a new concept of the "emotionality coefficient," which gained popularity and was studied in more detail by scientists John Mayer and Peter Salovey. This concept spread in the scientific field when an article with this title was published. It is also worth mentioning the works of Daniel Goleman, who described the history of the development of the emotional intelligence theory by analyzing modern ideas about this phenomenon. He also proposed his model [6,7].

This concept spread in the scientific field when an article with this title was published. Scientists identify the four components of emotional intelligence: self-control, self-awareness, sensitivity to society, and relationship management. Self-awareness and self-control aim to work with an individual's emotions; the last two components are essential when communicating with others. For example, empathy is needed for a company to be successful, especially in an environment with several cultures. A manager must be stress-resistant and correctly use the emotions of his subordinates to achieve the company's goals [8,9,10]. That is why such terms as "emotional contagion" and "emotional uplift" come into play.

Theoretical analysis of emotional intelligence in coaches

From a coaching perspective, self-control in coaches results from training in self-awareness and working on time efficiency. To create training and daily plans, coaches can improve organizational aspects through software and web platforms. In addition, coaches who have the best results in organizing their schedule have high results in the teams they lead. Thus, there is a connection between the ability to control their emotional state in coaches and the victories of their athletes. Scientists have also found a connection in the opposite direction: aggressive behavior of coaches leads to low motivation in athletes [11]. Therefore, the emotional background of athletes increases after a motivational speech by a coach before important competitions. A coach who can evoke positive pre-game feelings in his athletes demonstrates control over his emotional state and knowledge of the emotions that prompt them to react. Therefore, the coach is

responsible for implementing emotional regulation and control, especially at critical moments for the team.

Olympic coaches note that keeping calm under pressure significantly improves their ability to make strategic decisions and effectively manage a team [12]. Thus, cognitive-behavioral training allows a coach to develop skills in hiding emotions during tense moments in games and reduce the number of penalties for the team since the athletes also try to control their behavior [13]. Emotionally intelligent coaches know how to adjust the team's actions right during games, significantly if the opponent has changed their behavior strategy.

However, the calm state of an athlete is more suitable for sports that require concentration (chess, e-sports, etc.). Experienced coaches understand that there is a specific range of emotions. Sometimes, athletes in a state of anger can produce better results, significantly if the sport is associated with physical activity [14]. Therefore, control on the part of a coach also lies in the ability to bring his team out of a state of equilibrium to achieve high sports results (for example, in football) [15].

But the feelings of anger and anxiety are two emotions with opposite effects. Anger leads to achieving results as a catalyst, and anxiety does not allow concentration; it is an exhausting internal state [16]. At this moment, when the coach notices the first symptoms of anxiety and worries, he demonstrates such behavior that calms the athlete. However, if the coach does not have an emotional connection or needs to learn how to read team members' emotions, this leads to low sports results. It turns out that team management is the most essential skill for a coach, individual athletes, or the entire team [17,18]. Thus, a necessary role of the coach is the ability to resolve conflicts that arise not only at the team level but also between players and the management of sports clubs, to replace parents where necessary, to motivate and lead to achievements, and to be a friend in those moments when it is needed.

Methodology

The data for the study were collected as a result of a survey of employees of two companies: TOO "KAR-Tel" and "FitnessBlitz." In the first company, 30 top and middle managers were surveyed; 30 trainers were also surveyed in the second company. Mathematical processing was carried out using the IBM SPSS Statistics 22 statistical software package. Psychodiagnostic research methods are based on two methods:

1. Methodology “Emotional Intelligence Test” (N. Hall).
2. "Test EmIn" (D.Lucin).

The purpose of the first method is to determine the key aspects of the perception of the emotional stability of the individual [19]. The second method additionally includes the Mann-Whitney U test and will allow to identify the ability to control one's own emotions and the emotions of others [20,21].

The stages of conducting the research include:

1. Conducting two tests on the example of a technical company, namely managers of KAR-Tel LLC;
2. Conducting two tests among fitness trainers "FitnessBlitz"
3. Statistically process the results of each sample;

4. Formulate the necessary conclusions based on the results obtained.

Emotional Intelligence Test" N. Hall

The procedure for conducting the method: the subjects are offered statements that, in one way or another, reflect various aspects of their lives. Each statement must be marked according to the level of compliance with it on a scale from (-3 points) to (+3 points), there is no intermediate value of 0. Registered indicators: the methodology consists of 30 statements, divided into 5 parts (Figure 1).

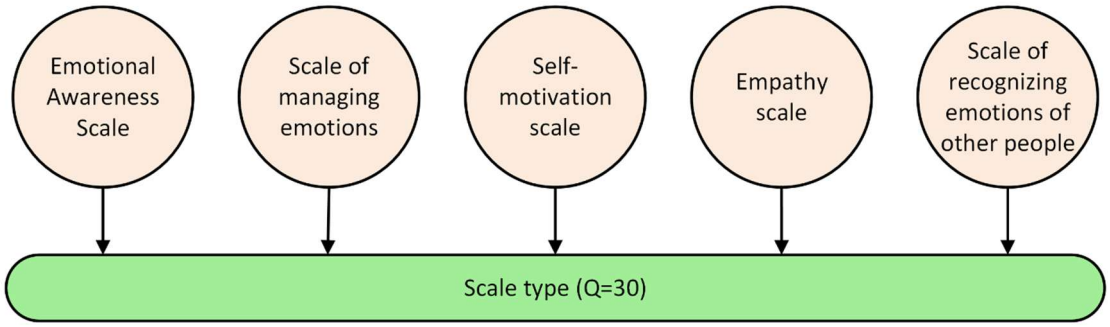

Figure 1. Types of question scales according to the "Emotional Intelligence Test" method (N. Hall)

Note: compiled by the authors

The first scale shows understanding and awareness of one's emotions through regular enrichment of the vocabulary of emotional expressions. The second scale assesses the ability to control one's emotional state. The third scale assesses a person's ability to control one's behavior. The fourth scale is devoted to determining the empathy of a leader (trainer or manager) and the ability to read the emotions of others by their behavior. Finally, the fifth scale includes questions to assess the ability to influence others.

This test will assess the ability of managers to recognize and regulate their emotions, including during conflict situations. The positive side of the survey is also information about how managers use emotions to maintain high motivation and productivity at work. It is planned to identify strengths and weaknesses in developing emotional intelligence in individual managers. The survey of fitness trainers will show the quality of customer service, the training process's effectiveness, and the fitness club's working atmosphere. Trainers with developed empathy better understand their clients' emotional and physical limitations, which helps to individualize training programs, avoid overload, and maintain motivation at a high level.

The second test "Test EmIn" D. Lucin

The procedure for conducting the method: subjects are offered 46 statements. To calculate the points, the answers are coded according to two scales:

a. For statements with the key: completely disagree - 1, completely disagree - 0, completely agree - 3.

b. For statements with a reverse key: strongly disagree - 3, degree of disagree - 2, degree of agreement - 1, strongly agree - 0.

These answers have 9 gradations, which reflect the ability to understand one's own internal emotions and interpret the emotions of other people (Figure 2).

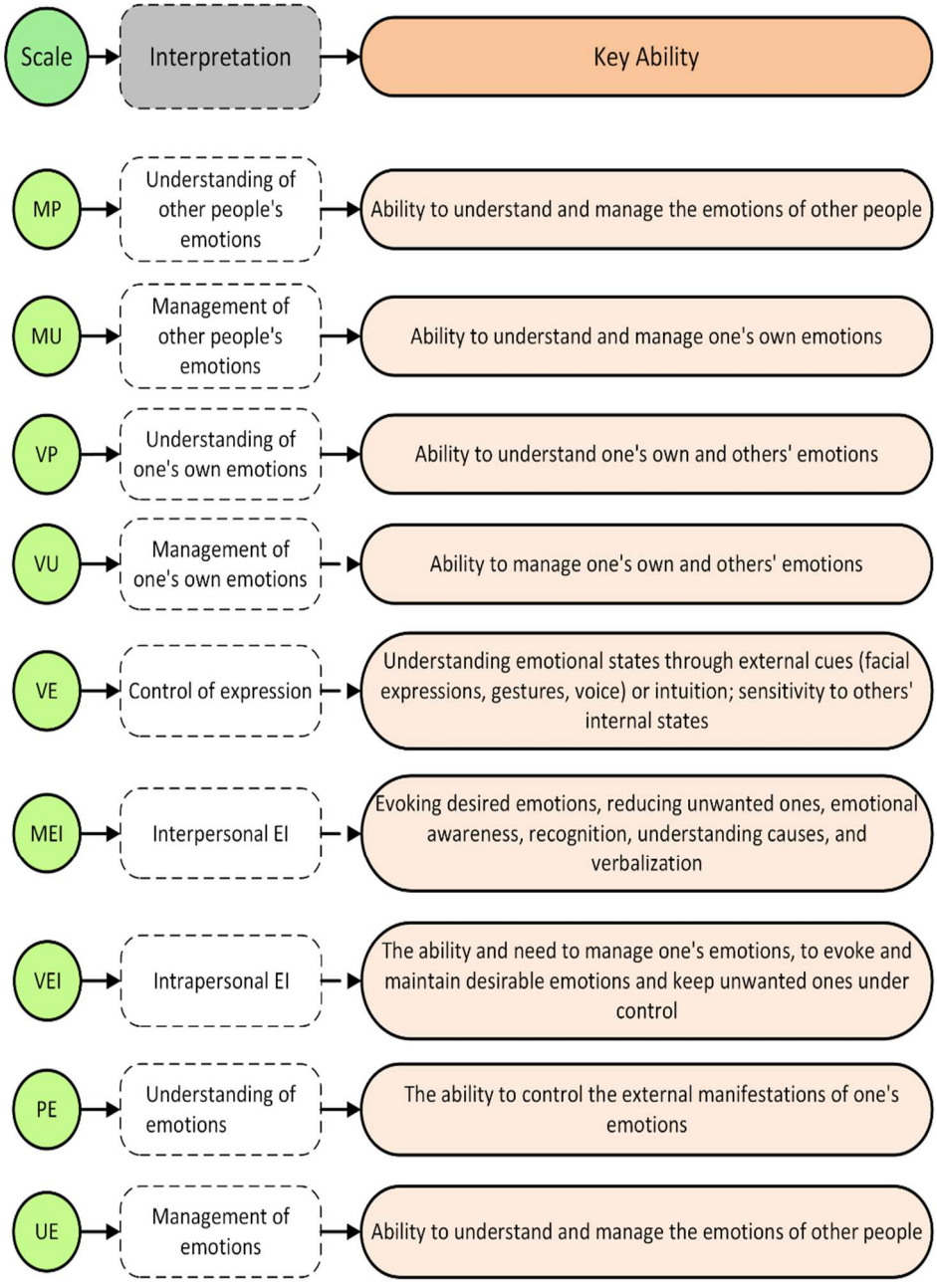

Figure 2. Registered indicators

Note: compiled by the authors

Therefore, the EmIn Test by D. Lusin is an effective tool for a comprehensive assessment of emotional intelligence, allowing one to determine the level of understanding, management of emotions, and empathy in the person himself and interpersonal interactions.

Results for the "Hall Emotional Intelligence Test"

The study then covered samples of 30 people to analyze the level of emotional intelligence. Based on the data obtained, researchers identified and described the features of emotional intelligence in each sample. Graphic data on the method "N. Ksoll's Emotional Intelligence Test" for both are shown (Figure 3).

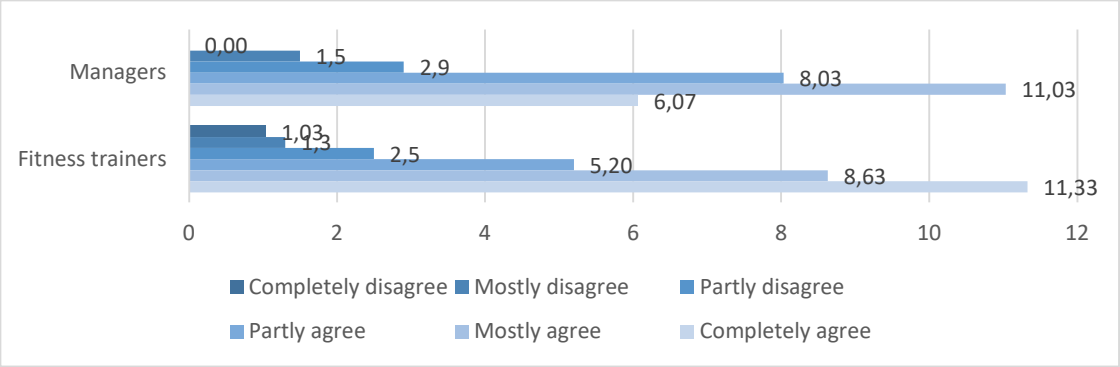

Figure 3. Average scores of managers of a technical company and fitness trainers ("N. Ksoll's Emotional Intelligence Test")

Note: compiled by the authors

According to the data obtained, most of the answers are combined in the column "In fundamental agreement," which offers a greater understanding of the statements about the level of external emotional intelligence. Researchers obtained the following results based on Table 4 and the analysis of the emotional intelligence scale (Figure 4).

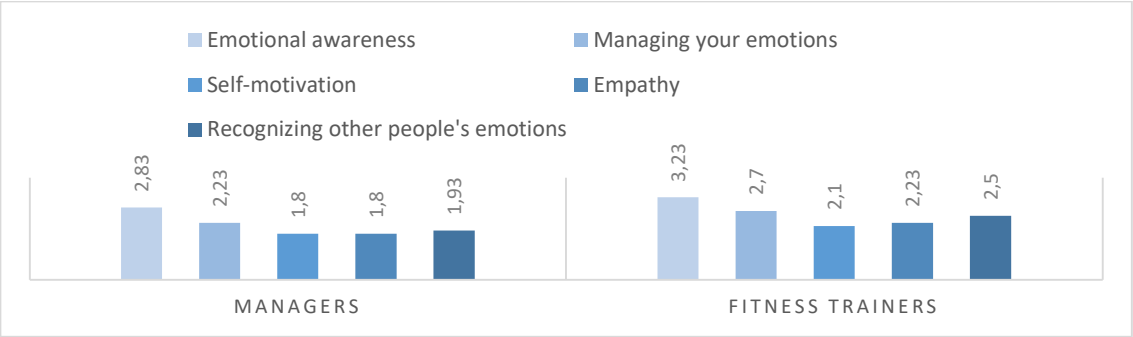

Figure 4. Comparative data of scales according to the method "N. Hall's Emotional Intelligence Test" of both samples

Note: compiled by the authors

According to Figure 4 and the detailed study of the emotional intelligence scale, the results showed the scale “Emotional awareness” of the technical company showed a reasonably high result, which indicates a general knowledge of emotions, their occurrence, and understanding, indicating in the school "mostly" Agree" a higher number of points (3.23 average score).

The results for fitness trainers also showed the highest result, which indicates a complete recognition of emotions and their occurrence, indicated in the school “completely agree” a higher number of points (2.83 average scores);

In the school, “Managing your emotions” is a good result, and in general, the subject's managers and trainers can control their emotions without difficulty; this is indicated by the highest number of colors indicated in the school "in normal agreement" (2.7 and 2.23 average ball);

On the scales, “Self-motivation” and “Empathy” for managers change in the same results. Relative to other scales, the average ball was lower (1.8 average score) in these. We assume that managers of a technical company work more directly with a technician and with clearly specified orders, which does not allow regular, informal contact with colleagues. Hence, the low results in these scales;

Results of a survey of fitness trainers at the “Self-motivation” school, the subjects showed the lowest result of all the available scales (2.1 average scores). We assume that fitness trainers are regularly subject to emotional feedback the side and subsequently, according to the words that we welcome, from emotional exhaustion, the motivation itself remains not at a high level, which was confirmed by the results and in the "Empathy" school, the result indicates a high understanding of the emotional state of a person's friend (2.23 average score);

The “Recognition of Other People's Emotions” scale differs significantly in the two samples. Managers do not have high results, although we have more marked balls in the “completely agree” school. However, compared to the previous ones, the school could be a leader (1.93 average scores). On the contrary, fitness trainers have relatively high results relative to each other's scales. Constant interaction with people allows us to recognize different people's emotions better (2.5 average scores).

Results for the “Emin D.Lucina Test”

The results of D. Lusin's “Emin Test” allow one to assess the general level of emotional intelligence, including intrapersonal and interpersonal aspects. They show the ability to recognize and manage one's emotions, understand and regulate other people's feelings, and demonstrate empathy and emotional regulation (Figure 5).

Analyzing the results of managers, in descending order, in Figure 4, we see that most people (19.5) marked the option “Rather agree”. Next comes the column “Rather disagree” (14.06). We received the least results in the column “Completely agree” and “Completely disagree”, which generally indicates that the subjects in the proposed statements, to a greater extent, did not give a completely confident statement (7.63), but also the least (5.13) they gave a negative answer to the proposed 46 statements.

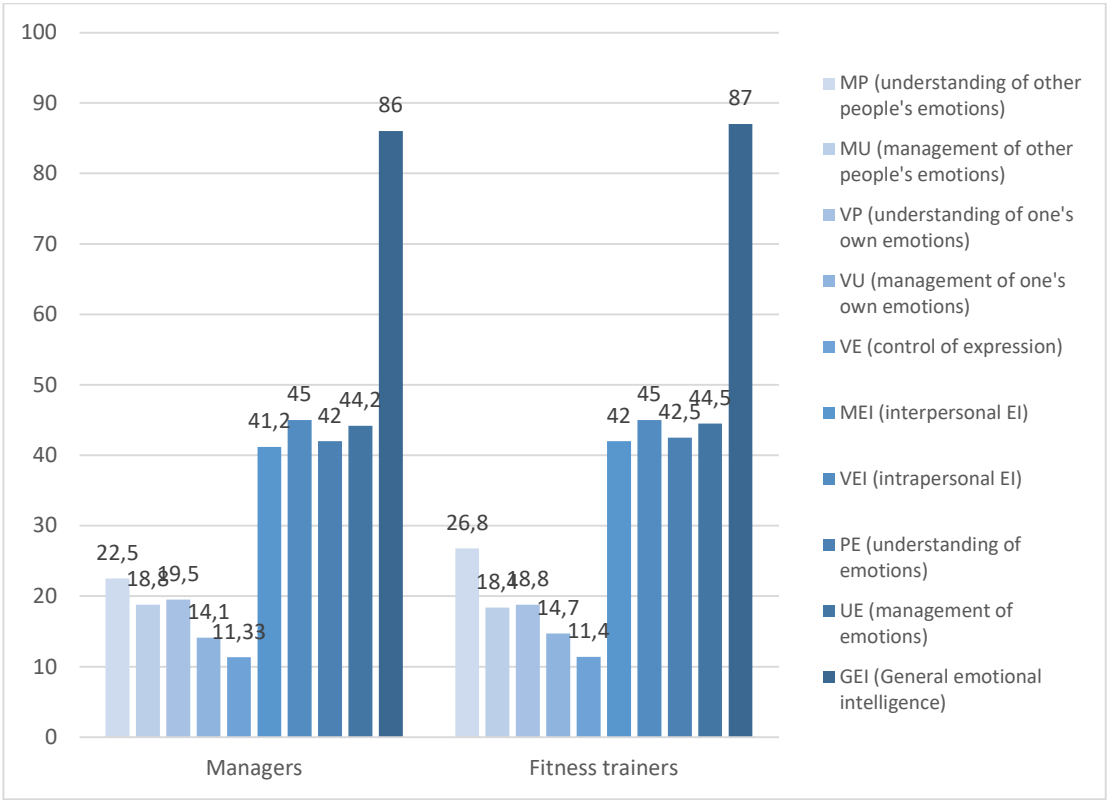

Figure 5. Comparative data of the scale according to the method "Test EmIn D.Lucin" with a choice

Note: compiled by the authors

Analyzing the results of fitness trainers, in descending order in Figure 6, we see that most fitness trainers (13.6) marked the option "Rather agree", as did the managers of the technical company. However, compared with the managers of the technical company, in the column "Completely agree", we received a greater result than the managers of the technical company, which generally indicates more confident answers to the statements (12.53). It is worth noting that in the column "Rather disagree" we received a result (11.16), which is clearly less than in the other sample. Still, in the column "Completely disagree" we received a higher result (8.7), which once again shows that fitness managers have more specific and confident answers.

To identify the differences in emotional intelligence among fitness trainers and technical company managers, a mathematical analysis of the data was carried out using the Mann-Whitney U-test in the IBM SPSS Statistics 22 program. Mathematical processing revealed indicators in the level of differences in emotional intelligence among fitness trainers and technical company managers, presented in Table 1.

Table 1. Comparison of the indicators of managers of a technical company and fitness trainers on the questionnaire EMiN Lyusin D.V scale.

Scale	Subgroup	Average rank	Sum of ranks
MP	Managers	33,5	1005
	Fitness trainers	27,5	825
MU	Managers	19,82	594,5
	Fitness trainers	41,18	1235,5
VP	Managers	34,12	1023,5
	Fitness trainers	26,88	806,5
VU	Managers	27,5	825
	Fitness trainers	33,5	1005
VE	Managers	30,3	909
	Fitness trainers	30,7	921
MEI	Managers	26,1	783
	Fitness trainers	34,9	1047
VEI	Managers	30,53	916
	Fitness trainers	30,47	914
PE	Managers	25,45	763,5
	Fitness trainers	35,55	1066,5
UE	Managers	25,3	930
	Fitness trainers	35,7	900

Note: compiled by the authors

On the MP scale, managers have an average rank of 33.5, higher than 27.5 for fitness trainers, indicating superior performance. In contrast, on the MU scale, fitness trainers show a significant advantage with an average rank of 41.18 compared to 19.82 for managers, indicating higher scores in this category. Similarly, on the VP scale, managers again outperform trainers with a rank of 34.12 against 26.88. However, on the VU scale, fitness trainers score higher (33.5) than managers (27.5), indicating superior performance. On the VE scale, there is equality, as the average ranks are almost the same - 30.3 for managers and 30.7 for trainers, indicating similar results in this parameter. On the MEI scale, trainers also show an advantage with a rank of 34.9 compared to 26.1 for managers, confirming their superior scores. The difference between the groups in the VEI and PE scales is minimal, but fitness trainers still have higher scores - 30.53 and 35.55, respectively, compared to 30.47 and 25.45 for managers. Finally, on the UE scale, trainers also demonstrated a better result (35.7) than managers (25.3). In general, the data indicate that managers have an advantage in some scales.

In contrast, in others, fitness trainers show higher results, which allows us to identify differences between these two professional groups in various aspects of their emotional perception and interaction. For some scales, managers show higher results (e.g., MP, VP). For other scales, fitness trainers have an advantage (e.g., MU, MEI, PE). The last step in this study is a nonparametric statistical test used to compare the

differences between two independent samples. Scientists use this test in cases where the data does not correspond to a normal distribution or the samples have different sizes (Table 2).

Table 2. Mann-Whitney test for both samples

Statistical criteria	**MP**	**MU**	**VP**	**VU**	**VE**	**MEI**	**VEI**	**PE**	**UE**
U Mann-Whitney	360	129,5	341,5	360	444	318	449	298,5	435
Wilcoxon's W	825	594,5	806,5	825	909	783	914	763,5	900
Z	-1,37	-4,76	-1,64	-1,37	-0,09	-1,96	-0,02	-2,25	-0,22
Asymptotic significance (2-sided)	0,171	0	0,101	0,17	0,928	0,05	0,988	0,025	0,049
Grouping variable: Specialty									

Note: compiled by the authors

The average rank on the MU scale of the EmIn Lusin questionnaire is 33.50 for managers and 27.50 for trainers. Managers demonstrate a higher level of MU than trainers. Since the value of the significance level (Asympt. val (two-sided)) is 0.171, the level of MU among managers of the technical company is higher than that of fitness trainers. The average rank on the MU scale of the EmIn Lusin questionnaire is 19.82 for managers and 42.18 for fitness trainers. Managers demonstrate a lower level of MP compared to trainers. The average rank on the VP scale of the EmIn Lusin questionnaire is 34.12 for managers and 26.88 for fitness trainers. The level of VP among managers is higher than that of trainers. The average rank on the VP scale of the EmIn Lusin questionnaire is 27.50 for managers and 33.50 for fitness trainers. Fitness trainers demonstrate a higher level of VE compared to managers. The average rank on the VE scale of the EmIn Lyusin questionnaire is 30.30 for managers and 30.70 for fitness trainers. Thus, the VE indicator is at the same level for fitness trainers and managers. Since the value of the significance level (Asympt. sign (two-sided)) is 0.928, there are no differences in the level of VE among managers of a technical company and fitness trainers. The average rank on the MEI scale of the EmIn Lyusin questionnaire is 26.10 for managers and 34.90 for fitness trainers.

Interestingly, the indicators for managers of a technical company and the indicators for fitness trainers show statistically significant differences. The MEI level of fitness trainers is higher than that of managers. There are no differences in the level of VEI between the managers of the technical company and the fitness trainers since the average rank on the VEI scale of the EmIn Lusin questionnaire is 30.53 for managers and 30.47 for fitness trainers, and the significance level value (Asympt. val (two-sided)) is 0.988. The average rank on the PE scale of the EmIn Lusin questionnaire is 25.45 for managers and 35.55 for fitness trainers. As a result, the level of PE is higher for fitness trainers than for managers. The average rank on the UE scale of the EmIn Lusin questionnaire is 25.30

for managers and 35.70 for fitness trainers. Finally, the UE indicator is higher for fitness trainers than for the managers of the technical company.

Discussions

Managers of a technical company have more information about the nature of emotions, their differences, and, in general, about the creation of specific emotions and the manifestation of fitness trainers. Also, managers of a technical company have better emotions regarding the specifics of their work. Most subjects are in a leadership position, which requires more remarkable restraint when working with a person. As for fitness trainers, their work style involves greater emancipation and only requires an official business style of communication when actively acting with clients, colleagues, and athletes, regardless of the position they hold. In the work process, fitness trainers often point out mistakes when not following the technique, accompanying the action with pronounced emotionality. In general, fitness trainers are restrained and disciplined due to the specifics of their work, but managers of a technical company showed a lower result;

In the process of work, a significant fact is the appearance and physical form of data, which require regular work on themselves to maintain status and make work more effective and profitable. The salary of a fitness trainer unevenly depends on the number of clients attracted due to their skills and regular professional development. Hence, there is a high level of self-motivation, unlike the managers of a technical company. The work of a manager can be done without regular maintenance of their physical form since the result and efficiency of work do not directly depend on it. Unlike trainers, the form of clothing is free, which indicates a broader work and lifestyle. Hence, the result of trainers is higher relative to managers of a technical company. Empathy is more developed in fitness trainers, explained by exceptional work requiring regular interaction with people. Often in the work of fitness trainers, you can observe a situation in which clients have a growing number of problems with fitness trainers, in turn, wanting full feedback and directly trainers become with situations of preparation of sports competitions to everyone, requiring more excellent skill, to show empathy to a person.

Thus, having a person to yourself improves the client's work and sports; the fitness trainer also works on psychosomatics and physical performance. Managers of a technical company, in turn, more often work with such statistical data and, due to the specifics of their work, have less influence on people and more on technology. Relative to the occupied share, most subjects are in a manual position, requiring significant action with people. In general, the obtained result is not bad, but in comparison with trainers, it is lower;

With the help of the data we received in the school of “recognition of other people's emotions”, we see a higher result for fitness trainers. For similar reasons, we can explain the best result in this school. More often than not, fitness trainers have become more likely to need to motivate and support clients and athletes in their work, unlike managers of a technical company. This statistic confirms that fitness trainers understand other people's emotions better than managers of a technical company.

Hypothesis 1 was partially confirmed: fitness trainers showed higher results in some aspects of emotional intelligence, such as empathy and the ability to recognize other

people's emotions. This result may be associated with their professional activities, which require frequent interaction with people and emotional support for clients.

Hypothesis 2 was not confirmed: Managers of a technical company showed lower results in most emotional intelligence scales than fitness trainers. In particular, they demonstrated a lower ability to understand and manage other people's emotions, which can be explained by the specifics of their work, which requires more analytical skills and work with technical data rather than interpersonal interactions.

Conclusions

Based on the study, several conclusions can be drawn regarding the differences in emotional intelligence levels between tech company managers and fitness trainers. First, fitness trainers showed higher results in parameters related to empathy and understanding other people's emotions. This difference can be explained by the specifics of their work, which requires close interaction with clients and more developed social skills. Second, tech company managers demonstrated better control over their emotions, which is associated with the need to make more structured decisions and maintain emotional restraint in their professional activities. However, their emotional involvement in the interaction process with colleagues and clients was lower, which can be partially explained by the specifics of their work, where the leading role is interaction with technical processes and data rather than with people.

Thus, the study data confirms the hypothesis that the differences in emotional intelligence between the two groups of professionals are due to the specifics of their work. Fitness trainers have more developed interpersonal skills, while tech company managers control their emotions better. Emotional intelligence is vital to both groups' success but manifests differently depending on the professional environment. These differences must be considered when developing programs to develop emotional competence for different professional categories.

This study has several limitations that must be considered when interpreting the results. First, the sample was limited to only two professional groups - tech company managers and fitness trainers, which does not allow extrapolation of the findings to other professional categories. Second, the small number of participants (30 people in each group) limits the study's statistical power and reduces the possibility of identifying more subtle differences in levels of emotional intelligence.

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An Empirical Analysis of Green Finance's Impact on Commercial Banks' Operational Performance

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Abstract

With the financial industry in various countries under strict regulation and interest rates increasingly market-oriented, the rise of the green finance sector has significantly impacted the operations of commercial banks. This influence is particularly evident in green credit, bonds, and insurance, which have emerged as critical components of sustainable finance. As a novel financial paradigm, green finance presents vast development prospects by linking economic growth with environmental sustainability. By actively developing green financial products and services, commercial banks can enhance their operational performance and create new profit growth opportunities. This study conducts an empirical analysis using data from state-owned, joint-stock, and city commercial banks to evaluate the relationship between green finance and bank performance. The findings reveal that green finance positively impacts the operational performance of commercial banks. Notably, green credit emerges as a significant driver, improving profitability while addressing environmental challenges. However, the study also identifies several challenges, such as the need for strategic alignment, product innovation, and enhanced risk management. Commercial banks must improve strategic planning, foster innovation, and strengthen their competitiveness to sustain momentum while maintaining a strong sense of social responsibility. These efforts will contribute to advancing green finance and enable banks to play a pivotal role in promoting sustainable economic development. This research provides valuable insights for policymakers and financial institutions aiming to align economic objectives with environmental goals.

Keywords: green financing, social financing, social sustainability, commercial banks, operations, green lending, profitability, financial regulation

Жасыл қаржыландырудың коммерциялық банктер операциялық қызметіне әсерін эмпирикалық талдау

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Түйін

Әртүрлі елдердегі қаржы индустриясы қатаң реттеуге және пайыздық мөлшерлемелердің нарыққа бейімделуіне байланысты жасыл қаржы секторының өсуі коммерциялық банктердің қызметіне айтарлықтай әсер етті. Бұл әсер әсіресе тұрақты қаржының маңызды құрамдас бөліктері ретінде пайда болған жасыл несиеде, облигацияларда және сақтандыруда айқын көрінеді. Жаңа қаржылық парадигма ретінде жасыл қаржыландыру экономикалық өсуді экологиялық тұрақтылықпен байланыстыру арқылы үлкен даму перспективаларын ұсынады. Жасыл қаржылық өнімдер мен қызметтерді белсенді дамыта отырып, коммерциялық банктер өздерінің операциялық көрсеткіштерін жақсарта алады және пайданың өсуіне жаңа мүмкіндіктер жасай алады. Бұл зерттеу жасыл қаржы мен банк қызметінің арасындағы байланысты бағалау үшін мемлекеттік, акционерлік және қалалық коммерциялық банктердің деректерін пайдалана отырып эмпирикалық талдау жүргізеді. Нәтижелер жасыл қаржыландыру коммерциялық банктердің операциялық көрсеткіштеріне оң әсер ететінін көрсетеді. Атап айтқанда, жасыл несие экологиялық мәселелерді шешу кезінде табыстылықты арттыратын маңызды драйвер ретінде пайда болады. Дегенмен, зерттеу сонымен қатар стратегиялық теңестіру, өнімді инновациялау және тәуекелдерді басқаруды жақсарту сияқты бірнеше қиындықтарды анықтайды. Коммерциялық банктер стратегиялық жоспарлауды жетілдіріп, инновацияларды дамытып, әлеуметтік жауапкершілік сезімін сақтай отырып, серпінді сақтау үшін бәсекеге қабілеттілігін күшейтуі керек. Бұл күш-жігер жасыл қаржыландыруды ілгерілетуге ықпал етеді және банктерге тұрақты экономикалық дамуды ілгерілетуде шешуші рөл атқаруға мүмкіндік береді. Бұл зерттеу экономикалық мақсаттарды экологиялық мақсаттармен сәйкестендіруге бағытталған саясаткерлер мен қаржы институттары үшін құнды түсініктер береді.

Кілт сөздер: жасыл қаржыландыру, әлеуметтік қаржыландыру, әлеуметтік тұрақтылық, коммерциялық банктер, операциялар, жасыл несиелеу, табыстылық, қаржылық реттеу

Эмпирический анализ влияния зеленого финансирования на операционную деятельность коммерческих банков

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Аннотация

Поскольку финансовая индустрия в разных странах находится под строгим регулированием, а процентные ставки все больше ориентированы на рынок, рост сектора зеленого финансирования существенно повлиял на деятельность коммерческих банков. Это влияние особенно заметно в зеленом кредите, облигациях и страховании, которые стали важнейшими компонентами устойчивого финансирования. Как новая финансовая парадигма, зеленое финансирование представляет огромные перспективы развития, связывая экономический рост с экологической устойчивостью. Активно разрабатывая зеленые финансовые продукты и услуги, коммерческие банки могут повысить свою операционную эффективность и создать новые возможности для роста прибыли. В этом исследовании проводится эмпирический анализ с использованием данных государственных, акционерных и городских коммерческих банков для оценки взаимосвязи между зеленым финансированием и эффективностью банка. Результаты показывают, что зеленое финансирование положительно влияет на операционную эффективность коммерческих банков. В частности, зеленый кредит становится значительным фактором, повышающим прибыльность и одновременно решающим экологические проблемы. Однако в исследовании также выявляется ряд проблем, таких как необходимость стратегического согласования, инновации продуктов и улучшенное управление рисками. Коммерческие банки должны улучшить стратегическое планирование, поощрять инновации и укреплять свою конкурентоспособность, чтобы поддерживать динамику, сохраняя при этом сильное чувство социальной ответственности. Эти усилия будут способствовать продвижению зеленого финансирования и позволят банкам играть ключевую роль в содействии устойчивому экономическому развитию. Это исследование дает ценную информацию для политиков и финансовых учреждений, стремящихся согласовать экономические цели с целями охраны окружающей среды.

Ключевые слова: зеленое финансирование, социальное финансирование, социальная устойчивость, коммерческие банки, операции, зеленое кредитование, прибыльность, финансовое регулирование

Introduction

This paper is dedicated to an empirical analysis of the impact of green finance on the operational performance of commercial banks. The study selects three state-owned banks in China—Industrial and Commercial Bank of China (ICBC), China Construction Bank (CCB), and Agricultural Bank of China (ABC)—as its sample. As large state-owned banks, these institutions hold a significant market share and influence in the banking sector, playing a crucial role in maintaining the stability and development of the national economy. Green finance refers to a financial model that promotes sustainable development and environmental protection through financial mechanisms. As global environmental issues become increasingly prominent, green finance plays a crucial role in addressing challenges such as climate change and resource scarcity. In China, relevant authorities are integrating "green" with the new development concepts of "innovation, coordination, openness, and sharing". At this stage, China's economy is transitioning toward green development, moving away from a past focus solely on high-speed growth. [1] This study aims to gain an in-depth understanding of the impact of green finance on the operational performance of commercial banks through empirical analysis. By doing so, it seeks to provide theoretical and practical guidance to encourage commercial banks to accelerate the development of green finance, improve their operational performance, and offer recommendations for achieving sustainable development.

Literature review

This article studies the impact of green finance on the operating performance of listed commercial banks. After reviewing the relevant literature on this topic, it is found that most scholars quantify the green finance and operating performance of commercial banks and then discuss the relationship between them. Therefore, when summarizing the literature, it is divided into the following two categories.

Evaluation of Green Finance

The development of green finance plays an indispensable role in national economic development. For instance, Xu Wenjuan (2011) highlighted that the implementation of green finance is an innovative environmental policy reform. By leveraging financial mechanisms within the market economy, industrial sectors shift from extensive growth to green, energy-saving, and emission-reduction-focused development, thereby adjusting the country's economic structure and promoting a transformation in economic growth patterns [2]. Regarding the evaluation of green finance, some scholars in Asia have adopted single indicators. For example, Li Su, Jia Yanyan, and Da Tanfeng (2017), Tao Xi (2016), Hao Qingmin, Wu Qianyue, and Ge Guofeng (2016) quantified green finance by using the year-end balance of green credit in commercial banks [3, 4, 5]. However, Zhang Xin (2017) disagreed with using the green credit balance as a metric, arguing that it does not effectively reflect the implementation of green finance. Instead, he suggested using a relative measure, such as the ratio of green credit balance to the total loan balance of commercial banks, to assess green finance operations [6]. Similarly, Wu Yingqian (2017) also used the green credit ratio for evaluation [7]. Scholars who rely on single

indicators to evaluate green finance often overlook the need for a comprehensive systematic assessment. Some scholars have emphasized the importance of constructing a green finance framework within the current market economy. They proposed using financial tools, such as green asset securitization, green loans, and green bonds, to address the challenges of high financing costs and difficulties faced by environmental enterprises. Similarly, Zeng Xuewen (2014) systematically built an evaluation system for the green finance operations of banks in China to measure the development level of green finance. The study concluded that since 2010, green finance operations have shown a steadily increasing trend [8].

In Western countries, the concept of green finance was explored much earlier than in other regions. For instance, Cowan E. (1999) conducted an in-depth discussion on the basic concept of environmental finance and its outward conceptual expansion [9]. Marcel Jeucken (2001) argued that green finance is not a newly introduced concept but rather an evolution of sustainable finance [10]. Sonia Labatt and Rodney R. White (2002) proposed that the specific implementation of environmental financing involves a social financing behavior aimed at optimizing the natural environment and reducing risks derived from environmental destruction through rational resource allocation [11]. Paul Thompson and Christopher J. Cowton (2004) suggested that implementing green finance is not solely focused on maximizing the economic benefits of commercial banks but involves evaluating enterprises during the loan approval process based on whether they use funds to fulfill environmental responsibilities. Enterprises are assessed against this criterion, and the evaluation results determine the issuance of loans [12]. Regarding the evaluation of green finance, they emphasize comprehensive evaluation methods. For example, E.J. Cilliers, E. Diemont, and D. J. Stobbelaar (2010) suggested that a value matrix method could be used to quantify green finance comprehensively. This is reflected in the value matrix, sets, and green compensation. Economic and environmental win-win outcomes can be achieved through these integrated analytical methods to promote sustainable development [13].

Evaluation of Operational Performance

A comprehensive review of existing literature on the evaluation of bank operational performance reveals that some scholars often employ methods such as factor analysis and principal component analysis when conducting independent studies on commercial bank performance evaluation systems. For example, Gu Haifeng and Li Dan (2013) and Gu Haifeng and Wu Di (2013) used these methods, which have the advantage of providing a comprehensive evaluation. However, the dimensionality reduction process can result in losing the original meaning of variables, making the interpretation of the metrics more challenging [14, 15]. In studies examining the impact of green finance on the operational performance of publicly listed commercial banks, most scholars have chosen single indicators to reflect bank performance. For instance, Zhu Jigao, Rao Pinggui, and Bao Mingming (2012) used the non-performing loan (NPL) ratio as a variable to explain bank operational performance from the perspective of loan management. They found that the NPL ratio negatively correlates with loan quality [16]. Similarly, Li Su, Jia Yanyan, and Da Tanfeng (2017) used the return on assets (ROA) as a reference indicator, arguing that the fluctuation trend of ROA reflects the rise and fall of a bank's operational performance.

If ROA shows an upward trend, it indicates stable improvement in operational performance; conversely, a downward trend signals poor performance [3]. While the single-indicator approach offers clear and direct advantages, evaluating operational performance solely based on loan quality or asset returns lacks comprehensiveness and systematicity. A multi-dimensional perspective is needed to evaluate the bank's operational performance. For example, Liu Yunlin (2016) analyzed the operational performance of commercial banks from both profitability and risk perspectives. From the profitability perspective, ROA was selected, and from the risk perspective, the NPL ratio was used. This multi-dimensional indicator selection approach ensures that the evaluation method is both comprehensive and systematic [17].

In Western countries, research on the impact of green finance on the operational performance of publicly listed commercial banks emphasizes comprehensive evaluation methods, including data envelopment analysis, non-parametric analysis, parametric analysis, factor analysis, and principal component analysis. Some scholars introduced the principal component analysis method, which extracts principal components from the original variables through dimensionality reduction to achieve comprehensive scoring. West (1985) analyzed data from 1,900 U.S. banks over two years and used factor analysis to extract four main factors. Based on the characteristics of the variables, these factors were categorized as capital adequacy, asset profitability, asset quality, and asset liquidity, providing an overall evaluation of bank operational performance from these four dimensions [18]. Humphry and Berger (1997) argued that bank operational performance should be measured from an efficiency perspective and proposed using parametric and non-parametric analysis methods for comprehensive quantification [19]. From the perspective of banking operations, Penny Street and Philip E. Monaghan (2001) conducted an extensive analysis of three channels through which banks provide green financial services: electronic devices, online banking, and physical branches. They integrated these green financial service channels with bank operational performance to construct a systematic green finance framework, which was then used as a standard for assessing the operational capacity of banks [20]. Oliver Schmid (2000) examined the types of green financial service products and highlighted the importance of improving the structure of green finance for building a comprehensive evaluation system. He proposed focusing on green financial tools, including green financial products, green insurance, securities, and credit services, as well as their associated environmental benefits and risks. Based on these products and the benefits and risks they generate, he suggested a thorough evaluation of the environmental performance brought about by green finance, aiming to promote the maturity and systematization of green financial operations [21].

Research and Methodology

The data of this study comes from the CSMAR database, and an empirical analysis is conducted around the impact of green finance on the operating performance of commercial banks. Among the research subjects, the large state-owned banks selected are Industrial and Commercial Bank of China, China Construction Bank and Agricultural Bank of China. As large state-owned commercial banks, these three banks not only

occupy an important position in the banking industry, with significant market share and influence but also play a key role in the stability and development of the national economy. In addition, this study selected Ping An Bank, Industrial Bank, China Merchants Bank, and CITIC Bank as samples among the joint-stock banks. These joint-stock banks, known for their flexible operating models and market-oriented operations, have garnered significant attention for their performance in the field of green finance.

In addition, Hua Xia Bank and Ningbo Bank were selected from city commercial banks. City commercial banks play a critical role in local economies, and their operating characteristics and market performance are representative. By selecting banks of different types, this study aims to comprehensively understand the development of green finance among commercial banks in this region and conduct an empirical analysis of their operational performance.

Indicator system construction: To study the impact of green finance on the operating performance of commercial banks, the following indicator system is constructed: the explained variable is ROA (net profit rate of total assets = net profit/total assets); the explanatory variables are (green credit balance scale) green credit balance logarithm Lngreen, total assets Lnassets, capital adequacy ratio car, non-performing loan ratio NPLratio, and liquidity ratio LiquidityRatio. ROA refers to the ability of an enterprise to create net profit using all its assets, and the calculation formula is ROA = net profit/total assets. The green credit balance scale refers to the total amount of green credit outstanding at the current specific point in time. Total assets refer to the total value of all assets of an enterprise, including fixed assets, current assets, etc. Total assets reflect the capital scale and operating strength of an enterprise. Capital adequacy ratio refers to the ratio of a financial institution's capital to its balance sheet assets after deducting risk exposure. The non-performing loan ratio refers to the proportion of non-performing loans in a bank or financial institution to its total loans. The current ratio is an indicator used to measure the relationship between a company's current assets and current liabilities, and the calculation formula is current ratio = current assets/current liabilities.

Model construction: This paper uses a multivariate linear regression model to construct the formula. In this model, the explained variable is ROA (net profit margin of total assets), and the explanatory variable is the logarithm of green credit balance (Lngreen). The control variables include the logarithm of total assets (Lnassets), capital adequacy ratio (car), non-performing loan ratio (NPLratio), and liquidity ratio (LiquidityRatio).

The model formula is expressed as (1):

$$ROA = \beta + \beta 1 \times Lngreen + \beta 2 \times Lnassets + \beta 3 \times car + \beta 4 \times NPLratio + \beta 5 \times LiquidityRatio + \varepsilon \quad (1)$$

In the formula, β is the intercept, which indicates the expected value of ROA when all explanatory variables and control variables take their baseline values; β1, β2, β3, β4, and β5 are regression coefficients, indicating the degree of influence of each variable on ROA: ε is the error term, indicating the influence of other unconsidered factors on ROA.

Correlation Analysis

As shown in Table 1, correlation analysis can further test and verify the factors that affect the profitability of commercial banks.

Table 1. List of correlation analysis results

Variable	code	Year	ROA	Lngreen	car	Lnassets	NPLratio
code	1						
year	0	1					
ROA	-0.210	-0.129	1				
Lngreen	0.209	0.134	0.477***	1			
car	0	0.926***	-0.0620	0.121	1		
Lnassets	0.285*	0.116	0.455***	0.922***	0.103	1	
NPLratio	0.407***	-0.169	-0.231	0.438***	-0.214	0.434***	1
LiquidityRatio	-0.284*	0.429***	-0.282*	0.0370	0.467***	-0.129	-0.00500
Type of bank	-0.234	0	-0.438***	-0.816***	0	-0.949***	-0.376**
L1 ROA	-0.124	-0.154	0.939***	0.539***	-0.146	0.542***	-0.209
L1 Lngreen	0.218	0.117	0.461***	0.995***	0.118	0.923***	0.391**
L1 Lnassets	0.286*	0.0900	0.427***	0.923***	0.0890	0.999***	0.374**
L1 car	0	0.846***	0.0140	0.0730	0.869***	0.0740	-0.211
L1 NPLratio	0.341**	-0.0700	-0.201	0.497***	-0.0810	0.502***	0.884***
L1 LiquidityRatio	-0.362**	0.282*	-0.119	0.00900	0.288*	-0.155	-0.0130
est fe3	0.194	0.354**	0.226	0.542***	0.317**	0.633***	-0.0390
est fe4	-0.117	0.426***	-0.202	-0.0340	0.382***	-0.0880	0.0770
	LiquidityRatio	Typeofbank	L1 ROA	L1 Lngreen	L1 Lnassets	L1 car	L1 NPLratio
LiquidityRatio	1						
Typeofbank	0.115	1					
L1 ROA	-0.410**		1				
L1 Lngreen	0.0160		0.548***	1			
L1 Lnassets	-0.151	-0.507***	0.530***	0.925***	1		
L1 car	0.438***	-0.823***	-0.0430	0.0980	0.0660	1	
L1 NPLratio	0.0180	-0.951***	-0.123	0.506***	0.511***	-0.136	1
L1 LiquidityRatio	0.780***	0	-0.234	0.0190	-0.153	0.338**	0.0100
est fe3	-0.0930	-0.443***	0.361**	0.605***	0.711***	0.108	0.150
est fe4	0.401***	0.105	-0.349**	-0.0710	-0.118	0.133	0.197
	L1 LiquidityRatio	-0.603***	est fe	est RE	est fe3	est fe4	
L1 LiquidityRatio	1						
est fe3	-0.200				1		
est fe4	0.342**				-0.302**	1	

Note: the authors conducted analysis based on data collected from the annual reports of Industrial and Commercial Bank of China, China Construction Bank and Agricultural Bank of China and the CSMAR database.

***p<0.01, **p<0.05, *p<0.1

A positive correlation exists between Return on Assets (ROA) and Green Finance (Lngreen), indicating that commercial banks' participation in green finance activities may

positively impact their profitability. Capital Adequacy Ratio (CAR) is also positively correlated with green finance, suggesting that commercial banks' capital adequacy level is related to their involvement in green finance projects, which may affect profitability. The scale of assets (Lnassets) is positively correlated with green finance, implying that an increase in asset size might be associated with greater participation in green finance activities, thereby positively influencing profitability. Non-Performing Loan Ratio (NPLratio), however, does not exhibit a significant correlation with green finance, indicating that participation in green finance projects may not directly affect the level of non-performing loans in commercial banks. Besides the above factors, the relationship between the Liquidity Ratio and the Type of Bank with green finance also requires further investigation.

Regression Analysis

The regression model results show that the F-statistic of the model is 11.00, with a p-value less than 0.001, indicating that the model is overall significant. The R-squared value is 0.5851, suggesting that the model explains 58.51% of the variance in the dependent variable, ROA. Controlling for other variables, the LnGreen variable positively impacts ROA, with a coefficient of 0.0006714 and a p-value of 0.009. The variables Lnassets, CAR, and LiquidityRatio do not significantly affect ROA. In contrast, the NPLRatio variable has a negative impact on ROA, with a coefficient of -0.0029223 and a p-value less than 0.001. Overall, the regression model is significant, and it has passed the Variance Inflation Factor (VIF) test, indicating that there is no strict multicollinearity. (Table 2)

Table 2. List of regression analysis results

ROA	**Coef.**	**St.Err.**	**t-value**	**p-value**	**[95% Conf Interval]**	
Lngreen	0.0006714	0.0002451	2.74	0.009	0.0001756	0.0011672
Lnassets	-0.0000583	0.0004592	-0.13	0.900	-0.0009873	0.0008706
car	-0.0005438	0.0004032	-1.35	0.185	-0.0013594	0.0002718
NPLratio	-0.0029223	0.0005942	-4.92	0.000	-0.0041241	-0.0017204
LiquidityRatio	-0.0000419	0.0000236	-1.78	0.083	-0.0000897	5.80e-06
Constant	0.0193842	0.0057009	3.40	0.002	0.0078531	0.0309153
R-squared	0.5851	Root MSE	0.00109			
Adj R-squared	0.5319	Number of obs	45			
F-test	11.00	Prob>F	0.0000			

Note: The author conducted an analysis based on data collected from the annual reports of banks such as the Industrial and Commercial Bank of China, China Construction Bank and Agricultural Bank of China, and the CSMAR database.

Year Fixed Effects Model Regression Analysis

Based on the given regression results, the impact of green finance on the profitability of commercial banks can be analyzed (Table 3).

Table 3. Summary of fixed effect output model results

Variable	y		
Lngreen	0.001** (3.05)	Observations	45
Lnassets	0.002 (0.73)	Number of code	9
car	-0.001 (-1.42)	R-squared	0.567
NPLratio	-0.000 (-0.32)	Company FE	YES
LiquidityRatio	-0.000*** (-3.48)	Year FE	YES
2016	-0.002** (-2.80)	F test	9.69e-06
2017	-0.001*** (-3.40)	r2_a	0.470
2018	-0.000*** (-3.85)	F	41.99
2019		Observations	45
Constant	0.005 (0.35)		

Note: The author conducted an analysis based on data collected from the annual reports of the Industrial and Commercial Bank of China, China Construction Bank and Agricultural Bank of China, and the CSMAR database. ***p<0.01, **p<0.05, *p<0.1

First, the regression results include a sample size of 45, with 9 different groups (codes) participating in the empirical analysis. The R-squared value of the regression model reflects the extent to which the model explains the dependent variable (ROA, i.e., profitability). In this model, the overall R-squared is 0.3007, indicating that the linear combination of all explanatory variables accounts for 30.07% of the variation in ROA. When only considering within-group variation (Within), the R-squared increases to 0.5666, meaning that the explanatory variables in the model account for 56.66% of the variation in ROA within groups. In addition to within-group variation, the model also considers between-group variation (Between), which explains 31.68% of the variation in ROA.

Next, the focus is on the coefficients and significance of the explanatory variables. The coefficient for Green Finance (Lngreen) is 0.0013088, with a standard error of 0.000429. This indicates that holding other explanatory variables constant, each unit increase in Lngreen will lead to an increase of 0.0013088 units in ROA. This coefficient is statistically significantly greater than zero (p-value = 0.016), meaning that Lngreen has a statistically significant positive impact on ROA.

The Lnassets (total assets) coefficient is 0.00121, with a standard error of 0.0022594 and a p-value of 0.488. This suggests that holding other explanatory variables constant, each unit increase in Lnassets will lead to a rise in 0.00121 units in ROA. However, statistically, this coefficient does not significantly differ from zero, as its p-value is relatively significant (greater than 0.05).

The coefficient for the CAR variable is -0.0013927, with a standard error of 0.0009817 and a p-value of 0.194. Thus, holding other explanatory variables constant, each unit increase in CAR will result in a decrease of 0.0013927 units in ROA. However, the difference between this coefficient and zero is insignificant from a statistical perspective.

The NPLratio (non-performing loan ratio) coefficient is -0.0002374, with a standard error of 0.0007324 and a p-value of 0.754. This indicates that each unit increase in NPLratio will lead to a decrease of 0.0002374 units in ROA. However, statistically, it

cannot be determined whether this coefficient significantly differs from zero, as its p-value is quite significant.

The coefficient for the Liquidity Ratio variable is -0.0000669, with a standard error of 0.0000192 and a p-value of 0.008. This indicates that holding other explanatory variables constant, each unit increase in the Liquidity Ratio will lead to a decrease of 0.0000669 units in ROA. The statistical results show that this coefficient is significantly different from zero. Lastly, attention should be given to the effect of years (year) on ROA. The regression results show that the logarithmic differences for 2016, 2017, and 2018 (2019 is not provided) all have negative coefficients with high significance levels. This suggests that commercial banks' profitability may have declined over time. In summary, based on the given regression results, The study concluded that green finance (Lngreen) has a positive impact on the profitability (ROA) of commercial banks; the impact of variables such as bank assets (Lnassets), capital adequacy ratio (CAR) and non-performing loan ratio (NPLratio) on the profitability of commercial banks have not reached statistical significance; the liquidity ratio has a negative effect on profitability; in addition, the year variable has an impact on the profitability of commercial banks, especially in 2016 and 2017.

Results

This study combined the results of model analysis to conduct an empirical study on the impact of green finance on the operating performance of commercial banks and drew the following conclusions. First, green finance has a significant positive impact on the operational performance of commercial banks. The empirical results indicate that commercial banks adopting green finance strategies perform better in terms of operational performance. This finding is consistent with other related research, confirming the positive role of green finance in commercial banking. Second, green credit positively influences the operational performance of commercial banks. The empirical results show that by allocating funds to green projects that meet environmental and social sustainability standards, commercial banks not only fulfill their social responsibilities but also achieve higher operational performance. Therefore, commercial banks should vigorously promote expanding the green credit business. Third, diversifying green financial products improves commercial banks' operational performance. The study reveals that providing various green financial products enables commercial banks to attract more customers and expand their market share, thereby enhancing operational performance. As a result, commercial banks should continuously innovate and launch more green financial products. Fourth, green finance plays a positive role in improving the risk management capabilities of commercial banks. The empirical results demonstrate that commercial banks adopting green finance strategies perform better in managing environmental and social risks, which reduces risk management costs and improves their risk management capabilities.

Based on the research conclusions, the following recommendations are proposed. Commercial banks should promote the implementation of green finance strategies by actively integrating environmental and social factors into their business decision-making processes. This includes formulating and implementing policies and measures related to

environmental and social responsibilities to maximize the positive impact of green finance on operational performance. Additionally, they should further promote the development of green credit businesses by allocating funds to green projects that meet environmental and social sustainability standards, which not only helps fulfill social responsibilities but also enhances their operational performance. Commercial banks should also innovate and launch diversified green financial products to attract more customers and expand their market share. These products can include green loans, green bonds, and green investment funds, catering to the diverse needs of customers and providing new growth opportunities for the banks. Furthermore, commercial banks should optimize their green finance talent systems by establishing green finance research think tanks, encouraging experts and scholars to conduct green finance research, creating talent incentive mechanisms, and forming interdisciplinary research teams to integrate professional resources from different fields.

Conclusion

The rapid development of green finance has profoundly impacted commercial banks' business models and performance. This study highlights that green finance not only provides a platform for developing innovative financial products and services but also offers opportunities for banks to address climate change, sustainable resource utilization, and environmental protection. The development of green finance strengthens banks' sense of social responsibility, encouraging them to incorporate more environmental elements into financial services, thereby enhancing public trust and market competitiveness. However, the current development of green finance still faces numerous challenges, including incomplete policy incentive mechanisms, unstable market demand, and the lack of unified green standards. These challenges limit the comprehensive improvement of commercial banks' performance through green finance. Thus, commercial banks need to play a more significant role in improving the green finance ecosystem by aligning with policies, enhancing business innovation, and increasing financial support for green projects to promote green finance's widespread and in-depth development. In the future, commercial banks should actively optimize the structure of green financial products, explore more diversified green finance models, and strengthen risk management to ensure the sustainable development of green finance. By advancing green finance, commercial banks can contribute to the harmonious development of the economy, society, and environment while securing a more advantageous position in global competition and becoming leaders in responsible and sustainable development within the international financial market.

In conclusion, green finance presents significant potential and development opportunities for commercial banks, but its full realization requires collaborative support from policies, markets, and industries.

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