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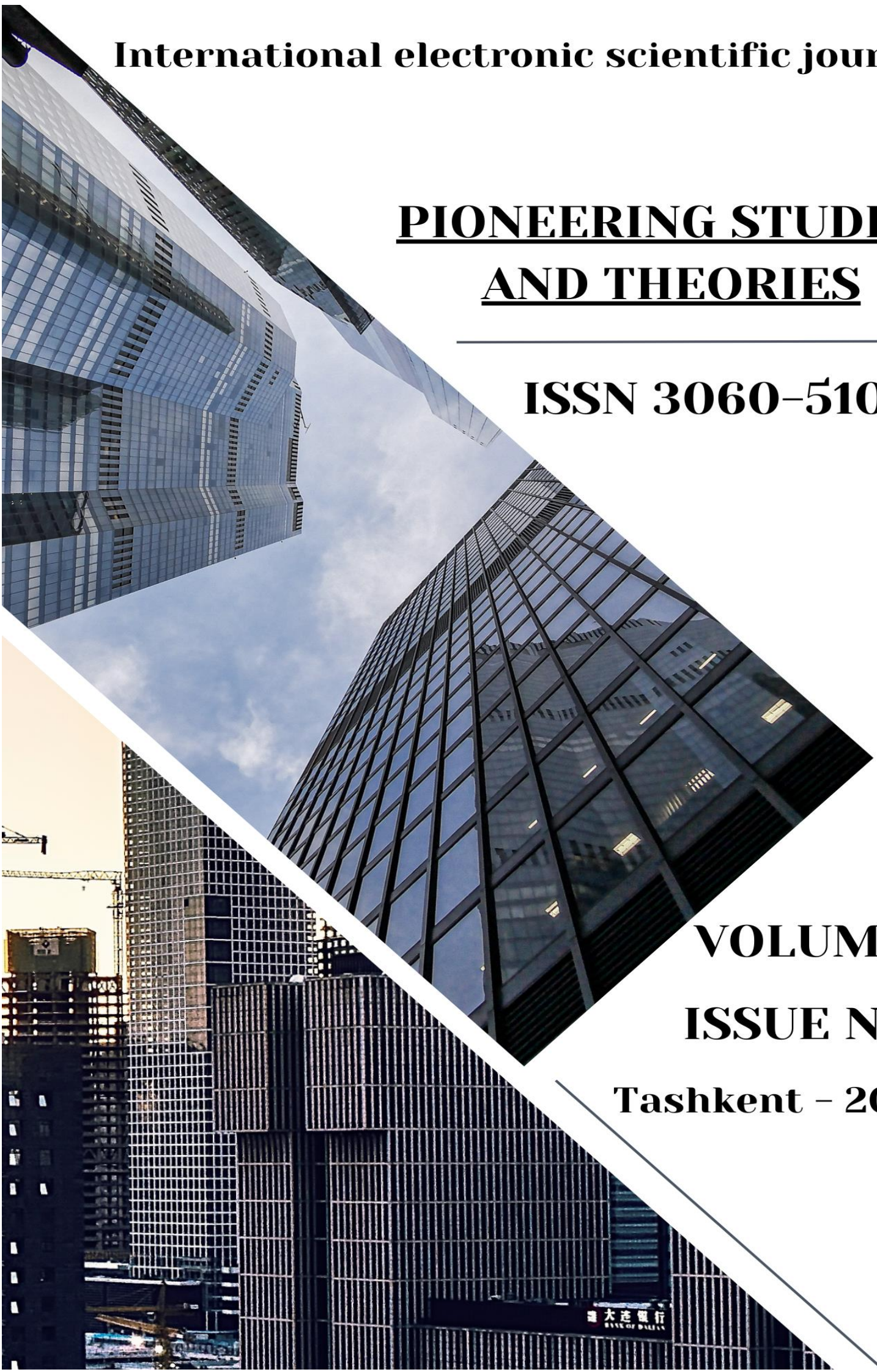

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PROFITABILITY OF BUSINESS ENTITIES AND FACTORS AFFECTING PROFIT

Gafurova Azizakhon Fatikhovna
PhD, Tashkent State University of Economics
94.aziza@gmail.com

Abstract: *This article examines the key elements that determine the profitability of enterprises and identifies the main factors influencing the formation and change in the level of profit. The influence of the internal and external environment of organizations is analyzed, and recommendations are provided to improve business efficiency. Based on the analysis of practical data on the banking sector of the Republic of Uzbekistan for 2023, the dominant role of interest income is established and its impact on the profitability of financial institutions is considered. The results of the economic analysis of the joint-stock company are also presented, trends in changes in gross, net and retained earnings for the period 2020-2023 are identified. Negative dynamics of the main financial indicators of the enterprise are noted, indicating the need to take urgent measures to optimize costs and improve production and commercial policies to stabilize the financial condition and increase the competitiveness of companies.*

Keywords: *profitability, profit, profit factors, business entities, profitability, external factors, internal factors.*

INTRODUCTION

Profitability is one of the main criteria by which the efficiency of enterprises is assessed. It reflects the company's ability to make a profit and ensure the stability of its economic development. Analysis of factors affecting profitability is necessary for timely adaptation of companies to changing market conditions.

Gross profit of a bank is formed after deducting the amount of current expenses from gross operating income. About half of all bank expenses are accounted for by interest payments on deposits, the rest of the expenses are other interest payments, wages, deductions to reserves in case of default on loans and other operating expenses.

Net profit is formed after paying all taxes on their gross profit and, in turn, is divided into distributed, that is, paid to shareholders of the bank as annual dividends on their shares, and capitalized, directed to increase the bank's equity capital and reserves.

The further expansion of the bank's operations, the increase of its capital and reserves depend entirely on the level of profit. In this case, it is not so much the absolute amount of net profit received by the bank that is important, but its ratio to a number of indicators of the bank's balance sheet.

LITERATURE REVIEW

"Income is the monetary or material assets received by the state, an individual or a legal entity as a result of any activity for a certain period of time"[1].

"Profit or loss is the total amount of income minus expenses, excluding components of other comprehensive income"[2].

Hendriksen E.S. argued that "profit is the result of using capital over a certain period of time"[3]. This point of view was announced more than twenty years ago, which is probably why it is very controversial for the present times, since we understand that profit no longer has a direct, but an indirect connection with capital, since there are many levers influencing profit today, but if we

consider the general theory of economics, then of course the concept of Money-Commodity-Money'(1) [4] is the basis of this statement.

E. A. Markaryan, G. P. Gerasimenko, S. E. Markaryan believe that "profit is the final financial result of the enterprise's activity, characterizing the absolute efficiency of its work" [5]. Referring to the definition of E. A. Markaryan and G. P. Gerasimenko, Kulyagina E. A. claims that, indicating profit as the "final financial result", they did not take into account the opposite indicator of profit - loss. Therefore, it would be appropriate to write: "positive financial result", since profit cannot have a negative value. However, referring to the same definition, it should be noted that at present in civilized countries there is a slow transition to a new concept of determining the profit of an organization through the concept of "financial result". In this concept, profit (loss) has a completely different name, which in essence does not change the content [6].

It is necessary to pay attention that the bank's profit is formed on the basis of the bank's credit, deposit, settlement and other types of banking activities. Traditionally, the largest share falls on the margin, that is, the difference between deposit and credit interest. Naturally, there are many factors affecting profit, both external and internal. Each of these factors can significantly affect the profit of banks. Internal factors include groups of extensive and intensive factors. Extensive factors include factors reflecting the volume of resources, for example, changes in the volume of the resource base, the number of regional divisions or the number of employees, their use over time (acceleration of the turnover of a unit of resources, changes in the duration of the working day), as well as inefficient use of resources (losses due to risks, significant diversion of funds to funds and reserves).

External factors can be divided into market and administrative. Market factors include the phase of economic development of the country, the level of competition in the market, demand and supply for credit, the price of credit resources, the level of public confidence in the banking system and their income level, the structure of the market, etc. Administrative factors include government regulation, the tax system, financial and monetary policy.

ANALYSIS AND RESULTS

For analysis, it is worth considering the income and expenses of the banking system during 2023 by month. In Figure No. 1, we looked at interest income and expenses for the period January-December 2023.

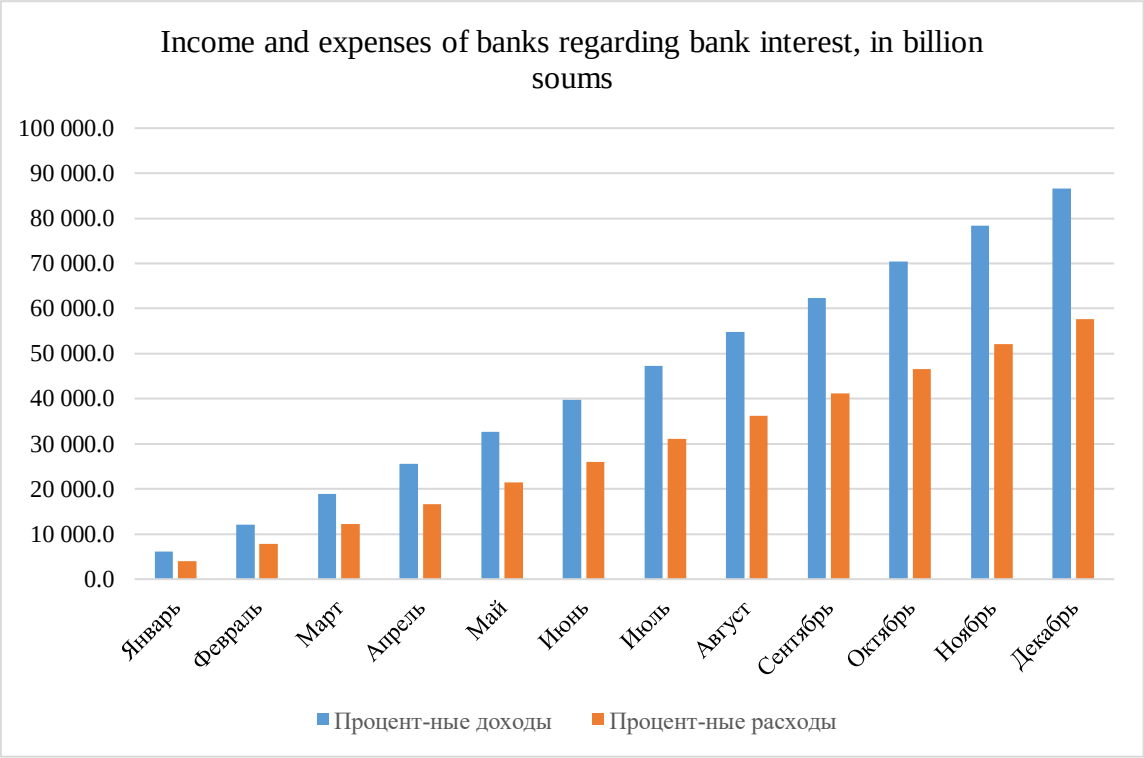

Figure №1. Income and expenses of banks regarding bank interest, in billion soums.

Interest income, as their name suggests, includes funds received in the form of interest on loans issued to individuals, legal entities and on the interbank market, as well as interest on deposits placed in other financial institutions. Interest expenses are the interest paid on loans, deposits, securities and other attracted funds. An example is that interest on deposits is significantly less than the interest paid to the bank for the loan, which forms the margin.

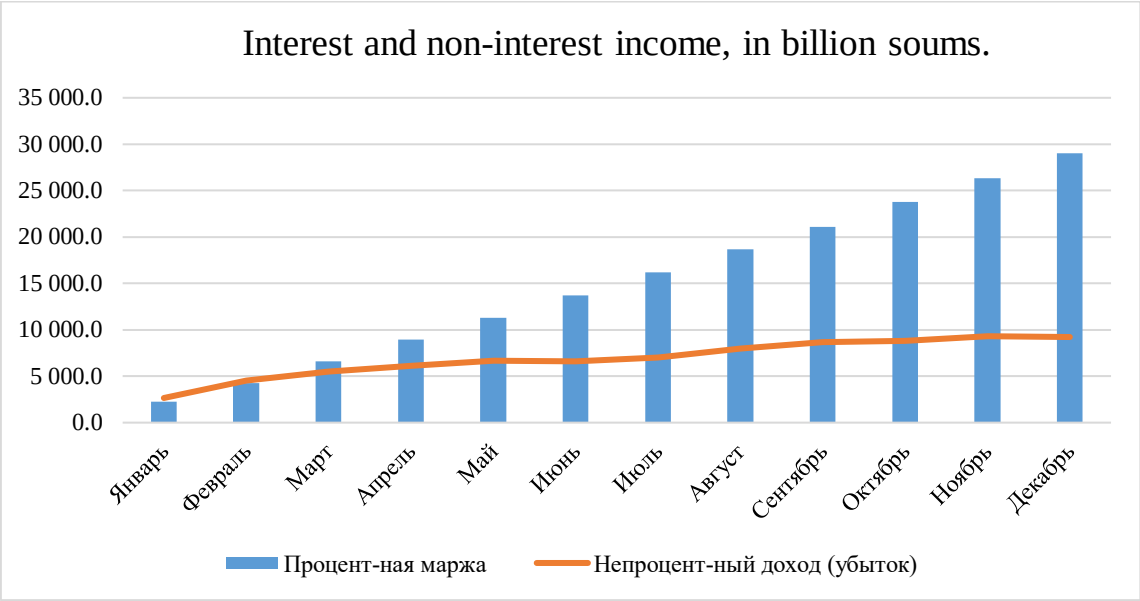

Figure 2. Interest and non-interest income.

Non-interest income of banks is income received by the bank from operations not related to issuing loans and investments in debt securities, but received by the bank from foreign exchange transactions with foreign currency, fees for services, commissions and other income.

As was already said above, interest income is the main source of income, as can be clearly seen in graph No. 2. Non-interest income here is obtained by subtracting non-interest expenses and operating expenses from non-interest income.

As was already noted above, E. A. Markaryan, G. P. Gerasimenko, S. E. Markaryan believe that “profit is the final financial result of an enterprise’s activities, characterizing the absolute efficiency of its work” [6]. This changes our perception of profit. If the activities of an economic entity are profitable for several months, this means the absolute efficiency of its activities.

When analyzing the profit already received, the question arises as to what influences it. The answer to this was to consider external and internal factors that have a significant impact on profit.

It should be noted that practical data show that interest income significantly exceeds non-interest income and has a progressive growth dynamics, the explanation for this is how much the demand for credit transactions has increased among both legal entities and individuals.

Now let's consider the formation of profits of industrial business entities. The profit of industrial joint-stock companies is formed on the basis of several stages. The most important source of income is the sale of products, which ensures the flow of funds to the organization. Production costs (raw materials, staff salaries, energy costs, equipment depreciation, etc.) are deducted from the revenue received, thus forming the company's gross profit.

Then operating costs (management costs, marketing activities, logistics and other costs associated with current activities) are deducted from the gross profit, as a result of which operating profit is determined. This indicator demonstrates the profitability of the main activity of the enterprise before deducting interest on loans and paying taxes. Next, operating profit is adjusted for financial indicators, including interest payments on loans, income or expenses from investments and exchange

rate differences, after which profit before tax is formed. After paying taxes and mandatory government fees, net profit remains, which is the final financial result of the company's activities. It is this profit that serves as a source for paying dividends to shareholders and reinvesting in the development of production and expansion of the enterprise. Thus, effective management of all stages of profit generation allows a joint-stock company to ensure sustainable development and high competitiveness.

The economic analysis was carried out on the basis of the company's financial statements reflected in the balance sheet (form No. 1) of JSC "XOVRENKO NOMIDAGI SAMARQAND VINO KOMBINATI". The key indicators of the company's profit for four years (2020-2023) were considered:

Gross profit (profit received from the sale of goods and services before deducting other expenses).

Net profit (the company's income remaining after paying all taxes and mandatory payments).

Retained earnings (part of the profit that was not distributed among the owners, remaining for business development or compensation for losses).

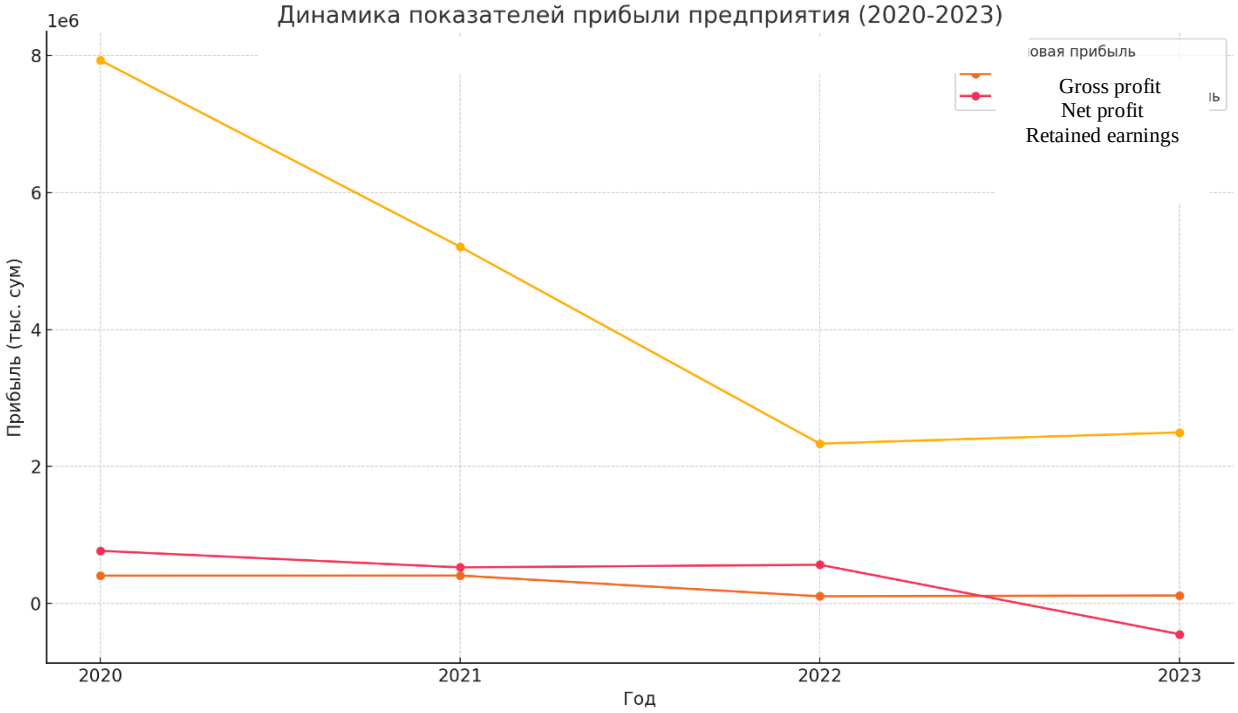

Figure 3. Dynamics of the company's profit indicators (2020-2023)

Based on the reviewed data, the following dynamics of financial indicators were revealed. The gross profit indicator tended to decrease during the period 2020-2022. This may be due to a decrease in demand for the company's products, an increase in production costs, or increased competition in the market. Although there is some increase in 2023, the profit level remains low compared to the beginning of the analyzed period. Net profit also showed negative dynamics for the period under review. A significant decrease in this indicator may be caused by an increase in tax liabilities, an increase in production and sales costs. In 2023, there is a slight increase, but it is not enough to compensate for the decline in previous years. The retained earnings indicator remained positive in the first years of the period, but in 2023 it turned negative. This indicates a possible deterioration in the financial stability of the enterprise and may signal the need to take urgent measures to restore the stability of the financial condition.

CONCLUSIONS AND SUGGESTIONS

Based on the analysis, it can be concluded that the company's financial results have significantly worsened in recent years. The decrease in profit is associated with both internal factors (increased

production costs, problems with product sales) and external conditions (competition, economic changes). The negative value of retained earnings for 2023 indicates the need for prompt action to correct the situation.

To stabilize financial indicators and return to sustainable growth, it is recommended to conduct a comprehensive analysis of the company's costs, optimize production and commercial processes, improve the product range and pricing strategy, and optimize tax payments and the company's liabilities.

REFERENCES

1. New Economic Dictionary / Edited by A. N. Azriliyan. - M.: Institute of New Economics, 2006. - 1088 p. - 4000 copies.
2. International Financial Reporting Standard (IAS) 1 "Presentation of Financial Statements"
3. Hendriksen E. S. Van Breda M. F. Accounting Theory: Trans. from English / Edited by prof. Ya. V. Sokolov. - M.: Finance and Statistics, 2000. - 576 p.
4. Karl Marx, "Capital", General Formula of Capital, year of publication 1867
5. Markaryan E. A. Economic Analysis of Business Activity: Textbook / E. A. Markaryan, G. P. Gerasimenko, S. E. Markaryan. - 2nd ed., revised. and add. — M.: KNORUS, 2010. — 536 p.
6.Sheremet A.D., Saifulin R.S. Methodology of financial analysis. - M .: INFRA-M, 2021. - 320 p.
7. Blank I.A. Profit management. Textbook. - Kyiv: Nika-Center, Elga, 2019. - 576 p.
8. Savitskaya G.V. Economic analysis of the enterprise: a textbook for universities. - M .: Infra-M, 2020. - 536 p.

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THEORETICAL ASPECTS OF MODERN ENTREPRENEURSHIP

Vaxidov Azamjon Kozimovich
Senior Lecturer at the Department of Economics at Andijan State University
avoxidov1974@gmail.com

Abstract - *The economic essence of entrepreneurship is considered. The processes taking place in entrepreneurship are investigated. It is noted that modern entrepreneurship is associated with a new management paradigm and the increasing role of innovation. The necessity of rationalization of management through the creation of innovative networks is substantiated. The directions of development of small and medium-sized enterprises are outlined.*

Keywords: *entrepreneurship, innovation, risk, corporate entrepreneurship, small and medium-sized businesses, government support for entrepreneurship, innovation networks.*

RELEVANCE OF THE PROBLEM

The essence and content of entrepreneurship has long attracted the attention of researchers. In the works of M. Werber, P. Drucker, R. Cantillon, K. Marx, A. Marshall, D. Ricardo, A. Smith, J. Schumpeter, entrepreneurship is considered both in general theoretical and practical-functional terms.

Modern authors – O. Amosov, V. Bakumenko, Z. Varnaly, I. Gerchikova, V. Grineva, A. Degtyar, O. Kirsh, O. Kuzhel, K. Lyapina, V. Lyashenko, M. Nadolishny – consider the issues of forming an entrepreneurial environment, state and regional programs to support it, and study individual factors contributing to the development of entrepreneurship.

Exploring modern entrepreneurship, we will consider its economic essence, approaches to this process, as well as the specifics of its organization.

The term «entrepreneurship» was first coined in the 18th century by R. Cantillon. In his opinion, an entrepreneur is an entity endowed with special abilities to anticipate, take risks, and take full responsibility for decisions made not only in standard situations, but also in risky circumstances, including when introducing innovations. At the same time, such entities do not necessarily have to be owners of functioning capital.

Founder of the classical school of Political Economy A.Smith called the owner of capital an entrepreneur, and considered the purpose of entrepreneurial activity to be obtaining entrepreneurial income.

The contribution of the representative of the German classical school to the development of the theory of entrepreneurship is very noticeable.Tunen, who characterized an entrepreneur as having special personal qualities: he must be able to take risks, make non-standard decisions and be responsible for his actions, and therefore be able to claim unplanned (unpredictable) income.

Make a significant contribution to the development of the theory of entrepreneurship. Schumpeter, who linked entrepreneurship with innovation [9, p. 174].

The point of view of a representative of the neoclassical school B is of interest.Clark. He considered entrepreneurship as a managerial function that is not related to labor or ownership of capital; it consists entirely in establishing and maintaining effective interactions between the factors of production [4].

ANALYSIS OF LITERATURE ON THE TOPIC

Famous American scientists R.Hitchrich and M. Peters have given a comprehensive definition of entrepreneurship that covers all aspects of the entrepreneurial process, namely innovation, risk and

result. In their opinion, entrepreneurship is a process of creating something new with value; a process that consumes time and effort, involving financial, moral and social responsibility; a process that brings monetary income and personal satisfaction with what has been achieved [7].

A.Shapiro believes that almost all definitions of entrepreneurship refer to such behavior, which includes, firstly, an element of initiative, secondly, the organization and reorganization of socio-economic mechanisms in order to be able to profitably use available resources and a specific situation, and, thirdly, taking responsibility. for possible failure, i.e. willingness to risk [8]. This definition combines economic, personal and managerial approaches.

P. Drucker's works consider not only the essential, but also the managerial aspects of entrepreneurial activity, moving to an interdisciplinary level of analysis (see, for example, [3]). He notes that entrepreneurship cannot be attributed to either science or art. This is a specific activity, a practice that has its own knowledge base, and knowledge in entrepreneurship is a means to achieve an end.

The works of G. Pinshot laid the foundation for the formation of modern concepts within corporate entrepreneurship, strengthened the understanding of entrepreneurship as a global process phenomenon, not necessarily associated with the concept of ownership.

The scientific understanding of entrepreneurship has also been influenced by the achievements of institutional theory, which considers organizations, including entrepreneurial ones, as open systems. Within the framework of the synergetic approach, entrepreneurship is defined as the process of self-renewal and self-organization of individuals and enterprises, carried out in interaction with the external and internal environment.

The points of view of Russian economic scientists on the essential concepts that characterize entrepreneurship are of interest. In particular, A.B. Busygin considers entrepreneurship as the art of doing business, primarily as a thought process implemented in the form of business design [2]. In a professional sense, entrepreneurship is defined as the ability to organize your own business and successfully perform the functions associated with it.

The synergetic approach to the theory of entrepreneurship is substantiated by L. Kolesnikova [5]. Its essence is to take into account the unity of objective-material and ideal-creative principles in entrepreneurial activity.

M. G. Lapusta emphasizes the legislative and financial aspects of entrepreneurial activity [6]. In his opinion, «entrepreneurship is a free economic management in various fields of activity (except those prohibited by law).... in order to meet the needs of specific consumers and society in goods (works, services) and generate profits (income) necessary for the self-development of their own business (enterprise) and ensure financial obligations to budgets and other business entities»

A.H. Asaul defines entrepreneurship as a special type of economic activity, the essence of which is to stimulate and satisfy the demand of society for the specific needs of its members through market exchange and which is aimed at gaining competitive advantages through disruption of market equilibrium [1].

In our opinion, entrepreneurship should be understood as a style of economic activity based on creativity, innovation, risk, initiative, constant search for new opportunities in order to make a profit, as well as personal self-realization. The latter aspect is particularly important, since most often the material side of entrepreneurial activity is highlighted - making a profit. We believe that the moral aspect is equally important, namely the entrepreneur's ability to realize himself, find his place in life by creating and effectively running his own business.

RESEARCH METHODOLOGY

This article attempts to effectively use induction and deduction, systematic and logical analysis, and comparative analysis methods.

ANALYSIS AND RESULTS

Modern economics defines entrepreneurship as a special type of activity, which is based on the following characteristics:

– freedom to choose areas and methods of activity, independence in decision-making;

– the constant existence of a risk factor;

– profit-oriented approach;

– innovative nature of the activity.

When defining the concept of entrepreneurship, it is necessary to take into account its main features:

– it is possible only in a certain social situation

–an entrepreneurial environment, which is understood primarily as a market, a market system of relations;

– it is carried out on its own behalf, at its own risk and the property responsibility of an individual, an entrepreneur or a legal entity – an enterprise (organization);

– requires the personal freedom of the entrepreneur, his independence, i.e. the ability to make independent decisions regarding the organization and implementation of the production of goods or services to maximize profits;

– aimed at making a profit or other material remuneration;

– by being proactive and implementing their innovative ideas, they contribute to the effective pooling and use of investment, material, labor and financial resources;

– provides prerequisites for the emergence and development of competition in the market and, thanks to this, becomes a kind of catalyst for the socio-economic development of the country's economy as a whole;

– it is the main factor of structural changes in the management system.

The formation and development of entrepreneurship can occur under certain conditions:

– economic–denationalization and privatization of property, demonopolization of economic activity, creation and functioning on this basis of multi-subject (private, collective, cooperative)owners, the assertion of freedom of entrepreneurial activity;

– political – creation of a favorable business climate, due to the stability and democratization of public life, appropriate tax, credit and other policies, ensuring guarantees for the safety and inviolability of private property, including intellectual property;

– legal – creation of a regulatory framework for entrepreneurship and its legal protection;

– psychological – creation of a favorable psychological climate in society, overcoming the negative attitude of the population towards entrepreneurship. Thus, entrepreneurship is a specific type of socially useful economic activity. The characteristic features of entrepreneurship are foresight, assertiveness, initiative, authority, sociability, and the ability to make risky decisions. Entrepreneurship is inherent in both individuals and legal entities of all forms of ownership, of various sizes and organizational structures.

The modern stage of entrepreneurship development is associated with a new management paradigm, the strengthening of the role of innovation. The aspirations of the organization today are aimed at ensuring long-term sustainability, rather than maximizing individual results. The key role is played not by adaptation to changing conditions, but by proactive management, which provides for the organization's ability to independently shape the environment to achieve its goals.

Modern management priorities envisage rationalization not of the use of resources, but of the very form and method of management, which is becoming a key element of entrepreneurial activity. At the same time, a special role is assigned today to innovative structures and network organizations. Innovative activity in the modern economy is becoming a defining feature of entrepreneurship.

Innovative activity in the modern economy is becoming a defining feature of entrepreneurship. Moreover, innovation is not just an invention or discovery, it involves the practical implementation of an entrepreneurial idea, i.e. the commercialization of new technical, technological, organizational and other developments. An important aspect of the development of entrepreneurship

is the emergence of high-tech, including venture capital firms, where the inventor and the entrepreneur act in one person.

The innovative activity of the enterprise, in turn, includes the following elements: – implementation of scientific and technical developments and tests; – effective technological and design activities; – implementation of technical, organizational and other innovations; – development of new utility models to improve the organization, management and regulation of the company's activities; – formation of an effective innovation and investment policy of the enterprise. Thus, the innovative activity of an enterprise should be understood as a process based on the implementation of investments in order to implement sound scientific and technical programs with guaranteed payback periods and the introduction of new scientific and technical achievements into production.

The creation of an innovative infrastructure depends on the level of technological and economic development of the national economy. In countries with developed production infrastructure, today there is a process of softening («soft infrastructure» as opposed to «hard infrastructure»), characterized by an increasing role of immaterial, immaterial factors of production, and the informatization of society.

Softening is intertwined with servification, which is the rapid development of the service sector.Thus, real opportunities are being created to create a network of consulting, engineering, service, and information services that support innovation processes.

Another characteristic of modern entrepreneurship is commercial risk. The level of risk is increasing today, correlating with the degree of complexity and uncertainty of the external environment, which makes it much more difficult to make rational decisions in the organization. Commercial risk is associated with the manifestation of initiatives, the introduction of innovations by competitors and requires the adoption of adequate measures to maintain competitiveness on the part of other market participants. The result is an entrepreneurial benefit as a reflection of realized competitive advantages.

The terms «entrepreneurship» and «business» are often used synonymously. The terminological difference between business and entrepreneurship, according to A.H. Asaul, is that business uses a violation of market equilibrium caused by entrepreneurship for its activities[1]. Thus, entrepreneurship differs from business in only one essential property - innovation, which leads to a violation of market equilibrium.

Entrepreneurship in a broad sense, unlike business, is much less common. According to J. Schumpeter, «an entrepreneur who has remained such for decades is as rare as a businessman who has never been at least a little entrepreneur in his everyday life» [9, p. 174].

In everyday life, the interpretation of these terms is usually allowed to be equivalent, since the term «entrepreneurship» in the narrow sense corresponds to the term «business» in the broad sense of the word.

In our opinion, small and medium-sized businesses, along with large ones, are specific forms through which the entrepreneurial function is realized. It seems that today it is necessary to consider two aspects of the development of entrepreneurial activity - on the one hand, the trends in the development of large corporate entrepreneurship, and on the other, the trends in the development of small and medium-sized businesses.

We support the view that small businesses in the manufacturing sector should develop based on large businesses. Small firms usually either seek to occupy market niches that are unprofitable for large companies to enter there, or they are funded by them by conducting innovative developments that are risky for the corporation.

As for the development of corporate entrepreneurship, it should be noted that its characteristic feature today is the involvement of an increasing number of participants in the entrepreneurial process and the distribution of the entrepreneurial function in the form of a decision-making process between managers at various levels. Thus, corporate entrepreneurship today is the lot of collective activity. Moreover, managers differ from classical entrepreneurs in their business qualities, values, and

corporate standards of behavior. They are characterized by a desire to work in a team, teamwork, and awareness of the value of cooperation.

As for small and medium-sized enterprises, it is necessary to note that their development and support in modern conditions are the most important direction of state policy. The main sign of a developed economy in any country is the presence of small enterprises in its structure.

Thanks to small businesses, the national economy is steadily growing, the market is being filled with goods and services on a competitive basis, new technologies are being promoted to produce products that meet market requirements, and employment is being ensured.

Less favorable business conditions than those of large enterprises lead to less stability and competitiveness of small businesses, which is why they need government support.

The experience of the development of the global and domestic economy shows that government policies aimed at helping small and medium-sized enterprises and promoting their development produce tangible results in achieving balanced economic growth.

It should be noted that in recent years, the country has been systematically working to create a continuous chain of comprehensive support for the development of entrepreneurship in Uzbekistan. By Decree of the President of the Republic of Uzbekistan dated November 10, 2023, No. UP-193 «On measures to improve the system of financial support for small and medium-sized businesses»

On March 19, President of Uzbekistan Shavkat Mirziyoyev held a meeting with representatives of small and medium-sized businesses.

Priority tasks for the development of small and medium-sized businesses were discussed at the meeting. In particular, the following goals are outlined for 2025:

– to increase the share of the sector in the economy to 55% with the creation of added value in the amount of 70 billion dollars. According to the Committee for National Statistics, the share of small businesses in GDP in 2024 was 54.3% (in 2020 it was 57.5%);

– expand the export of small businesses from $9 billion to $12 billion, providing support in transportation, certification and standardization of products;

– increase the share of small businesses in the fields of water supply, sewerage, road construction, utilities, logistics, migration, culture and social services by 2-3 times;

– create 1.5 million permanent jobs and bring the share of the employed population in this sector to 75%;

– to increase the number of enterprises with more than 100 employees to 4,000;

– develop 100 new brands in the field of small business;

– finance 200 startup projects with the participation of small businesses.

A comprehensive program has been developed jointly with international experts to achieve these goals.

In 2025, it is planned to allocate 10 billion dollars from various sources for its implementation.

The President elaborated on the new opportunities that will be created for small and medium-sized businesses.

In particular, preferential resources in the amount of 22 trillion soums are provided for the involvement of the population in business activities. Of these, 2.5 trillion soums will be allocated to support youth entrepreneurship and the same amount for projects of women entrepreneurs.

Since this year, loans of up to 300 million soums have been issued to small businesses. Now, entrepreneurs who have become small or medium—sized enterprises over the past year will be able to receive up to 150 million soums without collateral (currently it is 100 million soums). In addition, unsecured loans will be provided under family business programs for up to 50 million soums (currently 33 million).

Responsible persons were instructed to create an opportunity to obtain new preferential loans for entrepreneurs who had previously prevented delays in their loan obligations.

An additional 500 billion soums will be allocated to the 1 trillion soums provided this year for the development of infrastructure for small and medium-sized business projects.

It is also planned to adopt special programs to support entrepreneurs working in the field of equipment, electronics, medical devices, logistics and other promising areas.

The President noted that a five-year strategy has been developed that will determine further steps in the field of small business. This initiative was supported by international financial organizations, expressing their willingness to promote the introduction of best practices, innovations, technologies and international standards in new business areas. 470 million dollars have already been allocated for these purposes.

This approach ultimately means supporting specific enterprises in the financial, property, consulting, information and other fields.

In addition, in our opinion, support for small and medium-sized enterprises as a socio-economic phenomenon is extremely relevant at the moment. This direction involves the creation and regulation of institutions that determine the possibility of new socio-economic communications both within the company and between the company and the external environment.

The basis of entrepreneurial activity today is precisely the ability of an economic entity to qualitatively modify the network of economic relations. On this side, in our opinion, it is necessary to support small and medium-sized businesses by helping to create innovative networks, including technology parks, business centers and business incubators, as well as regional business clusters and networks.

CONCLUSION

Thus, analyzing and summarizing the opinions of scientists and practitioners, entrepreneurial activity has great reserves and prospects, because there is no other way to establish and strengthen the state, except for the development of a market economy, which is based primarily on entrepreneurship.

LIST OF USED LITERATURE

1. Asaul A.N. et al. Assessment of the competitive positions of business entities. St. Petersburg, 2007.
2. Busygin A.B. Entrepreneurship: textbook, 2003.
3. Drucker P. Effective management. Optimal solutions to economic problems. Moscow, 2003.
4. Clark D.B., Serebryakov B. Distribution of wealth / translated by D.Strashunsky, A. Beschinsky, M., 1934.
5. Kolesnikova L. Entrepreneurship: from «profit maximization» to the synergy of socio-economic systems // Voprosy ekonomiki. 2001. No. 10. pp. 40-54.
6. Lapusta M.G. Entrepreneurship: textbook, Moscow, 2009.
7. Khizrich R., Peters M. Entrepreneurship, or How to start your own business and succeed. Moscow, 1992.
8. Shapiro A.I. Modern problems and prospects of the world capitalist economy:A critical analysis of bourgeois concepts/AH USSR, Institute of World Economy International. relations. Moscow, 1984.
9. Schumpeter J. Theory of Economic Development, Moscow, 1982.

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THE PROBLEMS OF ENVIRONMENT AND GREEN ECONOMY

Alimova Saboxat Gaziyevna
Tashkent medical academy
Social sciences department, associate professor, PhD in Economics.
saboxat.alimova@mail.ru
+998998284330
Erkinova Sevinch
Tashkent Medical Academy
Management field 1 - stage student
+998 902527752

***Abstract**: This article identifies the most pressing environmental and other risks, as well as recommends policy changes and actions. Some of the issues discussed include measures to improve energy efficiency and landscape restoration programs, which simultaneously benefit the economy and the environment while also posing potential negative impacts on human health.*

***Key words:** environmental and economic problems, green economy, economic development, poverty reduction, air quality.*

INTRODUCTION

The year 2025 has been officially declared as the "Year of Environmental Protection and Green Economy" in our country. This announcement marks the beginning of a new phase dedicated to ensuring environmental sustainability and mitigating climate change.

A Roadmap for Transition to a Green Economy and Ensuring Green Growth until 2030 has been adopted in Uzbekistan. This plan includes measures aimed at addressing existing environmental and economic challenges to achieve green, sustainable, and inclusive development.

A recent report prepared by the World Bank, in cooperation with the Ministry of Economic Development and Poverty Reduction of Uzbekistan and other government agencies, analyzes the challenges and opportunities of the country's transition to a green economy. The report identifies the most pressing environmental and other risks while recommending policy changes and strategic actions. Some of these measures, such as improving energy efficiency and implementing landscape restoration programs, are designed to simultaneously benefit the economy and the environment.

Uzbekistan faces inefficiencies in water usage, and its energy consumption per unit of GDP is nearly three times higher than the average for Europe and Central Asia, and twice as high as that of neighboring Kazakhstan.

Moreover, air pollution from urban and industrial sources is exacerbated by dust storms carrying sand and degraded land particles. A significant portion of the population is regularly exposed to air quality levels considered harmful to human health.

LITERATURE REVIEW AND METHODOLOGY

At the 78th session of the United Nations General Assembly, President of Uzbekistan Shavkat Mirziyoyev emphasized:

"We are proud that our country is the homeland of great scholars and thinkers such as Al-Khwarizmi, Beruni, Imam Bukhari, Mirzo Ulugbek, and Alisher Navoi, who have made invaluable contributions to world science and culture."

Similar ideas were mentioned in Indian epics (Mahabharata and Ramayana) a century after the Avesta was written and appeared in Chinese chronicles 300 years later. However, it was only in

the 5th century BCE that ancient Greek philosophers like Heraclitus, Socrates, Hippocrates, Plato, and Aristotle began discussing ecological and environmental issues.

Speaking about the state of the environment today, President Mirziyoyev stated at the UN:

"The world is facing a serious environmental crisis. Climate change, biodiversity loss, and pollution are worsening the situation."

RESULTS

Given the country's agriculture-focused economy and high population density, one of Uzbekistan's key green priorities is to improve air quality and promote the sustainable use of land and water resources.

This can be achieved through landscape restoration, efficient water management, and air pollution reduction measures. Expanding sustainable land use practices is essential, and climate-smart agriculture can further enhance land sustainability.

Sectors that optimize both employment opportunities and environmental outcomes include healthcare, education, finance, and climate-resilient industries.

Since agriculture is the largest employment sector in Uzbekistan, transitioning to higher-value industries and optimizing land use through ecosystem services can create more green jobs and improve living standards.

Currently, many countries are facing a sharp decline in natural resources, including land and water, making their efficient use a pressing issue. Countries with advanced agriculture—such as the Netherlands, Israel, South Korea, Japan, the United States, and Germany—have implemented hydroponic farming in specialized greenhouses since the late 20th century.

Hydroponics (from the Greek words "hydro" – water and "ponos" – work) is a method of growing crops without soil, using water-based nutrient solutions in controlled environments. In hydroponic systems, essential factors for plant growth—such as temperature, humidity, heat, light, carbon dioxide, clean water, and essential nutrients—are artificially regulated.

This technology presents a profitable opportunity, even with a small investment, offering sustainable agricultural production while optimizing resource use.

DISCUSSION

By creating optimal growing conditions, the photosynthesis process in plants is enhanced, leading to increased accumulation of organic compounds, which promotes plant growth, development, and higher yields.

Key Advantages of Hydroponics:

1. No soil or manure is required.
2. Water consumption is reduced by 60-70%.
3. Heat usage in hydroponic greenhouses is 25-30% lower compared to traditional greenhouses.
4. Vegetable ripening time is shortened by 20-30 days, while the harvest period is extended by 50-60 days.
5. Crop yield in hydroponic systems is 2 to 2.5 times higher than in traditional greenhouses.
6. Water and nutrient solutions are delivered directly to plant roots through a drip irrigation system.
7. No need for soil preparation, fertilization, plowing, irrigation furrows, mineral fertilizers, or weed control.
8. No negative impact on the environment, as hydroponic technology prevents soil contamination from excess fertilizers and pesticides, which can cause long-term ecological damage.

Hydroponics offers a highly efficient, sustainable, and eco-friendly method of agricultural production, optimizing resource use while increasing crop quality and yield.

Calculation of Profitability: Traditional Farming vs. Hydroponics per $1m^2$

1. Traditional Farming:

• Yield: 4–6 kg per m² (2 harvests per year)
• Product Price: 8,000 UZS per kg
• Annual Revenue:
• Minimum: 4 kg × 8,000 = 32,000 UZS
• Maximum: 6 kg × 8,000 = 48,000 UZS
• Annual Expenses: 40,000 UZS
• Net Profit:
• Minimum: 32,000 – 40,000 = -8,000 UZS (loss)
• Maximum: 48,000 – 40,000 = 8,000 UZS (profit)

2. Hydroponics:
• Yield: 30–45 kg per m² (3–4 harvests per year)
• Product Price: 20,000 UZS per kg
• Annual Revenue:
• Minimum: 30 kg × 20,000 = 600,000 UZS
• Maximum: 45 kg × 20,000 = 900,000 UZS
• Annual Expenses: 130,000 UZS

• Net Profit:
• Minimum: 600,000 – 130,000 = 470,000 UZS
• Maximum: 900,000 – 130,000 = 770,000 UZS

Estimated Investment Costs for 1m² of Hydroponics

1. Initial Capital Investment (One-time Expenses):
• Hydroponic system equipment (pipes, pumps, tanks): 200,000 UZS
• Water circulation system and filters: 50,000 UZS
• Lighting equipment (LED lamps): 70,000 UZS
• Greenhouse or climate control systems (if applicable): 100,000 UZS
• Monitoring sensors and automation system: 50,000 UZS
• Total Initial Capital Investment: 470,000 UZS (one-time expense)
2. Operational Costs (Annual):
• Fertilizers and nutrients: 50,000 UZS
• Water consumption (minimal usage): 10,000 UZS
• Electricity costs: 30,000 UZS
• Technical maintenance and repairs: 40,000 UZS
• Total Annual Operational Costs: 130,000 UZS

Total Cost Analysis
• First Year (Capital Investment + Operational Costs):
• 470,000 + 130,000 = 600,000 UZS
• Subsequent Years (Only Operational Costs):
• 130,000 UZS per year

This analysis demonstrates that hydroponics offers significantly higher profitability and efficiency compared to traditional farming, despite requiring an initial investment.

CONCLUSION

By adopting the right mix of environmental protection policies and reforms, the country can reap the benefits of a green, resilient, and inclusive future. In a global green transition that presents numerous opportunities for economic growth and development, Uzbekistan must implement sustainable policies to secure its future. Attracting advanced technologies and supporting capacity building are essential prerequisites for establishing a sustainable and prosperous future.

REFERENCES

1. Alimova S.G. «Green logistics-the principle of sustainable development»

Novateur publications Journal NX-A Multidisciplinary Peer Reviewed Journal, Vol. 9, ISSUE 12 ISSN No: 2581 - 4230, 2023/12, 15-18 pgs.
2. Alimova S.G. "Tochka zreniya bioetiki s zelyonaya ekonomika" Ethics and Integration Issues in Medical Education. TTA Conference Proceedings. Vol. 2, 2021. 90-93 page.
3. "Green Economic: an introduction to theo, policy and practice" - M. O'Riordan
4. "Hydroponics: a practical guide for the soilless Grower" - J. Bento Jones Jr.
5. "Hydroponic Systems" - E. L. Schwitters
6. https://data.worldbank.org
7. Uzbekistan , Republic Of The Environment Protection To The State Committee Of
https://uzbekistan.org.ua/ru/news/6695-predotvrashaya-ekologicheskie-problemi.html

DOI: 10.5281/zenodo.15237434
Link: https://zenodo.org/records/15237434

TRANSFORMATION OF HR MANAGEMENT IN ENTERPRISES

Abitkoriev Azizulla Mukhamedrahimovich
Associate Professor of the Department
Faculty of Economics, Andijan State University
abitkariv@gmail.com , + 99897 991 00 19

Abstract: *The article discusses the need to organize effective forms of using employees engaged in official activities to ensure the economic efficiency of creating enterprises in a market economy. In a market economy, the use of innovative technologies in the process of providing services, the role of employees in the process of providing services by the management of enterprises and institutions increases, there is a need to ensure the formation of relations between employees based on market requirements. Personnel management at enterprises depends on the economic policy of the state and each enterprise in the service sector. The main goal of the economic policy of the Republic of Uzbekistan is the formation of an economy based on national traditions, free competition, bringing national products to the level of developed countries in the world market.*

Key words: *personnel, social problems in management , social protection of workers , human capital, innovative personnel management, coaching, corporate culture, digital HR.*

INTRODUCTION

In a market economy, the process of personnel reorganization and enterprise management covers the stages of production, distribution, exchange and consumption of economic development. It is formed at the stage of reprocessing, starting with the process of reprocessing the workforce (workers). Preschool educational institutions, schools, academic lyceums, secondary specialized professional colleges, higher educational institutions, and institutions of higher professional education take an active part. At the stage of distribution and exchange, they are organized into working employees who can actively participate in the provision of services and have the ability to work.

The distribution and exchange of workers in enterprises are the second and third stages of the reproduction process, which is realized in the labor market, and at the consumer stage of reproduction it is carried out by the subjects of production in their use.

In corporate institutions, the management of service activities by employees gives rise to certain conflicts between them and employers, which requires timely resolution of these conflicts.

In our opinion, there are the following social problems in the management of service personnel in enterprises:

- ✓ underdevelopment of the socio-cultural complexes that are provided for them when organizing effective management of enterprise employees;
- ✓ labor market, the discrepancy between labor exchanges that provide jobs and the requirements of a market economy;
- ✓ an enterprise created on the basis of the requirements of market relations promptly adapts the system of managing the retraining of personnel necessary for the provision of services to market requirements;
- ✓ the company's employees are not sufficiently motivated to ensure growth in labor productivity;
- ✓ that the level of social protection for workers employed in the service sector at enterprises

does not meet their needs;

- ✓ the level of adaptation of the social security system to the requirements of the market economy does not meet the requirements;
- ✓ when employees working at the enterprise reach retirement age, the amount of pension provision established for them turns out to be unsatisfactory;
- ✓ Failure to comply with labor protection requirements for service workers employed at enterprises in a market economy.

Effective organization of management of service sector workers employed in enterprises, in the conditions of market relations, is carried out at the expense of the country's budget and the income of enterprises.

The efficiency of labor management of personnel employed at enterprises can be assessed by the growth of profit, which is an indicator of economic success, by the reduction of service costs per employee engaged in the process of providing services to the enterprise, by the growth of the cost of services rendered.

Improving the social environment for the implementation of personnel services at enterprises depends on the effective organization of their management. Ensuring the future cost of pensions for employees of enterprises working under a fixed-term employment contract, close to the cost of their labor associated with the provision of services to the enterprise, or at least 75 percent of the monthly salary for retired employees will increase the productivity of their labor activity.

LITERATURE REVIEW

In the modern conditions of the formation of a market economy in the Republic of Uzbekistan, it is necessary to improve social and labor relations between economic entities in the production and service sectors based on various forms of ownership. Insufficient development of services at enterprises at the level of market requirements and existing social problems of the company, that is, the activities of service employees to eliminate deficiencies in their management leads to an improvement in their socio-economic situation. Thus, to manage the organization of labor activity of enterprise employees at an effective level, it is necessary:

- ✓ creation of socio-cultural conditions related to the provision of adequate services to the enterprise’s employees;
- ✓ in order to improve the activities of the labor exchange, promptly identify vacancies for available blue-collar jobs at enterprises;
- ✓ retraining of unused personnel in the service sector in new areas, taking into account market requirements for their specialties;
- ✓ Stimulating labor and strengthening social protection of workers based on the fundamental economic law of a market economy - the law of supply and demand;
- ✓ We believe it is necessary to review the pension amounts for retiring workers taking into account their work activity.

The creation of a socio-economic base depends on the level of organization of personnel management. Labor creates profit for the enterprise in the process of providing social services, ensures its development and expansion of the service process.

The economy of the enterprise, in connection with the development of the general economy, actively participates in the development of created material and intellectual goods, the improvement of the provision of services covering exchange and consumption, and spends a certain part of the profit received on improving the life and work of workers. Workers in the service sector of the enterprise, based on the expansion of the service sector, implement their social protection only on the basis of state intervention. Since the market is based on free competition, the state does not interfere in the processes of providing services by enterprises of various forms of ownership, and distributes the profit created in the service sectors by enterprises through adopted laws.

In order for the establishments of enterprises to be economically efficient in the conditions of a market economy, it is necessary to organize effective forms of using workers engaged in their

official activities. The use of innovative technologies in the process of providing services in the conditions of a market economy, the role of workers in the process of providing services by the management of enterprises and institutions will increase and there will be a need to ensure the formation of relations between workers based on market requirements.

Personnel management at enterprises depends on the economic policy of the state and each enterprise in the service sector. The main objective of the economic policy of the Republic of Uzbekistan is to form an economy based on national traditions, free competition and the sale of national products on the world market at the level of developed countries. - ensure competitiveness. To achieve this goal, entrepreneurial institutions must:

- ✓ allocate the necessary credit funds for the development of entrepreneurial activity, create conditions for increasing the competitiveness of their products;
- ✓ Provision of state support to enterprises in the manufacturing industry that, for various reasons, cannot meet the requirements of free competition in a market economy, in order to ensure that entities in the manufacturing industry meet the requirements of free competition;
- ✓ It is necessary to pay attention to reducing tax payments in order to increase the level of competitiveness of service sector enterprises and ensure their efficiency.

To implement the economic policy developed in the republic, it is necessary to use budgetary and financial, monetary and credit, antimonopoly, scientific and technical, innovative and other measures of a general nature. In addition to the above-mentioned management institutions, institutions of foreign investment, customs and foreign economic relations are also of great importance in the implementation of economic policy.

The economic efficiency of personnel management is expressed in the form of profit received by enterprises in relation to their transaction costs. Satisfaction with the level of consumption of service sector workers and their development in general is the main socio-economic indicator of efficiency. This is expressed mainly in the following indicators: the efficiency of capital investments provided to legal entities and individuals, the efficiency of using production technologies, the profitability of enterprises, the payback period of capital investments, the volume of production per worker employed in production, its cost, growth, reduction in cost price, and others. The efficiency of enterprises is expressed in the reduction of the cost price of the services they provide and the increase in profit. In short, the economic essence of enterprise employee management is expressed in the growth of their economic interests and the harmonization of the economic interests of production entities.

The social nature of enterprise management depends on the social policy pursued by the state.

The implementation of social policy requires the active participation of workers of each enterprise and institution. Social policy is expressed in the economic system in two ways:

- ✓ First, the progress of economic growth is expressed in the form of national wealth at the level of a particular country and gross income at the level of an enterprise. This wealth is the main goal of economic activity in organizing social conditions;
- ✓ Social policy is the goal of economic development. Economic development ensures the implementation of social policy;
- ✓ Secondly, social policy is considered a key factor in economic development.

Economic growth is reflected in the social conditions created for the work of service personnel at each enterprise. As the economic level of the enterprise grows, the demand for labor of service workers also increases. In this case, the social essence of managing the enterprise's employees is that they are intellectually developed in all respects, highly professional and highly qualified specialists, and that their qualifications are formed. The results of the enterprise's personnel policy are reflected in the level of development of working and living conditions of service personnel, as well as in its social infrastructure.

In the context of globalization of the economy in the world, the effectiveness of the market economy, first of all, the attention of the state and enterprises to the personnel management system, the search for innovative forms of personnel management depends on the volume of investments spent

in human capital. In the reforms of recent years, special attention was paid to the development of two main areas in personnel management: personnel and innovation. As the history of economic development has shown, without taking these two factors into account, it is impossible to ensure sustainable development of society. The human factor began to be considered as the main object of investment, and even more important than factories, equipment, technologies and other production capabilities [1].

There is no single theoretical definition of human capital development among specialists. Certain natural resources and people do not bring us economic benefits in themselves. In order for a person to be useful, he also needs to be trained in a certain field or to ensure his qualifications are upgraded. It is on this basis, by organizing human resources, and from them labor resources, that this factor begins to bring benefits as physical capital in the production process.

Human capital was originally defined by its academic degree and ability to work. This is due to the fact that human capital has been considered primarily as a social factor, not an economic one, for many years. Therefore, it is assessed as a social factor and is recognized only as a cost factor in the economic sphere.

Only by the middle of the 20th century did the attitude towards human capital change, and initially in developed countries it was viewed as an economic factor.

In the mid-20th century, American economists T. Schultz and G. Becker first studied the concept of human capital as an economic factor.

American economist T. Schultz, based on his study of the period of improvement of human capital, substantiated that it is the main factor in the production of "human capital". In his research, the scientist substantiated the human factor as a factor in development in the "industrial" and "post-industrial" periods of economic development.

According to T. Schulz, the results of investment funds invested in a person are necessary for the formation of his ability to work, and health care should ensure its effective functioning. Providing the production process with human capital is very progressive and justifies the need to establish high wages for effective workers [2].

Economist E. Bogart expressed his thoughts on the need to assess the value of human lives lost in war in monetary terms, on the economic significance of these losses and on the tragic significance of human losses as a result of war, considering human life as a decrease in the value of total capital. According to him, there is a general relationship between human capital and material capital.

In our opinion, it is necessary to consider human resources not as a necessary factor of production, but as the main resource of production. Because it embodies labor, social relations and working conditions. Based on this, human resources, first of all, should be considered as the main factor influencing the general quality of a person, that is, knowledge, profession, health, as well as the quality and results of his activities.

G. Becker estimated the investment costs associated with the education of a person as a factor in achieving economic efficiency. These investment costs primarily benefit the worker who is engaged in the production process, and the ratio of additional income is expressed as the difference between the income of a highly educated worker and the income of an ordinary worker [3].

Among the economists of our republic, K. Yu. Yuldoshev and K. Muftidinov believe that "labor force is the sum of physical and mental forces possessed by the human body, the ability to work. They usually consider labor force as a personal factor in the development of labor [4]. "

A. Kadyrov stated that "the human factor is a manifestation of the mental and physical abilities of the workforce. "The presence of work capacity makes a person a workforce, and in the

[1]Gerchikova I.N. Management.-M.: 2000. S. 31; Gudushaura G.V., Litvak B.G. Management of a modern enterprise.: 1998. S. 78; Daft R.L. Management. - KPb .: Piter, 2000. S. 217; Whitmore J. New style of management and personnel management . - M., 2000. S. 58.
[2] Edward Woods . America's Human Wealth: The Money Value of Human Life / E. Woods , K. Metzer . - New York: F.S. Crofts @ Co. 1927.
[3] Becker, G. Human Capital. - New York: Columbia University Press, 1964.
[4]Yuldoshev K.Yu., Muftaydinov K,. Students of Economics. Do not use the word " Uku ". T.: Teacher. 1999. - 25 p.

process of work he also expands his knowledge, influencing changes in nature [5]. "

K.Kh. Abdurakhmanov "retraining of the workforce is the restoration of its ability to develop mental and physical strength , that is, its nutrition, clothing, rest and cultural leisure "[6] - he understands.

According to economists J.Kh. Ataniyazov, T. Dzhalilov, "Human capital is a factor and a necessary condition for the development of innovative activities. Human capital remains a priority for the national economy."[7] - they think.

S.S. Gulyamov, N. Ochilov, O. Saidakhmedov paid attention to "financing human capital in the social sphere and the development of the Uzbek model in Uzbekistan" [8].

D.A. Rakhimova believes that "in order to stimulate economic growth and innovative activity, financing of human capital should, in our opinion, be directed to the areas of education and healthcare [9]".

And Z.D. Oripova writes, "people with a high level of education have more opportunities to benefit from this factor." "In addition to the economic benefits of higher education, its impact on the well-being of life, as well as on the social and political life of the country, is immeasurable [10]. "

According to D. Tadjiboeva, "the main factor that ensures the effective work of the human factor and motivates it to work is special attention to labor rights, economic relations in the process of organizing and managing labor [11]." The effectiveness of personnel management is of particular importance, especially in the production sphere, since the manufactured products satisfy both the physical and spiritual needs of society.

The introduction of innovative methods of effective personnel management ultimately increases overall economic efficiency. Therefore, it is important to choose the right concept of managing employee innovations, which constitute the main component of human capital. "Efficient personnel management is based on the targeted activity of the enterprise's management personnel, including the development of the concept and strategy of personnel policy, principles and methods of personnel management [12]." That is why a number of foreign and domestic economists have conducted research on the problem of personnel management.

Russian economist Dresvyannikov V.A. "Human Resources Management is a field of activity aimed at increasing the efficiency of an enterprise by increasing the efficiency of work with specialists, which is understood as a system of employee management by the enterprise management using psychological, legal, economic and social methods [13]. "

Local economist, academician K.Kh. Abdurakhmanov emphasized that personnel management is a system of organizational, socio-economic, psychological, moral and legal relations aimed at the effective use of human resources in order to ensure the interests of individual employees and the enterprise as a whole [14].

In our opinion, it is appropriate to understand personnel management in the sense of increasing the efficiency and competitiveness of an enterprise through the effective use of the physical and intellectual capabilities of the enterprise's employees through interconnected techniques, forms and methods of organizing work with personnel.

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[5]Kodirov A. Iktikodiyot nazaryati . T.: TDTU. 2002. - 17 p.
[6]Abdurakhmanov K.Kh. Cocktail bar. T.: Trud. 2004. - 76 p.
[7] Ataniyazov J.Kh., Dzhalilov T. The role of human capital in the innovative development of the economy // International finance and high-tech. T.: 2019. No. 2. - P. 1-9.
[8]Gulyamov Ch.K., Ochilov N., Chaidakhmedov O. Intellectual economic factors of business // Economic Bulletin of Uzbekistan. T.: 2015. No. 6. - P. 38-41.
[9]Rakhimova D.A. Improvement of the methodological verification of sources of financing of social trade in Uzbekistan. Abstract of the doctoral dissertation in economic sciences. T.: 2018. - 72 p.
[10]Oripova Z.D. Orientation of investments to non-commercial capital in China // Modern education. T.: 2014. No. 6. - P. 3-8.
[11]Todjiboeva D. Economist-theorist. T.: 2002. - 220 p.
[12] Kosimov Farkhod Orifzhonovich_dissertation.docx
[13] Dresvyannikov V.A. - Center for assessment and development of personnel (Center for assessment and development): creation and technology of work - Rukaints - 2017 - 221 p. - ISBN: 978-5-4365-2242-5 - Electronic text // EBC BOOKRU - URL: https://book.ru/book/927768
[14] Abdurakhmonov K.Kh., Kholmominov Sh.R., Zokirova N.K.. Perkonal management: Darklik. - Tashkent. Vostok, 2008.

MAIN PART

In the theory and practice of human capital management of a voluntary enterprise, four concepts are distinguished: the use of labor resources, personnel management, human resource management, and people management. These concepts were developed within the framework of three main areas - economic, organizational, and social approaches.

By investing in attracting and developing qualified specialists, increasing their intellectual, i.e. innovative, knowledge, retraining and additional education, it is possible to achieve a high level of profitability through the efficient use of workers.

Changes in working conditions in the production process of an enterprise require improvements in the methods of payment and the mechanism for organizing it.

Since employees are the top priority of a company, maximizing productivity is a serious challenge for many companies. Manufacturing companies pay great attention to product quality and employee productivity. The manufacturing industry is one of the sectors that plays an important role in the process of structural changes in the economic cycle.

There are the following areas of effective personnel management in manufacturing enterprises:

1. Creation of the necessary conditions for obtaining high economic results from the work of the enterprise's employees in the production process;
2. Protection of the rights of employees of the enterprise by the management of the enterprise;
3. Ensuring transparency of production relations between production units of the enterprise;
4. Ensuring full use of workers' labor by the enterprise management;
5. Creation by the enterprise administration of conditions for the implementation of initiatives proposed by the enterprise employees;
6. Motivation of employees by the management of the enterprise taking into account the qualitative and economic aspects of labor results.

The scientific concept of innovative personnel management is formed as a result of the synthesis of the most effective management methods used at enterprises. This concept mainly uses the methods of the organizational approach, and also includes methods of the corresponding economic and humanistic approaches. In our opinion, the synthesis of methods in such proportion fully covers the features of the current stage of socio-economic development of our country.

Managing employees at enterprises using innovative methods. Modern economic development in the context of globalization covers the following areas:

To ensure effective results of the enterprise's activities, it is advisable to clearly define the strategic goals of its development and align them with the personnel management strategy:

- ✓ *maintaining constant and consistent interaction with the external environment, conducting various marketing research, monitoring, studying public opinion and communicating this information to employees;*
- ✓ *differentiation of forms and methods of corporate management of employees based on functional tasks, teamwork and individual identification of problems;*
- ✓ *motivate employees to build self-confidence in the enterprise and create opportunities to solve their personal problems, maintain their high innovative activity, which allows employees to demonstrate creative abilities;*
- ✓ *formation of a sustainable corporate spirit, formation of creative groups responsible for solving production problems and management issues;*
- ✓ *formation of stable, effective special groups on individual production and management issues;*
- ✓ *creation of institutional foundations regulating social and labor relations of all participants in the labor process;*

✓ *develop standards and rules that take into account the participation of workers in the production process, constantly improve them and revise existing ones.*

Coaching, corporate culture and digital HR are becoming innovative ways to manage employees.

In order to achieve high and effective results, companies need to retain their employees, and employees must devote themselves to the company during working hours. Labor efficiency is associated with good employee productivity. For this reason, the management of the enterprise has to use various approaches and methods to improve business efficiency. According to Mazis and Jackson, coaching is an action taken by a manager to improve the efficiency of employees, but according to Minor, the essence of coaching is more clearly revealed if it is translated as training. That is, training is a process during which a manager introduces an employee to the true nature of the workplace and helps him overcome obstacles to achieve his goals. Coaching is a teaching method aimed at developing individual competencies that uses various knowledge to shape behavior. Enterprises and organizations can improve their business by developing coaching. At the same time, coaching creates conditions for employees to fully reveal their potential, and also gives an opportunity to analyze their work. This consolidates success and allows you to quickly correct mistakes. As a result, coaching (training) accelerates the process of improving efficiency. Coaching enables managers to think critically and select the best employees at all levels of the business. It is important for the company's management to use a variety of approaches and methods to improve business performance.

At the present stage of development of personnel management systems, there are many developments, methods and approaches that make a significant contribution to the qualitative and operational study of any management system. From the position of the systemic approach, the enterprise personnel management system should be studied as a structure consisting of subsystems, components, elements and a set of connections between them. In addition, the personnel management system itself can be presented as a separate system or as an integration of several areas that are parts of a smaller system.

CONCLUSIONS AND SUGGESTIONS

The concept of the management system is based on a dialectical approach that allows studying the emergence, development and interrelation of various management problems. Using the laws of dialectics, it is possible to determine the main trends in the development of the personnel management system. The rapid development of the digital economy and artificial intelligence sets new trends in human resource management. Digital HR is the most important component of human resource management, based on the integration of rapidly developing digital technologies with the capabilities of rapidly developing technologies to ensure transparency, reliability in the construction and measurement of human capital management processes in all areas of human resource management. Thus, in the context of the development of digital personnel management, the new concept of personnel management considers the authorities, rather than personnel, as the object of management, that is, it can be concluded that:

✓ Human resource management system is a set of subsystems that include principles, tasks, methods and technologies of human resource management aimed at the effective socio - economic development of human resources in accordance with the goals of the enterprise;

✓ The personnel management system is a mobile subsystem of the general management system, which differs depending on the size of the enterprise in functional subsystems;

✓ The objectives of the personnel management system are the main structure-forming factor that determines the development of the organizational structure of the personnel management system.

Based on the above, it can be concluded that this enterprise is moving towards a broader understanding of the importance of the innovation process in using innovations in working with

personnel. The growth, development and improvement of any enterprise are inextricably linked with the use of innovative technologies in personnel management.

The efficient use of production capacities required by the enterprise to stabilize production depends on the development of high-quality production technologies and the growth of the level of capitalization based on innovative innovations in personnel management for the production of goods that meet the requirements of the consumer market.

REFERENCES

1. Abdullayev M. Analysis of the efficiency of the use of personnel at light industry enterprises in andijan region. // India. Novateur Publications JournalNX- A Multidisciplinary Peer Reviewed Journal. ISSN: 2581-4230. July, 2022. page 86-94.
2. Абдуллаев М.Г. Основные элементы эффективности системы управления персонала. Технологии социальной работы в различных сферах жизнедеятельности. Материалы Международной научно-практической конференции (Часть 1) (7 апрель 2020 г., Россия, Махачкала). 222-227 стр.
3. Абдуллаев М. Personal malakasini oshirish asoslari. Хоразм Маъмун Академияси Ахборотномаси. № 2.
4. Теоретические аспекты влияния социально-экологических факторов на эффективное использование трудовых ресурсов. Нурматов Д.Н., Абдуллаев М..Г. Номер: 2 (92) Год: 2014 Страницы: 30-31. 14.02.2014. Издательство: Редакция Журнала научных публикаций аспирантов и докторантов (Курск).
5. Continuous forms of employment and their importance in ensuring employment of the population. A.M. Abitkoriyev. «SCIENCE AND EDUCATION IN AGRICULTURE». Andijon qishloq xo‘jaligi va agrotexnologiyalar instituti ilmiy jurnali. 2025 yil. Yanvar.
6. Управление персоналом организации: Учебник / Под ред. А.Я. Кибанова. - Москва. ИНФРА-М, 2017.
7. Управление персоналом: Учебник / Под ред. Базарова Т.Ю., Еремина Б.Л. - Москва. ЮНИТИ, 2017.
8. Основы управления персоналом организации: Учебное пособие / Под ред. К.Х.Абдурахманова. — Тошкент. ТГЭУ, 2018.
9. Абдуллаев М.Г. Основные элементы эффективности системы управления персонала. ТЕХНОЛОГИИ СОЦИАЛЬНОЙ РАБОТЫ В РАЗЛИЧНЫХ СФЕРАХ ЖИЗНЕДЕЯТЕЛЬНОСТИ. Материалы Международной научно-практической конференции (Часть 1) (7 апрель 2020 г., Россия, Махачкала). 222-227 стр.
10. Теоретические аспекты влияния социально-экологических факторов на эффективное использование трудовых ресурсов. Нурматов Дильшадбек Набижанович, Абдуллаев Мирзохид Гайибердиевич. Номер: 2 (92) Год: 2014 Страницы: 30-31. 14.02.2014. Издательство: Редакция Журнала научных публикаций аспирантов и докторантов (Курск).

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THE ROLE OF ENCRYPTION ALGORITHMS IN ENSURING INFORMATION SECURITY

Yusupova Zamira
Tashkent University of Information Technology named after Muhammad Al-Khwarazmi,
yusupovaz677@gmail.com
+998909337461
Yusupov Baxtiyor
Tashkent State Technical University named after Islam Karimov

Absract. Encryption algorithms play a very important role in ensuring information security. Their main function is to protect data by changing it into an unreadable form (cipher). Encryption algorithms encrypt data in such a way that a person who does not have a key cannot read the information. This is especially necessary to protect important information, including personal, financial or commercial secrets. Encryption algorithms can also be used to ensure the integrity of the data. Cryptographic methods, such as Hash functions, allow the data to be checked for non-tampering. Encryption algorithms play an important role in ensuring the authentication of users or systems. Examples include password encryption, secure connection setup (SSL/TLS), and authentication via digital signatures.

Keywords: AES, chacha20, RSA, diffil-hellman, elliptic curve, MD5, SHA 3, Electronic Digital Signature, algorithmic.

I. INTRODUCTION

Encryption algorithms are an important means of information security and play a decisive role in protecting confidential information from unauthorized access, capture and theft.

Encryption is the process of converting plain text or data into an unreadable format using a mathematical algorithm called cipher. Encrypted data can only be read by authorized users who have the correct password solution key to convert it to its original form.

Below is the principle of operation, application areas and other analysis of algorithms currently in widespread use.

AES (Advanced Encryption Standard) is a symmetric encryption algorithm widely used to protect confidential data. It was selected by the U.S. National Institute of standards and technology (NIST) in 2001 to replace the previous data encryption standard (DES). The key size can be 128/192/256 bits. Each encrypts data in 128-bit blocks.

This means that it takes 128 bits as input and outputs 128 bits of encrypted text as output. AES relies on the swap-Change Network principle, which means it is implemented using a series of linked operations that involve switching and mixing input data. AES performs operations not in bits, but in data bytes. Since the block size is 128 bits, The Cipher processes 128 bits (or 16 bytes) of input data at the same time [1].

ChaCha20 is a symmetric KeyFlow encryption algorithm that was introduced in 2008 by Daniel J. Designed by Bernstein. It is one of the most widely used stream ciphers and is a very safe and efficient algorithm. ChaCha20 works by creating a pseudo-random stream of bits based on a secret key and nonce (a disposable number).

This stream of bits is hacked with Open Text to create encrypted text. The ChaCha20 algorithm uses a 256-bit key and a 96-bit nonce. The ChaCha20 was designed to be very fast and safe

with a high degree of resistance to attacks such as differential and linear cryptanalysis. It is also designed to be immune to timing attacks and side-channel attacks.

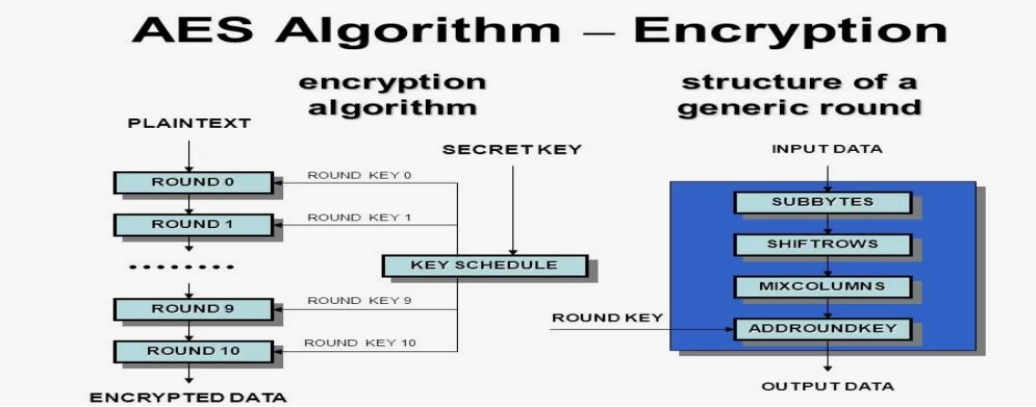

Figure 1. AES algorithm working principle

It is also the standard encryption algorithm for the latest version of the Transport Layer Security (TLS) protocol used to protect web traffic [2].

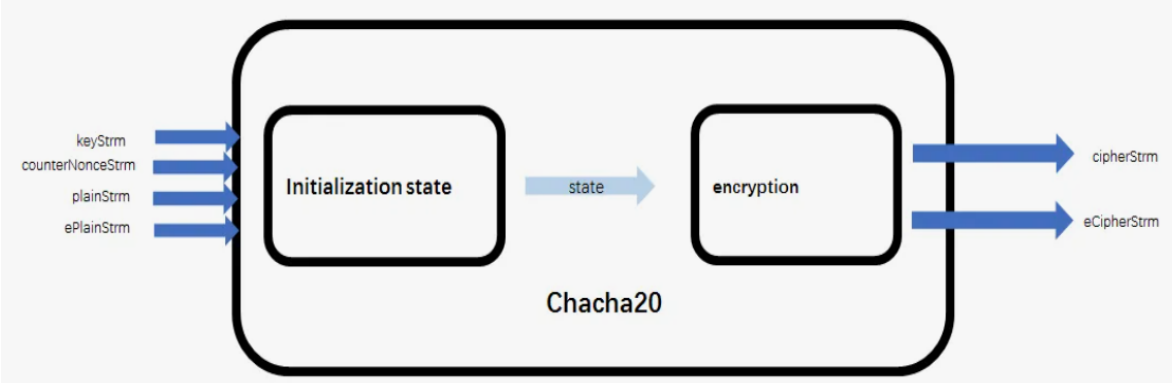

Figure 2. ChaCha20 algorithm working principle

RSA is a public key encryption algorithm developed in 1977 by Ron Rivest, Adi Shamir and Leonard Adleman. It is widely used for secure data transmission over the Internet, as well as for digital signature and key exchange. RSA works using a pair of keys: a public key and a private key. The public key is used to encrypt data, and the private key is used to encrypt data. The public key consists of two parts: a module (the derivative of two large primes) and a pointer (usually a small number, for example, 65537). The secret key consists of an indicator calculated on the basis of the main factors of the same module and module. To encrypt data using RSA, Open Text is first converted to a numerical value using a specific encoding scheme (e.g. ASCII or Unicode). Then the Open Text is raised to the power of the public indicator and divided into modules, resulting in encrypted text. To decrypt the encrypted text, the recipient has his own personal

To decrypt the ciphertext, the recipient uses his or her private key to raise the ciphertext to the power of a private pointer and divide it into a module, resulting in the original Open Text. RSA is a very secure encryption algorithm because it is based on the difficulty of factoring large prime numbers. At the same time, it works relatively slowly compared to other modern encryption algorithms and is not recommended for encrypting large amounts of data[1].

The Diffie-Hellman algorithm is a key exchange algorithm that allows a shared secret key to be set over a non-secure communication channel without transmitting a key to either side. The algorithm was developed in 1976 by Whitfield Diffie and Martin Hellman and is one of the first practical open-key algorithms. The Diffie-Hellman algorithm works by using a mathematical function to create a common secret key between two parties. The function contains two values inside.

The function contains two values: a large prime number and the root root of that prime number. Each side selects a secret number, then uses a base number and a primitive Root to create a common key. The two sides exchange their public keys and then use their secret numbers and the other side's public keys to create a shared secret key. The security of the Diffie-Hellman algorithm is based on the difficulty of computing discrete logarithms. In other words, it is easy to calculate the value of the equation raised to the force, but it is very difficult to determine the force itself. While the Diffie-Hellman algorithm does not provide direct encryption, it is often used in conjunction with other encryption algorithms such as AES to establish a secure communication channel between the two parties. A common secret key created by the Diffie-Hellman algorithm can be used as a key for symmetric encryption.

Elliptic Curve Cryptography (ECC) is a type of public key cryptography based on the mathematics of elliptic curves. It is widely used in modern cryptographic systems such as secure communication protocols and digital signatures [3].

The basic idea of ECC is to use elliptic curve properties to create a trapdoor function that is easy to compute in one direction but difficult to compute in the opposite direction. This trapdoor function is used to generate open and private keys that can be used for encryption and digital signatures. To create a pair of common-private keys using ECC, a random private key is first selected, which is the number between 1 and the curve. The corresponding public key is then calculated as a point on an elliptic curve by multiplying the private key by the principal point on the curve.

The resulting point is a public key, which can be freely distributed. ECC security is based on the difficulty of solving the elliptic curve discrete logarithm problem (ECDLP). While ECDLP is not considered computable, attackers can use some specialized algorithms and resources to test and hack encryption. One of the main advantages of ECC is its effectiveness. Compared to other public key cryptography systems such as RSA, ECC requires shorter key lengths for the same level of security. This means that ECC can be implemented with fewer computing resources and provide faster encryption and decryption times.

The hash function is a mathematical function that accepts input data of arbitrary size and produces a fixed-size output called a hash or message digest. Hash functions are widely used in Informatics and cryptography for various purposes such as data integrity verification, digital signature and password storage. A good hash function must be deterministic, i.e. the same input data always produces the same hash value, and it must be collision resistant, i.e. it is difficult to find two different inputs that produce the same hash value. In addition, the hash function must have an avalanche effect, that is, a small change in the input data must lead to significant changes in the hash output. One common type of hash function is the cryptographic hash function, which is designed to protect against different types of attacks, such as preimage attacks, second preimage attacks, and collision attacks. Some frequently used cryptographic hash functions include MD5, SHA-1, SHA-2, and SHA-3.

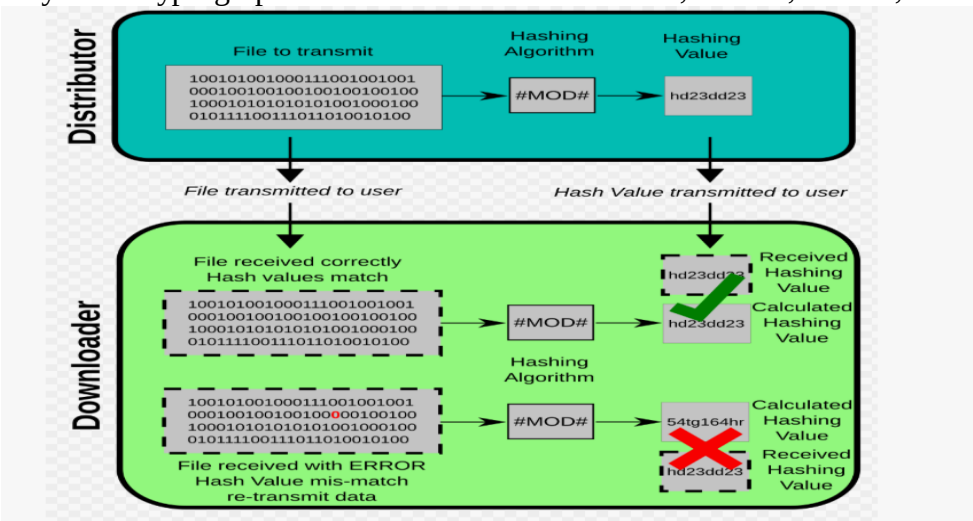

Figure 3. MD5 Hecht function working principle

One of the oldest algorithms for which MD5 is widely used, M5 is a one - way cryptographic function that modifies messages of any length and returns a solid-length line output of 32 characters. An example of MD5 hash-dijesti output looks like this: b6c7868ea605a8f951a03f284d08415e.

SHA - 3 is the latest in the SHA family. Developed through a public competition promoted by NIST, it is part of the same standard and is completely different from MD5, SHA-1 and SHA-2. SHA - 3 consists of four algorithms with different hash functions, and two extensible output functions can be used to generate domain hashing, random hashing, stream encryption, and MAC addresses:

1) SHA3-224;
2) SHA3-256;
3) SHA3-384;
4) SHA3-512;
5) SHAKE-128 (output function);
6) SHAKE-256 (output function).

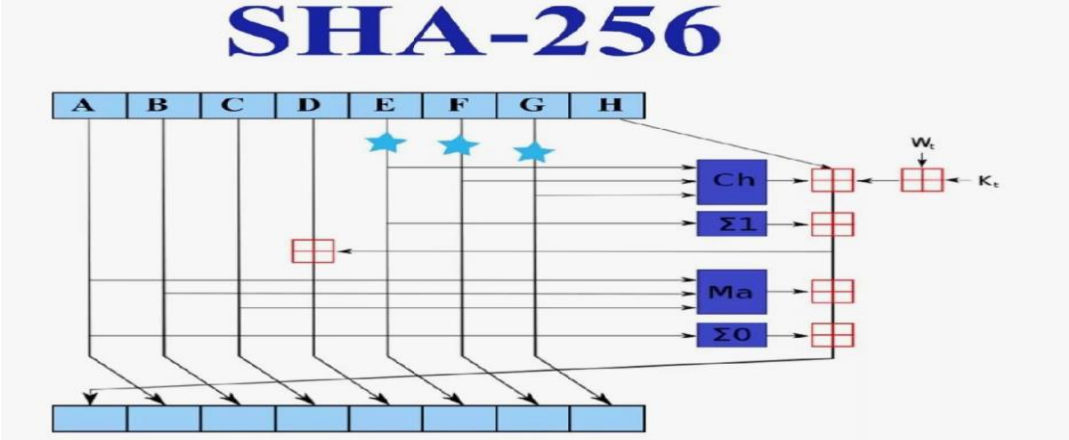

Figure 4. SHA3 Hecht function working principle

Electronic digital signature (EDS) algorithms are cryptographic protocols used to ensure the authenticity, integrity and non-rejection of digital documents or messages. They are widely used in e-commerce, online banking and other applications where secure communication and authentication are important. Several electronic digital signature algorithms exist, but one of the most commonly used algorithms is the RSA digital signature algorithm. The RSA algorithm is based on the properties of prime numbers and includes two keys, a secret key and a public key. The secret key is kept secret by the owner and used to sign messages, while the public key is used to verify the signature. To sign a message using the RSA digital signature algorithm, the sender first calculates the message hash using a cryptographic hash function such as SHA-256. The sender then encrypts the hash using his private key and creates a digital signature. After that, the recipient of the message can confirm the signature by decrypting it using the sender's public key and comparing it with the message cache.

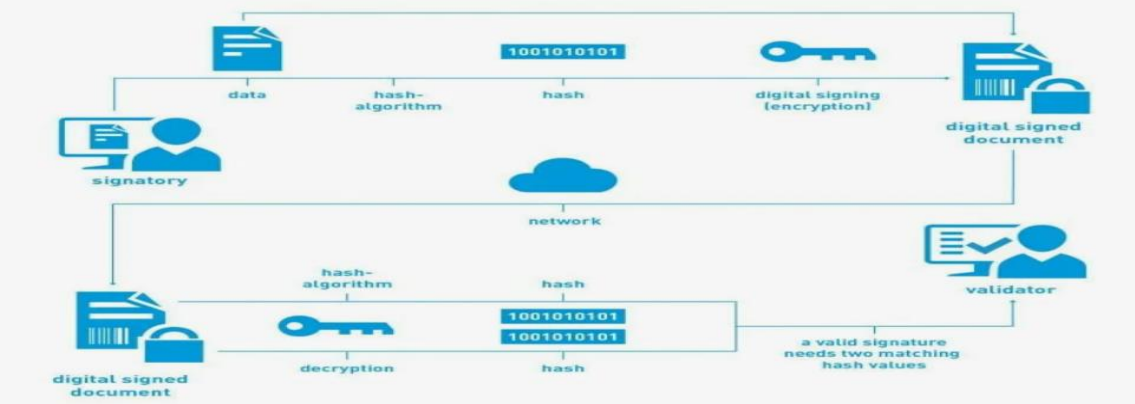

Figure 5. EDS algorithm processing circuit

Above, the main tasks of AES, chacha20, RSA, diffil-hellman, elliptic curve, MD5, SHA 3, electronic digital signature algorithms, the principles of processing, were cited, while in the qquyi table, their general analysis is keltiirl, which makes it possible to learn even more about encryption algorithms [4].

II. THEORETICAL ANALYSIS AND RESULT

Table 1. AES, chacha20, RSA, diffil-hellman, elliptic curve, MD5, SHA 3, general analysis of electronic digital signature algorithms

Algorithm name	Information security protection categories	Rate of exchange (bit per second)	Advantage rating	Potential vulnerabilities	Underdog	Threat tolerance	Programming languages	Application areas	Resistance to phishing attacks	The man in the middle is resistant to attack
AES	Privacy	1,1 mlrd	1	Basic size constraints	Vulnerable to side canal attacks	High	C, C++, Java, Python	Cryptographic	Resistant	High
ChaCha20	Privacy	3,3 mlrd	2	Not clear	Vulnerable to side canal attacks	Middle	C, C++, Python	Encryption, secure communication, VPN	Resistant	High
RSA	Authentication and data privacy	16 mil	3	Basic size constraints	Faktorizatsiya hujumlariga nisbatan zaif	Middle	C, C++, Java, Python	Encryption, digital signature, secure communication	Weak	Middle
Diffie-Hellman	Key exchange	70 mil	4	Generating weak random numbers	Vulnerable to man-in-the-middle attacks	Middle	C, C++, Java, Python	Generating weak random numbers	Weak	Low
Elliptic Curve Cryptography	Public key encryption and access control	130 mil	5	Generating weak random numbers	Elliptic curve vulnerable to discrete logarithm problem attacks	High	C, C	Cryptographic	Resistant	High
MD5	Totality	500	2	Cryptographic	Unprotected against riot attacks	Low	C, C++, Java, Python	Heshing	Weak	Low
SHA3	Totality	700	2	Not clear	Not clear	High	C, C++, Java, Python	Hashing, digital signatures, blockchain	Resistant	High
EDS	Authentication and integrity	16 mil	3	Cryptographic	Withstanding unknown attacks	Middle	C, C++, Java, Python	Autentification	Resistant	High

Conclusion

Encryption algorithms are an important component of information security, ensuring confidentiality, integrity, authentication, and non-denial of information. They are necessary to protect data, establish safe communication and resist various security threats. The correct selection and proper use of encryption algorithms is decisive in ensuring information security.

Bibliography

1) Akbarov D.E. Axborot xavfsizligini ta’minlashning kriptografik usullari va ularning qo‘llanilishi // Toshkent, 2008, -B. - 394.Bruce S. Applied cryptography: protocols, algorithms, and source code in C //New York: Wiley. – 1996, - P. - 1027.
2) “Symmetric Encryption Algorithms: Live Long & Encrypt”, 2020.
3) “Symmetric Encryption Algorithms”, 2023.
4) Leighton Johnson, “Security component fundamentals for assessment”, 2020.
Jay Thakkar, “Types of Encryption: 5 Encryption Algorithms & How to Choose the Right One”, 2022.

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COMPARATIVE ANALYSIS OF PHISHING ATTACKS AND OTHER CYBERATTACK TYPES

Kodirov Akbarjon
Student of Academic Lyceum named after S.H. Sirojidinov
tojiakbarova@gmail.com
+998933858491

Absract. In recent years, the rapid development of information technology has been accompanied by a surge in cybersecurity issues. Among the various cyberattack methods, phishing stands out as one of the most common and deceptive techniques. Unlike many technical attacks, phishing relies heavily on human psychology and user inattention. This paper presents a detailed overview of phishing attacks and compares them with other prevalent forms of cyberattacks.

Keywords: phishing, types, attack, whaling, smishing, vishing, spear phishing.

I. INTRODUCTION

*Phishing i*s a cybercrime technique in which attackers impersonate legitimate institutions or entities to trick individuals into disclosing sensitive information such as passwords, bank account details, and credit card numbers. Typically, phishing is executed through deceptive emails, fake websites, or messages on social media and mobile platforms.

How a phishing attack works:

1. The attacker creates a fake website or message that appears legitimate.
2. The user is lured into clicking a link and is redirected to the fake site.
3. The user inputs personal data, believing the site is real.
4. The attacker collects the entered data and uses it for malicious purposes[1].

Types of Phishing:

1. Spear Phishing – targeted phishing aimed at a specific person or organization.
2. Whaling – targeting high-level executives or officials.
3. Smishing – phishing via SMS messages.
4. Vishing – voice phishing, using phone calls to extract data.

Consequences of phishing attacks. Phishing can result in serious outcomes such as emptied bank accounts, data breaches, brand reputation damage, and financial losses for individuals and organizations.

II. THEORETICAL ANALYSIS AND RESULT

Based on 2024 data, here is a comparative table highlighting the countries most affected by phishing attacks, using the percentage of users encountering phishing attempts as reported by Kaspersky.

Table 1. Statistics of countries affected by phishing attacks, for 2024

Country	Percentage of users affected
Peru	19.06%
Greece	18.21%
Vietnam	17.53%
Madagascar	17.17%
Ecuador	16.90%
Lesotho	16.87%

Somalia	16.70%
Brunei	16.55%
Tunisia	16.51%
Kenya	16.38%

These figures represent the share of Kaspersky users in each country who encountered phishing attempts in 2024. Notably, Peru had the highest percentage, with nearly one in five users affected. This data underscores the global reach of phishing attacks and highlights the importance of cybersecurity awareness and protective measures across all regions [2].

Based on available data, here is a comparative table highlighting the financial damages caused by phishing attacks in various countries during 2024.

Table 2. Amount of damages

Country	Estimated Losses (USD)	Notes
United States	$16 billion (cybercrime total)	Phishing and investment frauds were primary contributors to the total cybercrime losses.
Australia	$2.74 billion (scams total)	Significant portion attributed to phishing and email scams.
Vietnam	$744 million (online frauds total)	Common scams included fake investment schemes and impersonation.
India	$20.3 million (high-value cyber frauds)	High-value cyber fraud cases increased over four-fold in FY2024.
Cryptocurrency Sector	$800 million	Losses in 2024 due to phishing attacks targeting crypto users.

These figures underscore the significant financial impact of phishing attacks globally in 2024. The United States and Australia reported the highest losses, with phishing being a major contributor to the overall cybercrime damages. Vietnam and India also faced substantial losses due to online frauds, including phishing schemes. The cryptocurrency sector experienced notable phishing-related losses, emphasizing the need for enhanced security measures across all digital platforms.

Other types of cyberattacks:

1. Malware – malicious software that damages or takes control of a system.
2. Ransomware – encrypts a user's data and demands a ransom to restore access.
3. SQL Injection – exploits vulnerabilities in web applications to access databases.
4. Man-in-the-Middle (MitM) – intercepts communication between two parties.
5. Denial of Service (DoS) – overloads servers to disrupt services[3].

Table 3. Comparison with Other Attacks

Aspect	Phishing	Malware	Ransomware	MitM	SQL Injection
Primary Goal	Steal user credentials	Damage or control system	Encrypt files & demand ransom	Intercept communication	Exploit database via web app
Technical Skill Needed	Low	Medium to High	High	High	High
Target	Mass users or specific individuals	Any system	General public or companies	Parties in communication	Web applications
Exploitation Method	Social engineering	Malicious software	Encryption and extortion	Eavesdropping on network	Injection into SQL queries

Table 4. Phishing attack prevention methods

Prevention Method	Phishing	Spear Phishing	Vishing/Smishing	Malware-Based Phishing	Email Spoofing

User Awareness Training	High impact	Very high impact	Medium	Limited	High
Two-Factor Authentication (2FA)	High	High	Limited	Helpful	Limited
Spam/Phishing Filters	High	Moderate	Moderate	High	High
Secure Email Gateways	High	High	Not applicable	High	High
Antivirus/Anti-Malware Software	Limited	Not effective	Not applicable	Critical	Limited
Regular Software Updates	Not direct	Not direct	Not direct	Helpful	Not applicable
Email Authentication (SPF, DKIM, DMARC)	High	High	Not applicable	Not applicable	Critical
URL and Link Scanning Tools	Critical	Helpful	Moderate	Critical	Critical
Incident Response Plan	Reactive measure	Essential	Helpful	Helpful	Helpful

Conclusion

Phishing is a widespread and dangerous cyberattack that takes advantage of human vulnerability rather than technical flaws. While other cyberattacks may require complex tools and hacking knowledge, phishing is often simple but highly effective. Theref Here's a list of relevant **literature sources (2020–2024)** related to phishing attacks, their prevention, and comparative cyberattack research. These works are a good foundation for academic analysis or inclusion in your project:

Bibliography

1. Gupta, B., & Shukla, A. (2020). *Phishing and Social Engineering Attacks: Strategies and Techniques*. CRC Press. A comprehensive overview of phishing strategies and how social engineering is used to exploit users.
2. Hutchins, R., & Alenezi, M. (2021). *Cybersecurity Awareness and the Role of Education in Preventing Phishing*, *Journal of Cybersecurity Education, Research and Practice*, 2021(1), Article 3.
3. Huang, Y., & Bashir, M. (2021). *Impact of User Training on Phishing Susceptibility: A Meta-Analysis*. *ACM Transactions on Privacy and Security (TOPS)*, 24(4), 1–28.
4. Tariq, M. U., et al. (2022). *Phishing Attacks: Recent Trends and Challenges*. *Journal of Information Security and Applications*, 65, 103133. https://doi.org/10.1016/j.jisa.2022.103133
5. Jakobsson, M., & Liao, Q. V. (2022). *Deception by Design: The Rise of Phishing as a Threat to Usability*. *IEEE Security & Privacy*, 20(2), 44–51.
6. Stallings, William, "Computer Security: Principles and Practice", Pearson, 4th Edition, 2018.
7. Whitman, Michael E., and Herbert J. Mattord, "Principles of Information Security", Cengage Learning, 6th Edition, 2017.
8. Jagatic, Tom N., et al, *"Social phishing",* Communications of the ACM, vol. 50, no. 10, 2007, pp. 94-100.
9. Hong, Jason, *"The state of phishing attacks",* Communications of the ACM, vol. 55, no. 1, 2012, pp. 74-81.
10. Alazab, Mamoun, et al, "*Cybercrime: The Case of Phishing",* 2013 IEEE TrustCom Conference.

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THE ROLE AND IMPORTANCE OF C# PROGRAMMING TOOLS IN INFORMATION SECURITY

Kodirov Akbarjon
Student of Academic Lyceum named after S.H. Sirojidinov
tojiakbarova@gmail.com
+998933858491

Absract. The C# programming language plays an important role in information security for several key reasons. C# was developed by Microsoft, and as a result, it is highly integrated with Windows operating systems. Since Windows is widely used in enterprise environments, C# is an excellent choice for developing security tools that need to interact with system processes and underlying Windows architecture. C# provides access to Windows APIs, enabling security professionals to perform system-level tasks such as process management, memory analysis, and network monitoring. C# is a powerful tool for penetration testers who simulate attacks on systems to identify vulnerabilities.

Keywords: c#, security, role, tools

I. INTRODUCTION

C# (pronounced C-sharp) is a modern, object-oriented programming language developed by Microsoft as part of the .NET framework. It is widely used for building Windows applications, and in recent years, its role in cybersecurity has expanded significantly. Due to its integration with Windows, powerful libraries, and ease of development, C# has become a popular language among both cybersecurity professionals and malicious actors. Its versatile nature allows it to play a vital role in various aspects of information security, from offensive security tasks to defensive measures, providing an essential toolset for both attackers and defenders.

2022: Consistent Demand

Job Market: In 2022, C# remained one of the most in-demand programming languages in software development. It was ranked among the top languages for enterprise software development, game development (especially with Unity), and web applications [1].

a) The job market saw significant opportunities for C# developers, especially within industries that rely on the Microsoft ecosystem, such as finance, healthcare, and government sectors.
b) Demand was also driven by the continued use of .NET Framework and the gradual transition to .NET Core for cross-platform applications.

Salary Trends: The demand for C# developers reflected competitive salaries in both full-time and contract roles, especially in regions with a high concentration of Microsoft technologies, such as the U.S., the UK, and Europe.

Technological Advancements (2022–2024):

NET Framework to .NET Core Transition: The ongoing transition to .NET Core (now simply .NET 5 and beyond) played a key role in maintaining the language's relevance. As .NET Core allows for cross-platform applications, it made C# developers more attractive to companies transitioning to multi-platform environments.

Cloud and Microservices: With the growing adoption of cloud computing and microservices architecture, C# has been increasingly used to build scalable applications that can be deployed across multiple environments. Microsoft Azure's dominance in cloud platforms also reinforced C#'s role in this sector [2].

AI and ML: Integration of C# with AI and machine learning frameworks (like ML.NET) has become a significant trend. This development has increased the demand for C# developers who are able to implement machine learning algorithms and data science workflows in their applications.

Table 1. Job Listings and Demand Trends (2022–2024)

Year	Demand Level	Average Salary (U.S.)	Technological Trends
2022	High	$85,000 - $95,000	.NET Framework, Game Development (Unity)
2023	Growing	$90,000 - $100,000	Cloud-Native, ML Integration, Remote Work
2024	Very High	$100,000 - $115,000	.NET 6/7/8, Cross-Platform, AI, Microservices

Table 2. C# vs Python

Feature	C#	Python
Popularity	Popular in enterprise software, game development, and desktop apps.	Extremely popular in data science, web development, and automation.
Ease of Use	Moderate, strongly typed language with a steep learning curve for beginners.	Very beginner-friendly, known for its simple and clean syntax.
Performance	Excellent performance, especially with .NET Core. Strong memory management and multi-threading support.	Slower compared to C#, especially in CPU-intensive applications.
Application Areas	Enterprise applications, desktop software, web development (ASP.NET), game development (Unity).	Data science, AI, web development (Django/Flask), automation, scripting.
Community Support	Strong, especially in Microsoft ecosystems. Large user base in enterprise software development.	Huge, with a vast number of libraries and frameworks across multiple domains.
Deployment	Primarily Windows-based, though cross-platform with .NET Core.	Cross-platform support, works well on Windows, Linux, and macOS.
Learning Curve	Steeper due to its strict type system and object-oriented nature.	Gentle learning curve due to its clean and readable syntax.

Table 3. C# vs Java

Feature	C#	Java
Popularity	Popular in enterprise software, game development, and web applications.	One of the most popular languages for enterprise applications, Android development.
Ease of Use	Similar to Java, moderately complex syntax.	Similar to C#, but more established in terms of cross-platform capabilities.
Performance	Comparable to Java, with high performance in .NET applications.	Excellent performance, well-optimized for large-scale applications.
Application Areas	Game development (Unity), desktop applications, enterprise applications (ASP.NET).	Enterprise applications (Spring), Android development, web services.
Community Support	Strong, especially in the Microsoft ecosystem and gaming (Unity).	Very strong, with extensive libraries, frameworks, and community support.
Deployment	Windows-based, with cross-platform support through .NET Core.	Highly portable, runs on any device with a Java Virtual Machine (JVM).
Learning Curve	Similar to Java, with an object-oriented and statically typed syntax.	Similar to C#, though some might find Java's long history more daunting.

Table 4. C# vs JavaScript

Feature	C#	JavaScript

Popularity	Popular in enterprise software and gaming (Unity).	Extremely popular, especially for front-end web development.
Ease of Use	Moderate, requires understanding of object-oriented programming.	Easy to start with for web development, but can get complex for large projects.
Performance	Excellent performance in .NET applications and with Unity for games.	Generally slower for heavy computation tasks but optimized for web applications.
Application Areas	Game development (Unity), enterprise software, desktop apps, web development.	Web development (both front-end and back-end), mobile apps (React Native).
Community Support	Strong in enterprise and game development, especially in .NET Core.	Huge, with an extensive number of frameworks and libraries (React, Node.js).
Deployment	Windows, cross-platform with .NET Core.	Runs natively in the browser, with server-side applications in Node.js.
Learning Curve	Steep learning curve for those new to object-oriented programming.	Low entry barrier but can become complex with asynchronous programming and callbacks.

Advantages of C# in Information Security:

1. Strong integration with Windows operating systems: C# is deeply integrated with the Windows OS, making it ideal for developing system-level security tools. This provides access to system processes, allowing security professionals to work directly with the underlying OS architecture[3].
2. Access to native Windows API: This enables low-level interactions, such as managing system processes and network connections, which is critical for both offensive and defensive security tasks.
3. Robust development environment using Visual Studio: Visual Studio, one of the most powerful Integrated Development Environments (IDEs), enhances the productivity of C# developers. It provides a suite of tools for debugging, testing, and deploying security applications, allowing developers to create, test, and iterate quickly.
4. Rich set of libraries: C# has a comprehensive set of libraries that include cryptographic functions, networking utilities, and security-focused APIs. These libraries are crucial for creating secure communication protocols, encrypting sensitive data, and interacting with various systems.
5. Memory safety: Unlike languages such as C or C++, C# manages memory automatically through garbage collection. This reduces the risk of common vulnerabilities such as buffer overflows, making it a safer option for writing security tools.

*Offensive security applications:*In offensive security, C# is commonly used for red teaming and penetration testing. Ethical hackers and security researchers use C# to develop tools that simulate malicious attacks, identify vulnerabilities, and assess system weaknesses. Some common uses include:

1. Exploit Development: C# allows attackers to create custom payloads designed to exploit system vulnerabilities. By interacting with the Windows OS, attackers can develop highly targeted and stealthy exploits.
2. Reverse Shells: One of the most common tasks in penetration testing is establishing a reverse shell. C# provides an easy way to develop reverse shell payloads, which connect back to an attacker's server, allowing them to control a compromised system remotely.
3. Bypassing Antivirus Detection: C# is often used to create malware that attempts to bypass antivirus software by obfuscating its code or exploiting known weaknesses in antivirus products. Tools such as SharpHound and SharpSploit demonstrate how C# can be leveraged to circumvent security measures and achieve undetected penetration.
4. Privilege Escalation: Security researchers also use C# to escalate privileges on compromised systems. By leveraging C# to interact with system-level processes, hackers can elevate their access rights, providing further control over the target environment.

Examples of popular C#-based tools for offensive security include:

1. SharpHound: A tool used for Active Directory enumeration and mapping, which aids in identifying security weaknesses in corporate environments.
2. Seatbelt: A post-exploitation tool that collects host-based information, such as running processes and user credentials, to further compromise a system.
3. Mimikatz (via C#): This popular tool, often used for credential dumping, has been ported to C# and is widely used in penetration testing for capturing passwords and authentication tokens from Windows systems[5].

Defensive security applications: On the defensive side, C# plays a critical role in the development of security tools designed to detect, prevent, and respond to cyber threats. Defensive security professionals leverage C# to build tools that help safeguard systems and applications from malicious activities. Some key applications of C# in defensive security include:

1. Host-based Intrusion Detection Systems (HIDS): C# can be used to develop HIDS, which monitor and analyze system activities in real-time to detect suspicious behavior, such as unauthorized access or malware activity.
2. System Auditing Tools: C# is frequently used to develop auditing tools that track and log system events, helping administrators identify and respond to potential security incidents.
3. Real-Time Threat Monitoring Dashboards: With its powerful integration with Windows, C# is ideal for creating dashboards that provide real-time visibility into system activities, security alerts, and network traffic.
4. Malware Analysis Sandboxes: Security analysts use C# to build isolated environments (sandboxes) where they can safely analyze potentially harmful files without risking system integrity.
5. Secure Authentication and Encryption Modules: C# is commonly used for developing secure authentication systems, including multi-factor authentication (MFA) and encryption algorithms that protect sensitive data [6].

In defensive security, C# is also used to write scripts that automate routine security tasks, such as vulnerability scanning, patch management, and incident response.

Popular C# security tools: Several powerful tools used in cybersecurity are written in or support C#:

1. SharpHound: This tool is used for Active Directory enumeration and mapping, helping penetration testers identify vulnerabilities in Windows domain environments.
2. Seatbelt: A post-exploitation tool written in C# that gathers system information from compromised hosts, providing critical data to attackers during a penetration test.
3. SafetyKatz: A C# reimplementation of the popular Mimikatz credential dumper, which extracts Windows credentials and authentication tokens from memory.
4. SharpRDP: A tool that exploits Remote Desktop Protocol (RDP) vulnerabilities for lateral movement across compromised networks.

These tools demonstrate the versatility of C# in both offensive and defensive cybersecurity tasks, allowing security professionals to conduct thorough assessments and protect systems from various threats.

CONCLUSION

C# is an invaluable tool in modern information security. Its ability to interact deeply with Windows systems, combined with a rich development environment and mature ecosystem, makes it well-suited for both attack and defense in cybersecurity. Whether used for developing offensive security tools, building defensive applications, or automating security tasks, C# offers a powerful framework for cybersecurity professionals to safeguard systems, detect vulnerabilities, and respond to emerging threats. As the cybersecurity landscape continues to evolve, C# will remain an essential language for developing and analyzing security solutions, playing a crucial role in defending against increasingly sophisticated cyberattacks.

BIBLIOGRAPHY

1. Sharma, R., & Patel, M. (2021). *"Secure Coding in C# for Modern Web Applications", Journal of Cybersecurity Technology, 5(3), 200–215.* https://doi.org/10.1080/23742917.2021.1880913
2. Rindell, K., & Seppänen, M. (2022). *"Security Analysis of .NET Applications: A C# Perspective" Proceedings of the International Conference on Cybersecurity Advances.*
3. Srinivas, R. (2023). *"C# and Information Security: From Code to Countermeasures" Cyber Defense Review, 8(1), 77–95.*
4. Yilmaz, A., & Kaya, D. (2020). *"A Comparative Study of Static Code Analysis Tools for C#" IEEE Access, 8, 164789–164798.* https://ieeexplore.ieee.org/document/9193804
5. Reinders, J. (2021). *"Practical C# Security for .NET Developers" Packt Publishing.* ISBN: 9781800568988
6. Microsoft Docs (2020–2024). *".NET Security Practices and C# Code Samples" Microsoft Learn Documentation.* https://learn.microsoft.com/en-us/dotnet/standard/security/
7. Troelsen, Andrew, and Philip Japikse, *"Pro C# 10 with .NET 6",* Apress, 2022.
8. Mark J. Price, *"C# 11 and .NET 7 – Modern Cross-Platform Development",* Packt Publishing, 2022.
9. Seth, Kevin, *"Secure Coding in C and C++",* Addison-Wesley, 2014.
10. AbuZaid, Ahmad, and Hossain Shahriar, "*Security Vulnerabilities in .NET Applications and Mitigation Techniques",* Journal of Information Security and Applications, 2017.

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A MACHINE-LEARNING APPROACH TO DETECT HEART DISEASE

Turaeva Makhliyo Shokir kizi[1]
[1] assistant teacher
[1,] "Tashkent University of Information Technologies", Tashkent, Uzbekistan.
max1209uz@gmail.com
Phone: + 998507740047

Abstract: Moreover, heart disease has kept on being the leading cause of death worldwide, hence the importance of coming up with different strategies for early detection and diagnosis. Machine learning algorithms have been found to be very efficient in diagnosing various cardiac diseases, through approaches such as Support Vector Machines (SVM), Random Forest, Neural Networks, and Logistic Regression. The materials of this research consist of a dataset that has various health markers, such as age, blood pressure, cholesterol level, and other clinical factors that are relevant to this issue. The Random Forest classifier was the only one with an incredible accuracy of 97.5% to outsmart the rest of the algorithms used. It also managed to record a 0.998 Area Under the Curve (AUC) score and F1, Precision, and Recall scores of 97.5%.

Keywords: Diagnosis, internal analysis, Dentistry, effective treatment, treatment plan, Dental diseases.

INTRODUCTION

Finding new approaches to early detection and diagnosis can be considered urgent, while cardiovascular disease remains one of the leading reasons for mortality internationally. A new revelation was just established, which applies the significance of machine learning (ML) as an innovative form of technology that can bring the most significant impact in the healthcare business, particularly the prediction and diagnosis of cardiovascular diseases. As a result, compared to top-down and traditional methods, machine learning can assess complex patient records characteristics based on large datasets and algorithms. This results in enhanced diagnostic accuracy and efficiency. Several machine learning algorithms are useful in predicting cardiac disease, with high accuracy rates, according to recent research reports. Certain examples of classifiers that have demonstrated promising outcomes are Support Vector Machines (SVM), Random Forests (RF), and Neural Networks. In certain instances, the accuracy rates of these classifiers have reached as high as 98.7% [1].

An individual's risk profile for cardiovascular disease may be evaluated completely thanks to the capability of machine learning to include many clinical parameters, such as age, blood pressure, cholesterol levels, and electrocardiogram (ECG) readings [2], [3]. A more comprehensive knowledge of a patient's health status is provided by this multifactorial approach, which also makes it possible to diagnose probable cardiac issues earlier and with more precision for the patient. Furthermore, machine learning helps in the diagnostic process and improves individualized therapy by identifying specific risk factors connected with individual patients with the disease. With prompt intervention, it is possible to considerably minimize the morbidity and mortality associated with cardiac diseases [4]. This skill is very beneficial in the healthcare industry. This allows healthcare practitioners to adjust therapies to each patient's particular needs, improving results and optimising resource allocation.

Machine learning algorithms guide personalized treatment techniques. For instance, machine learning may assist in identifying patients at a greater risk for particular forms of cardiac disease. This results in the implementation of focused preventative measures and the treatment of current problems in a more efficient manner. The scope of machine learning's potential to revolutionize cardiovascular disease diagnosis is becoming increasingly obvious as the amount of data about healthcare continues to develop. With the increasing access to electronic health records, wearable devices and other sources of data, it can be possible to build machine learning models that would provide higher levels of accuracy in diagnosing cardiac disease than is presently achievable. The change towards data-driven healthcare solutions represents a more effective, precise, and open path to care. This will, in turn, enhance the quality of patients and lower the prevalence of heart disease in health facilities across the globe [5]. Machine learning is set to become a significant component in cardiovascular healthcare in the future, promising the improved efficacy of avoiding and treating heart ailments. This is so since this area has ongoing research and development subdomains.

RELATED WORKS

Traditional machine learning methods may perform poorly when dealing with unbalanced datasets in heart disease prediction, as emphasized by Sharma et al.'s systematic literature review. This study highlights the need for more resilient algorithms to efficiently manage such data instabilities and synthesized results from 451 investigations. Veisi [6] et al. made another vital addition by using various models, such as Multilayer Perceptron (MLP) and XGBoost. The MLP model was remarkable in its accuracy, as seen by its 94.6% accuracy. Their work underlined the need for preprocessing measures, including outlier detection and normalization, to improve the predictive power of ML systems. Ramesh et al. conducted a thorough investigation and highlighted the revolutionary potential of machine learning (ML) in the healthcare industry, namely in heart disease identification. They looked at various machine learning approaches, such as ensemble methods and neural networks, that have been successfully used to analyze massive datasets and find intricate patterns linked to heart disease. The need for more research to increase these models' generalizability to a broader range of patient groups was highlighted by this study [7].

In addition, research by Ghosh et al. used feature selection methods like Relief and LASSO in conjunction with ML algorithms like Random Forest and Support Vector Machine (SVM) to improve prediction accuracy. According to their findings, the hybrid model considerably outperformed conventional techniques and had high prediction accuracy rates for cardiovascular events. This work demonstrates how crucial it is to combine sophisticated machine learning methods with careful feature selection to maximize predicted results [8]. Another noteworthy addition was a work that used eight different machine learning classifiers, such as Naïve Bayes and Learning Vector Quantization, to predict cardiac disease using the UCI repository dataset. Using the Learning Vector Quantization approach, the researchers obtained a fantastic accuracy of 98.7%, demonstrating the efficacy of several algorithms in finding essential variables that contribute to the prediction of heart disease [9]. Moreover, current research has investigated hybrid models that combine several machine-learning approaches.

Research has indicated that integrating models such as Gradient Boosting, Convolutional Neural Networks, and K-nearest neighbours might enhance the precision and dependability of heart disease prognosis. This method makes it possible to improve overall performance by utilizing the advantages of several different algorithms [10]. To sum up, research suggests that machine learning techniques have a great deal of potential to enhance heart disease prognosis. To improve the accuracy and usability of machine learning approaches in cardiovascular health, more innovation in model construction, data management, and integration of varied datasets is required, according to ongoing research in this field. These technologies will probably be crucial in revolutionizing the diagnosis and treatment of cardiac disease as they develop further. The usefulness of machine learning in image-based cardiac diagnostics has been demonstrated in recent research. Deep learning techniques have

shown better performance in analyzing computed tomography scans, cardiac magnetic resonance imaging, and echocardiograms. For example, a thorough analysis revealed that by automating the interpretation of imaging data, machine learning (ML) algorithms might greatly increase the diagnosis accuracy for diseases like heart failure (HF) and coronary artery disease (CAD) (Książek et al., 2019) [11].

By producing more accurate evaluations, machine learning (ML) integration in imaging expedites the diagnosis process and lessens the workload for medical practitioners. One of the most economical ways to diagnose heart disease is still using an ECG. However, reading ECG signals can be difficult since cardiac diseases vary and are so complicated. Interpretable machine learning (IML) approaches have recently advanced to provide models that not only categorize cardiac ailments but also provide insights into their decisionmaking processes in an attempt to solve these issues. Gaining the confidence of healthcare professionals and guaranteeing the practical application of ML models depend on this openness (Kresoja et al., 2023) [12]. Machine learning can also be used in agriculture and other domains [13] [14].

RESEARCH METHODOLOGY

A. Data Collection Collect relevant datasets, such as patient medical records and lab results.

B. Data Preprocessing Handle missing values, eliminate duplicates, and fix mistakes in your data. Finding and choosing pertinent features is the first step in feature selection (e.g., age, cholesterol levels, blood pressure). Scale the information so that each feature adds the same amount to the model.

C. Exploratory Data Analysis (EDA) Plots and charts can be used to visualize data linkages and distributions. Run statistical analyses to find essential features.

D. Model Selection Choose suitable machine learning algorithms, such as neural networks, random forests, and logistic regression.

E. Model Training Utilizing the training dataset, train the chosen models. Use methods such as Grid Search and Random Search to optimize model parameters.

F. Model Evaluation Metrics like F1-score, AUC-ROC, recall, accuracy, and precision are used to quantify models. Check the model's generalization by running it on a different validation dataset.

G. Model Deployment Introduce the trained model into an operational setting. Provide APIs so that other systems can communicate with the model.

Dataset available at https://www.kaggle.com/datasets/johnsmith88/heart-diseasedataset/data. Which consists of 1025 patient records with 13 attributes including age, chest pain type, blood pressure, cholesterol, and blood sugar.

RESULTS AND DISCUSSION

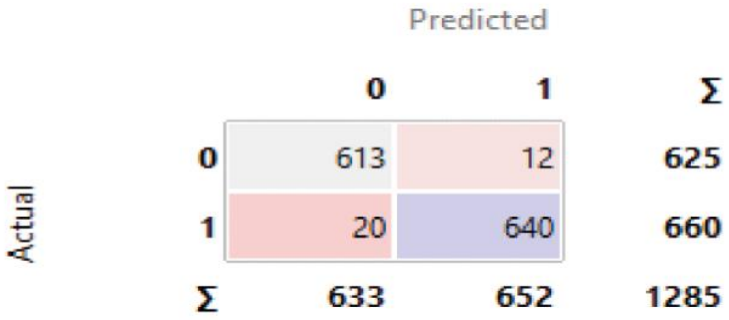

Figure 1. (a) Random Forest confusion matrix

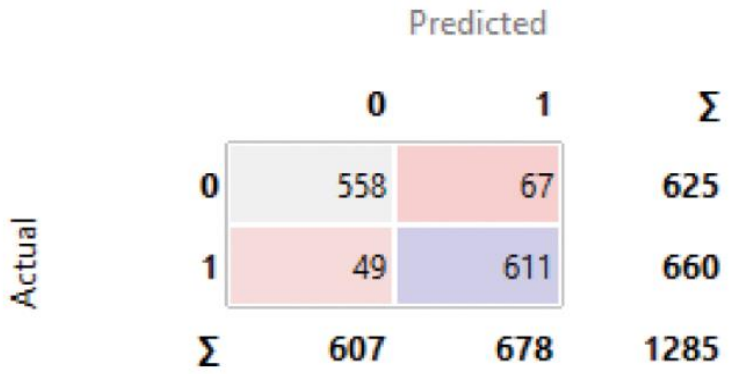

Figure 2. (b) SVM confusion matrix

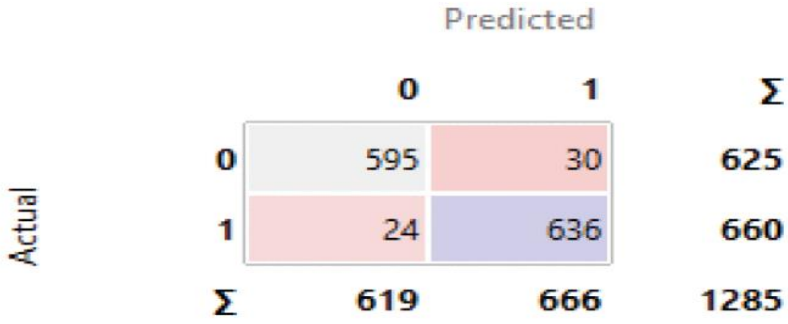

Figure 3. (c) Neural Network confusion matrix

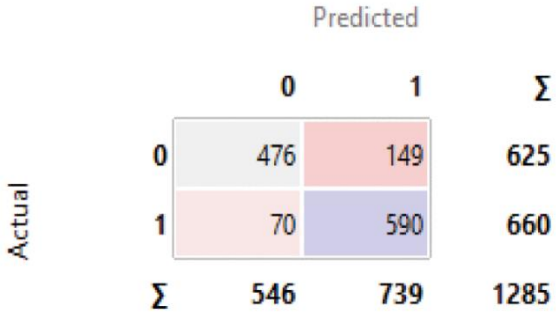

Figure 4. Logistic Regression confusion matrix

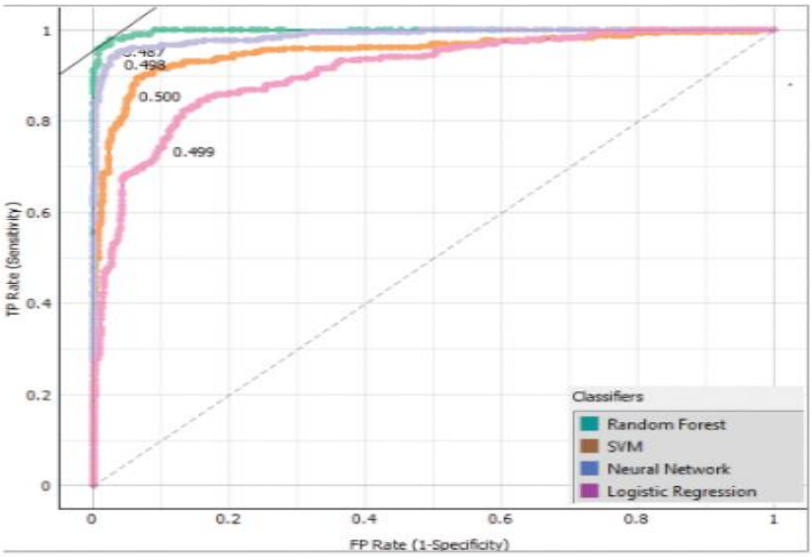

Figure 5. (e) ROC Curve for target class 0 no heart disease

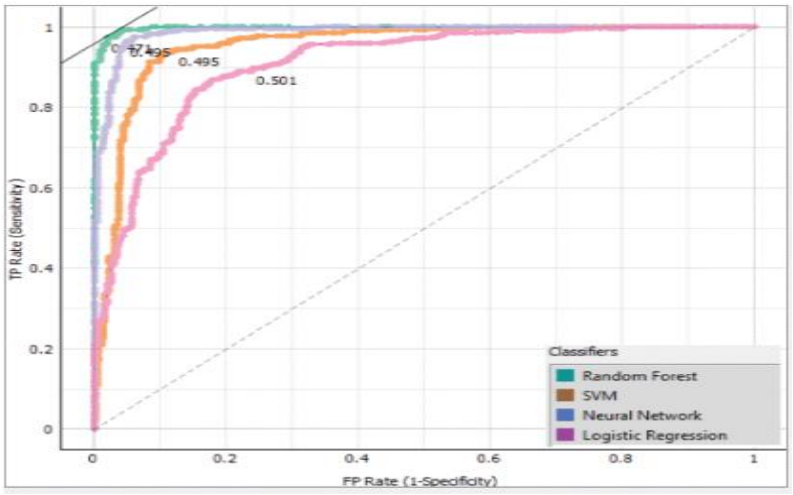

Figure 6. (f) ROC Curve for target class 1 heart disease.

Table 1. Results of Various Used Classifiers

Model	AUC	CA	F1	Precision	Recall
SVM	0.954	0.910	0.910	0.910	0.910
Random Forest	0.998	0.975	0.975	0.975	0.975
Neural Network	0.988	0.958	0.958	0.958	0.958
Logistic Regression	0.909	0.830	0.829	0.834	0.830

Based on the following critical performance measures, the table compares four machine learning models: Random Forest, Neural Network, SVM (Support Vector Machine), and Logistic Regression. These metrics include AUC (Area Under the ROC Curve), F1 Score, Precision, and Recall. The Random Forest model performs better than the other models in every metric. With an AUC of 0.998, it attains the greatest level and shows good discrimination between positive and negative classes. Additionally, this model has a Classification Accuracy of 97.5%, which indicates that 97.5% of occurrences are accurately predicted. Furthermore, the Random Forest model exhibits

a balanced performance in identifying true positives and avoiding false positives, as seen by its F1 Score, Precision, and Recall of 0.975.

Conclusion. This study shows how machine learning algorithms have a great deal of potential for early diagnosis and detection of heart disease, one of the world's leading causes of death. Out of all the tested algorithms, the Random Forest classifier performed exceptionally well, attaining an astounding 97.5% accuracy and an almost perfect AUC score of 0.998. These findings highlight how machine learning models can improve diagnostic accuracy and assist healthcare providers in making better decisions about patient care. This study adds to the expanding corpus of information on using sophisticated computational approaches in healthcare settings by utilizing machine learning. According to the research, using machine learning in standard clinical practice may help identify cardiac problems earlier, eventually improving patient outcomes and saving medical expenses.

REFERENCES

1. H. Ge, Y. Shi, M. Zhang, Y. Wei, H. Zhang and X. Cao, "YOLO: An Improved High-Accuracy Method for PCB Defect Detection," 2024 IEEE 12th International Conference on Computer Science and Network Technology (ICCSNT), Dalian, China, 2024, pp. 159-165, doi: 10.1109/ICCSNT62291.2024.10776686.
2. Mekhriddin Rakhimov, Dilnoza Zaripova, Shakhzod Javliev, Jakhongir Karimberdiyev; Deep learning parallel approach using CUDA technology. AIP Conf. Proc. 27 November 2024; 3244 (1): 030003. https://doi.org/10.1063/5.0241439.
3. M. Rakhimov, R. Akhmadjonov and S. Javliev, "Artificial Intelligence in Medicine for Chronic Disease Classification Using Machine Learning," 2022 IEEE 16th International Conference on Application of Information and Communication Technologies (AICT), Washington DC, DC, USA, 2022, pp. 1-6, doi: 10.1109/AICT55583.2022.10013587.
4. Rakhimov, M., Karimberdiyev, J., Javliev, S. (2024). Artificial Intelligence in Medicine: Enhancing Pneumonia Detection Using Wavelet Transform. In: Choi, B.J., Singh, D., Tiwary, U.S., Chung, WY. (eds) Intelligent Human Computer Interaction. IHCI 2023. Lecture Notes in Computer Science, vol 14531. Springer, Cham. https://doi.org/10.1007/978-3-031-53827-8_16
5. Goran Oreski. 2023. YOLO*C — Adding context improves YOLO performance. Neurocomput. 555, C (Oct 2023). https://doi.org/10.1016/j.neucom.2023.126655
6. M. Rakhimov, J. Elov, U. Khamdamov, S. Aminov and S. Javliev, "Parallel Implementation of Real-Time Object Detection using OpenMP," 2021 International Conference on Information Science and Communications Technologies (ICISCT), Tashkent, Uzbekistan, 2021, pp. 1-4, doi: 10.1109/ICISCT52966.2021.9670146.
7. Nasimov, R., Rakhimov, M., Javliev, S., Abdullaeva, M. (2024). Parallel Approaches to Accelerate Deep Learning Processes Using Heterogeneous Computing. In: Koucheryavy, Y., Aziz, A. (eds) Internet of Things, Smart Spaces, and Next Generation Networks and Systems. NEW2AN ruSMART 2023 2023. Lecture Notes in Computer Science, vol 14543. Springer, Cham. https://doi.org/10.1007/978-3-031-60997-8_4.
8. Mekhriddin Rakhimov, Shakhzod Javliev, and Rashid Nasimov. 2024. Parallel Approaches in Deep Learning: Use Parallel Computing. In Proceedings of the 7th International Conference on Future Networks and Distributed Systems (ICFNDS '23). Association for Computing Machinery, New York, NY, USA, 192–201. https://doi.org/10.1145/3644713.3644738
9. A. Thulaseedharan and L. P. P. S, "Deep Learning based Object Detection Algorithm for the Detection of Dental Diseases and Differential Treatments," 2022 IEEE 19th India Council International Conference (INDICON), Kochi, India, 2022, pp. 1-7, doi: 10.1109/INDICON56171.2022.10040109.
10. Wang, M.; Yang, B.; Wang, X.; Yang, C.; Xu, J.; Mu, B.; Xiong, K.; Li, Y. YOLO-T: Multitarget Intelligent Recognition Method for X-ray Images Based on the YOLO and Transformer Models. Appl. Sci. 2022, 12, 11848. https://doi.org/10.3390/app122211848.

11. Otabek Ismailov, Xosiyat Temirova; Tooth square detection using artificial intelligence. AIP Conf. Proc. 27 November 2024; 3244 (1): 030030. https://doi.org/10.1063/5.0242591
12. Terven, J.; Córdova-Esparza, D.-M.; Romero-González, J.-A. A Comprehensive Review of YOLO Architectures in Computer Vision: From YOLOv1 to YOLOv8 and YOLO-NAS. Mach. Learn. Knowl. Extr. 2023, 5, 1680-1716. https://doi.org/10.3390/make5040083.
13. Davron Ziyadullaev, Dildora Muhamediyeva, Sholpan Ziyaeva, Umirzoq Xoliyorov, Khasanturdi Kayumov, Otabek Ismailov. “Development of a traditional transport system based on the bee colony algorithm”. E3S Web of Conf. 365 01017 (2023). DOI: 10.1051/e3sconf/202336501017.
14. R. Mohan, R. Arunmozhi and V. Rajinikanth, "Deep-Learning Segmentation and Recognition of Tooth in Thresholded Panoramic X-ray," *2023 Winter Summit on Smart Computing and Networks (WiSSCoN)*, Chennai, India, 2023, pp. 1-5, doi: 10.1109/WiSSCoN56857.2023.10133861.
15. Suryani, D & Shoumi, M & Wakhidah, Rokhimatul. (2021). Object detection on dental x-ray images using deep learning method. IOP Conference Series: Materials Science and Engineering. 1073. 012058. 10.1088/1757-899X/1073/1/012058.
16. Abdusalomov, A.B.; Nasimov, R.; Nasimova, N.; Muminov, B.; Whangbo, T.K. Evaluating Synthetic Medical Images Using Artificial Intelligence with the GAN Algorithm. Sensors 2023, 23, 3440. https://doi.org/10.3390/s23073440
J. George, T. S. Hemanth, J. Raju, J. G. Mattapallil and N. Naveen, "Dental Radiography Analysis and Diagnosis using YOLOv8," 2023 9th International Conference on Smart Computing and Communications (ICSCC), Kochi, Kerala, India, 2023, pp. 102-107, doi: 10.1109/ICSCC59169.2023.10335023.

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THE HUMANISTIC APPROACH FOR STUDENTS OF THE EDUCATION

PhD, docent D.B.Mirkhodjaeva
Tashkent institute of textile and light industry

Abstract. *The article reveals the importance of a humanistic approach to the student's personality in the educational process. This article explores the essence and application of the humanistic approach in the field of education, emphasizing its role in the personal development and self-actualization of students. The humanistic perspective prioritizes the individuality, emotional well-being, and intrinsic motivation of learners, viewing education not merely as a process of knowledge transfer but as a means of nurturing the whole person. The study highlights key principles of humanistic pedagogy, such as learner-centeredness, empathy, active participation, and the creation of a supportive learning environment. Particular attention is paid to the relevance of this approach in contemporary educational systems, where the psychological and emotional needs of students are increasingly recognized as integral to academic success and lifelong learning.*

Keywords: *humanistic education, learner-centered approach, student motivation, empathy in teaching, personal development, holistic learning.*

INTRODUCTION

Element in the turn to pedagogy flowed from concerns in social work and youth work in the UK that the needs of many children were not being met by existing forms of practice and provision. Significantly, a number of practitioners and academics looked to models of practice found in continental Europe and Scandinavia and focused, in particular, on the traditions of social pedagogy. In Scotland, for example, there was discussion of the 'Scottish pedagogue' (after the use of the term 'Danish pedagogue). In England various initiatives and discussions emerged around reconceptualising working with children in care as social pedagogy and similarly the activities of youth workers, teachers, mentors and inclusion workers within schools Significantly, much of this work bypassed the English language discussion of pedagogy – which was probably an advantage in some ways.

However, it also missed just how much work in the UK was undertaken by specialist pedagogues drawing upon thinking and practice well-known to social pedagogues but whose identity has been formed around youth work, informal and social education and community learning and development. If we look to these traditions we are likely to re-appreciate pedagogy. Here I want to suggest that what comes to the fore is a focus on flourishing and of the significance of the person of the pedagogue. In addition, three elements things out about the processes of the current generation of specialist pedagogues. First, they are heirs to the ancient Greek process of accompanying. Second, their pedagogy involves a significant amount of helping and caring for. Third, they are engaged in what we can call 'bringing learning to life'. Woven into those processes are theories and beliefs that we also need to attend to. To reword and add to Robin Alexander pedagogy can be approached as what we need to know, the skills we need to command, and the commitments we need to live in order to make and justify the many different kinds of decisions needed to be made.

A FOCUS ON FLOURISHING

The first and obvious thing to say is that pedagogues have a fundamentally different focus to subject teachers. Their central concern is with the well-being of those they are among and with. In

many respectshas argued with regard to youth work, pedagogues are involved for much of the time in an exercise in moral philosophy. Those they are working with are frequently seeking to answer in some way profound questions about themselves and the situations they face. At root these look to how people should live their lives: 'what is the right way to act in this situation or that; of what does happiness consist for me and for others; how should I to relate to others; what sort of society should I be working for?'. In turn, pedagogues need to have spent some time reflecting themselves upon what might make for flourishing and happiness (in Aristotle's terms eudaimonia).

In looking to continental concerns and debates around pedagogy, a number of specialist pedagogues have turned to the work of Pestalozzi and to those concerned with more holistic forms of practice. As Brühlmeier has commented, 'Pestalozzi has shown that there is more to [education] than attaining prescribed learning outcomes; it is concerned with the whole person, with their physical, mental and psychological development'. Learning is a matter of head, hand and heart. Heart here is a matter of, ' spirit– the passions that animate or move us; moral sense or conscience– the values, ideals and attitudes that guide us; and being– the kind of person we are, or wish to be, in the world.

THE PERSON OF THE PEDAGOGUE

This is a way of working that is deeply wrapped up with the person of the pedagogue and their ability to reflect, make judgements and respond. They need to be experienced as people who can be trusted, respected and turned to. We are called upon to be wise. We are expected to hold truth dearly, to be sincere and accurate… There is also, usually, an expectation that we have a good understanding of the subjects upon which we are consulted, and that we know something about the way of the world. We are also likely to be approached for learning and counsel if we are seen as people who have the ability to come to sound judgements, and to help others to see how they may act for the best in different situations, and how they should live their lives.

At one level, the same could be said of a 'good' subject teacher in a school. As Palmer has argued, 'good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher' (emphasis in the original). However, the focus of pedagogues frequently takes them directly into questions around identity and integrity. This then means that their authenticity and the extent to which they are experienced as wise are vital considerations.

CARING FOR AND CARING ABOUT

In recent years our understanding of what is involved in 'caring' has been greatly enhanced by the work of Nel Noddings. She distinguishes between caring-for and caring-about. Caring-for involves face-to-face encounters in which one person attends directly to the needs of another. We learn first what it means to be cared-for. 'Then, gradually, we learn both to care for and, by extension, to care about others'. Such caring-about, Noddings suggests, can be seen as providing the foundation for our sense of justice.

Noddings then argues that caring relations are a foundation for pedagogical activity (by which she means teaching activity):

First, as we listen to our students, we gain their trust and, in an on-going relation of care and trust, it is more likely that students will accept what we try to teach. They will not see our efforts as "interference" but, rather, as cooperative work proceeding from the integrity of the relation. Second, as we engage our students in dialogue, we learn about their needs, working habits, interests, and talents. We gain important ideas from them about how to build our lessons and plan for their individual progress. Finally, as we acquire knowledge about our students' needs and realize how much more than the standard curriculum is needed, we are inspired to increase our own competence

Bringing learning to life

In talking about pedagogy as a process of bringing learning to life I want to focus on three aspects. Pedagogy as:

Animation – bringing 'life' into situations. This is often achieved through offering new experiences.

-Reflection – creating moments and spaces to explore lived experience.

-Action – working with people so that they are able to make changes in their lives.

Animation. In their book Working with experience: Animating learning David Boud and Nod Miller link 'animating' to 'learning' because of the word's connotations: to give life to, to quicken, to vivify, to inspire. They see the job of animators (animateurs) to be that of 'acting with learners, or with others, in situations where learning is an aspect of what is occurring, to assist them to work with their experience'. It is a pretty good description of what many social pedagogues, youth workers and informal educators do for much of the time. They work with people on situations and relationships so that they are more stimulating and satisfying. However, they also look to what Dewey described as enlarging experience and to making it more vivid and inspiring (to use Boud and Miller's words). They encourage people to try new things and provide opportunities that open up fresh experiences

Reflection. Within these fields of practice there has been a long-standing tradition of looking to learning from experience and, thus, to encouraging reflection. Conversation is central to the practice of informal educators and animators of community learning and development. With this has come a long tradition of starting and staying with the concerns and interests of those they are working with, while at the same time creating moments and spaces where people can come to know themselves, their situations and what is possible in their lives and communities.

Action. This isn't learning that stops at the classroom door, but is focused around working with people so that they can make changes in their lives – and in communities. As Lindeman put it many years ago, this is education as life. Based in responding to 'situations, not subjects' it involves a committed and action-oriented form of education. This:

As we have seen, etymologically, 'pedagogy' is derived from the Greek paidag?ge? meaning literally, 'to lead the child' or 'tend the child'. In common usage it is often used to describe practice with children. Indeed, much of the work that 'social pedagogy' has been used to describe has been with children and young people. While and others talked about pedagogy in relation to working with adults, there are plenty who argue that it cannot escape its roots is bound up with practice with children. For example, convinced that adults learned differently to children – and that this provided the basis for a distinctive field of enquiry. He, thus, set andragogy – the art and science' of helping adults learn – against pedagogy. While we might question whether children's processes of learning differ significantly from adults, it is the case that educators tend to approach them differently and employ contrasting strategies. The question we are left with is whether it is more helpful to restrict usage of the term 'pedagogy' to practice with children or whether it can be applied across the age range? There is a fairly strong set of arguments for the former position – the word's origin; organisational and policy concerns that tend separate children (up to 18 years old) from adults; and current usage of the term. Against restricting it to children are that learning isn't easily divided along child/adult lines; and via writers like Freire it is possible to draw on traditions of thinking and practice regarding pedagogy that apply to both adults and children. While recognizing the strength of the arguments for using 'pedagogy to describe practice across the lifespan, there may be pragmatic reasons for retaining a focus on children and young people. In part this flows from the organizational context of schooling, welfare and education service; in part from etymology.

CONCLUSION

A method is a systematic procedure of doing something. In teaching, such a procedure should be one which elicits effective learning. It should therefore be orderly and well planned for action. Effective teaching in the local language depends on how well the four language skills: listening, speaking, reading and writing, are developed by learners. Amongst these four skills, the reading skill enables the learner to make a breakthrough to literacy. It is a vital skill in the learning experience. Therefore there is need to pay particular attention on how learners develop the reading skill.

The common methods of teaching reading in primary classes are the: phonic method, syllabic method, whole word and whole sentence (look and say) method and eclectic method. However, it is important to note that there is no single method that can be used independent of the other in teaching reading especially in as far as the different types of learners are concerned. Therefore, the teacher should use these methods in a complementary way according to the needs of the learner. He/she

should pay attention to the learning achievement of each learner as the teaching progresses. Note that some methods are more effective in guiding learners to acquire specific competences in local language depending on the concepts the learner is expected to develop. If the teacher chooses to teach numeracy integrated in literacy, he/she should ensure that numerals are included in the words children read. The detail of each of the methods for teaching reading in local language has been outlined below. [3].

REFERENCES

1. A Handbook for Teaching and Learning in Higher Education. Heather Fry, Steve Ketteridge, Stephanie Marshall. UK 2009.
2. Pedagogy and Practice: Teaching and Learning in Secondary Schools. 2004 year.
3. 3.Effective curricula for at-risk students in vocational education: a study of teachers' practice Fix, G.M., Ritzen, H.T.M., Pieters, J.M., Kuiper, W.A.J.M.
4. Maslow, A. H. Motivation and Personality. — New York: Harper & Row, 1970. — 369 p.
5. Rogers, C. R. Freedom to Learn. — Columbus: Charles E. Merrill Publishing, 1969. — 420 p.
6. Knowles, M. S. The Modern Practice of Adult Education: From Pedagogy to Andragogy. — Chicago: Follett Publishing Company, 1980. — 292 p.
7. Huitt, W. Humanism and Open Education. — Educational Psychology Interactive, Valdosta State University, 2009. — [Electronic resource]. — URL: http://www.edpsycinteractive.org/topics/affect/humed.html
8. Neill, J. Humanistic Learning Theory. — The University of Canberra, 2005. — [Electronic resource]. — URL: https://wilderdom.com/personality/L8-5HumanisticLearningTheory.html
9. Combs, A. W., Avila, D. L., & Purkey, W. W. Helping Relationships: Basic Concepts for the Helping Professions. — Boston: Allyn & Bacon, 1971. — 318 p.
10. Noddings, N. Caring: A Feminine Approach to Ethics and Moral Education. — Berkeley: University of California Press, 1984. — 254 p.
11. McLeod, S. Humanism. — Simply Psychology, 2023. — [Electronic resource]. — URL: https://www.simplypsychology.org/humanistic.html
12. Brown, H. D. Principles of Language Learning and Teaching. — 6th ed. — New York: Pearson Education, 2014. — 400 p.

Cranton, P. Understanding and Promoting Transformative Learning. — 2nd ed. — San Francisco: Jossey-Bass, 2006. — 310 p.

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ANALYSIS OF FACTORS AFFECTING THE EFFECTIVENESS OF PERSONNEL MANAGEMENT

Abdullaev Mirzokhid Gayiberdievich
associate professor of the Department
of Economics of Andijan State University
mirzo 1972@ mail . ru . +99895 017 07 67

Abstract *: The article examines scientific research conducted by foreign scientists, scientists from the Commonwealth of Independent States and Uzbek scientists on personnel management in industrial enterprises. The research methodology is presented. The types of factors influencing the effectiveness of personnel management are studied. The study examined the specifics of such factors as information and know-how, financial and material resources, human resources, internal communications and relationships. The features of personnel management in America and Japan are studied. Currently, many Western companies are working in three main areas of human resource management: full automation of production processes, improvement of forms and methods of business management, as well as training and advanced training of personnel. The content of physical, technical and technological, socio-economic, socio-psychological, territorial-contextual and innovative factors influencing personnel management is indicated.*

Keywords: *management, personnel, resource, information, efficiency, technology, communication, competence, motivation, need.*

Introduction

At present, the goals and tasks of "personnel management" in industrial enterprises are as follows: creation and implementation of personnel policy and principles of general economic activity; preparation of a staffing table in accordance with the enterprise's strategy and its structure; development of professional qualification requirements; employment of specialists, selection and selection of personnel; personnel management, rotation, appointment, management of career movement, attestation, election, replacement; prevention of social and economic conflicts, prevention of unnecessary stress; employment management; professional and organizational adaptation of personnel; labor relations, regulation of psychophysiological requirements, ethical, aesthetic, labor economy requirements”;

Currently, the effectiveness of personnel management is not sufficient, but at the same time, the attention of many enterprises to this area is increasing. The interest of enterprise managers in personnel is growing, but at the same time, the personnel involved in personnel is not formed at the required level. Therefore, in conditions of strong competition and uncertainty in the market, a systematic form of personnel policy is a very important task for all enterprises. The competitiveness of any enterprise is directly related to the employees working in it and the system of personnel management in this organization. Therefore, in the modern concept of enterprise management, special attention should be paid to the functional tasks related to personnel management.

Personnel management methods are administrative-organizational, economic and moral-spiritual methods known as persuasion, motivation and coercion. The specific principles that are manifested in personnel management are often associated with the leadership style.

Relevance of the problem

Production efficiency depends on many factors, which are described in detail in the economic literature . In the first classification factors of production efficiency included classical ones factors , long ago considered in the works A. Smith , D. Ricardo , P. Samuelson and others. They have not lost their relevance in modern conditions. However The globalization of the world economy has expanded the range of efficiency factors . Since industry is the leading sector in every country , scientific , theoretical, methodological and practical aspects of its development and effective management always were at the center of attention of economists. Issues of increasing the efficiency of management staff at industrial enterprises they discussed Foreign scientists I. Ansoff , L. Vodachek , F. Taylor , O. Vodachkova , P. Drucker, M. Mescon, B. Karloff, R. Waterman, Lee Iacocca, P. Drucker, M. Eto found reflection in scientific research Mescona, D. Thompson, F. Kheduori, V.L. Eremi and others.

Among the economists of the CIS countries are V.K. Potemkin, A.P. Dobrovinsky, T.Yu. Bazarov, V.E. Bystritsky, S.D. Ilenkova, A.Ya. Kibanov, Yu.G. Odegov, G.G. Rudenko, S.I. Sotnikova, A.I. Kochetkova, V.V. Travin , O.S. Vihansky, B.M. Genkin, G.G. Zaitsev, Yu.D. Krasovsky, A.L. Slobodskoy, E.A. Utkin studied the issues of improvement management on a scientific basis.

Uzbek scientists Sh.N.Zainutdinov, G.Kh.Abdurakhmonov, Sh.R.Kholmuminov, N.K.Yuldashev, D.S.Kosimova, D.N.Rakhimova, N.S.Ismoilova , AARakhimov, B.A.Abdukarimov, B.N.Urinov, D.A.Azlarova and others dedicated their scientific activities to working with personnel.

In recent years, institutional changes in various sectors of the economy have increased the responsibility of enterprises for managing their activities and making decisions. Therefore, today's manager must master his profession, learn the rules, methods and culture of management. However, despite the diversity of scientific developments on theoretical and some practical aspects of personnel management problems, organization and improvement of personnel management at enterprises, in particular , the features of personnel management at industrial enterprises and aspects influencing production management have not been studied. served as the basis for determining the goals and objectives of the study [1, p. 87].

Analysis of literature on the topic

Russian economists Varnavskiy V.G., Julie L.V., Popov E.V., Semyachkov K.A., Sadykov N.N., Semenov Yu.A., Stavtseva T.I., foreign economists Barron I., Curnow R., Bell D., Cruz-Jesus F., scientists such as Oliveira T., Bacao F., Irani Z., Gates B. Irawan, T. Jonsher K. Lane N. Martin J., Malgan G. Toffler A., Urry J. conducted research on personnel management.

At the present stage of socio-economic development it is important to thoroughly study the necessity of personnel management. In modern researches the theory of hierarchy of needs of A. Maslow, the theory of achieved needs of McClelland, two-factor theory of Herzberg, the theory of expectations of K. Levin, the theory of fairness of Porter-Lowler, the model of choice of risk of D. Atkinson, Douglas, McGregor and others are widely used. In researches of Russian scientists A. G. Yadov, A. T. Zdravomyslov, V. P. Rozhin, N. F. Naumova, I. F. Belova and others not only needs are considered, but also the process of formation of motivation and its functioning.

Research Methodology

This article attempts to effectively use induction and deduction, systematic and logical analysis, and comparative analysis methods.

Analysis and results

The proposed factors are not only of production but also of resource nature. They can be summarized as follows:

- ✓ Information and know-how;
- ✓ financial and material resources;

- ✓ Human resources potential;
- ✓ External connections and relations.

All enterprises or organizations have some common characteristics: firstly, they are social systems; secondly, their activities are integrated, they work as a team; thirdly, their activities are purposeful and solve a common problem.

In enterprises, each individual employee carries out a wide range of activities in cooperation with other managers. Consequently, the employee is a product of his own behavior and aspirations, which change significantly under the influence of certain factors and circumstances. At present, information about the character, tendencies, additions and installations that help the administration to influence the employee more effectively are of great importance. For example, Americans solve these problems with the help of various tests. Japanese managers, on the contrary, try to conduct a deep analysis of the actions, interests and hobbies of the employee in order to better reveal his personal qualities [2, p. 125].

To increase the importance of the latter condition, each manager should spend part of his time communicating with subordinates, studying the personnel comprehensively. These expenses, in particular, will subsequently be compensated by a more effective impact on the personnel.

In our country, foreign experience in managing personnel and enterprises has been little studied by both theorists and practitioners for a very long time. However, the studies conducted show that it is possible to study the vast experience of these countries, to objectively approach it and use its practices, methods, and forms in managing enterprises and personnel in our country. In addition, it has become clear that the management mechanism can be made more flexible and easily adapted to the implementation of any new management style. This, in turn, makes it possible to rationally and sufficiently effectively manage the use of the creative potential of the organization's personnel.

In the current pandemic situation in the world, the crisis in the personnel management system encourages scientists and managers to search for the latest methods of improving and improving management. This helps to eliminate stereotypes in managerial thinking and develop new conceptual approaches. It should be noted that the study and research of new approaches to personnel management does not immediately give satisfactory results. "The reason for this is that Western corporations initially used the experience of other countries (for example, Japan and the USA), without completing the necessary modernization of their labor management systems, and used this experience, which was determined by the socio-economic, organizational and ethno-psychological characteristics of the countries. At the same time, mechanically copying the experience of Western countries, it is necessary to remember and evaluate the impact of the consequences of use on the economy of the country where these experiences are used. The experience of Western countries is disseminated and has an impact on other areas, in particular, the spiritual and social spheres, but the values, culture, knowledge and much more of the Western and American way of life are not the same as these experiences It is gradually influencing the minds and consciousness of the citizens of the countries where it is used .

As noted above, currently, little attention is paid to the issues of organizing the use of personnel labor in enterprises and the effective formation of a personnel management system. To solve these problems, it is necessary, first of all, to effectively organize the system of using personnel labor, study the experience of developed foreign countries (Japan, the USA, China, Germany, Korea, Russia) and apply them in the industrial sectors of our country.

The very intensive development of Western traditional values has been confirmed by many experts, sociologists and scientists. This situation can be observed in the sphere of politics and economics. However, it raises the most striking problem of the loss of civilizational identity, which is impossible to restore.

At the same time, the globalization processes of the world economic community and the development of modern technologies set their own standards in the field of personnel management. For example, for personnel management in our country, the attitude of the management mechanism to the invisible and visible final results is currently of great importance. It covers all aspects of

planning the future and work activities of employees of organizations and enterprises, the formation of an economic thinking mechanism of personnel oriented to the end user.

Therefore, it is important for operating organizations and enterprises to understand and adapt foreign experience and management for themselves and the country's working conditions.

The human resource management system in foreign countries is usually divided into seven points: “development and training, management, selection and appointment, benefits and incentives, labor relations, health, labor safety and confidentiality ”.

In world practice, there are two approaches to forming a personnel management system - the American approach and the Japanese approach.

Both approaches emphasize the strategic focus on activating human resources, continuous technological improvement, a large range of products and services produced, and excellent development skills, and the transfer or delegation of rights, authorities, and responsibilities for a number of important decisions to a middle level. At the same time, they are distinguished by the fact that they are designed to create and implement long-term plans for the development of the enterprise.

The American system of personnel management.

The American system of personnel management is based on the principle of individualism. American companies, when selecting employees, give preference to charismatic individuals who bring the necessary positive results, have a bright and creative, original and inventive approach to the assigned tasks. In order to perform the assigned tasks qualitatively, the responsibilities of personnel management managers at all levels in the USA include planning, organizing, coordinating, motivating and controlling the activities of employees. The personnel management system in enterprises and corporations includes the following closely related areas of activity: "recruitment of employees, selection of candidates, determination of wage and service systems, professional orientation and social adaptation of personnel, training of personnel, evaluation of personnel performance, career management, training of managerial personnel, evaluation of the performance of managers and specialists, evaluation of the performance of personnel management services."

Currently, American corporations face a number of problems in personnel management. One of the main problems is associated with the activities of large multinational corporations (MNCs). The increase in labor productivity is greatly influenced by the socio-psychological climate in the team and in the corporation. In America, where large multinational corporations (MNCs) form the basis of the economy, the main task of the human resources management system is to develop mechanisms that facilitate the adaptation and acclimatization of personnel in the composition of various groups formed in the team, to form a team and eliminate conflicts in it.

American researchers in the field of human resource management have identified another important problem: the diversity of the workforce.

“With the passage of federal legislation prohibiting discrimination in employment, hiring policies and systems also changed. It became possible to hire young adults and women, the fastest-growing segment of the workforce. Meeting their needs became the responsibility of managers. With the decline in the birth rate in the United States and the further strengthening of globalization, it became easier for Latin American, Asian, and other foreign nationals to find jobs .”

The problem of the division of workers into younger and older generations is also considered one of the potential problems. The preparation of the younger generation of the workforce is assessed by the low level of experience and the lack of necessary skills for performing high-tech work. The lack of skills and experience affects the efficiency of the corporation, that is, leads to low quality of work and productivity. As a result, large losses can occur. This situation leads to an increase in the number of complaints from consumers. Human resources require the education system to be in the spotlight and require significant costs from companies. These processes should be carried out with the direct participation of companies, corporations, enterprises, and the state.

The American corporate personnel management system involves the use of questionnaires and various tests at all stages - from recruitment to subsequent career advancement. Almost all corporations and enterprises strive to find personnel who have unconventional thinking, are resistant

to stress and are able to independently make important management decisions and innovative ideas that will help ensure the stability of the corporation in the market and increase its competitiveness.

In the US, the processes of using personal labor are based on a large database, advisory support, and a developed management infrastructure. The results of this management infrastructure are also used in countries such as Great Britain, Canada, Japan, and New Zealand in their work processes.

The most effective modern approach in US companies is based on its appearance and methods of working with personnel, as well as the use of new information technologies. Personnel management in companies is based on the individual labor process of each employee. The labor of personnel is evaluated in accordance with the personal results achieved in the labor process, and their position can be increased. A sincere and friendly relationship is formed between management and personnel. In order to increase the responsibility and labor efficiency of personnel in companies, labor duties are assigned to the head of the brigade (workshop) or a higher management position. An employee who is given increased work responsibilities strives to perform at a high level of efficiency in order to justify the trust placed in him by the company's management and demonstrate his current abilities.

In US companies, the hiring of employees is carried out on a selective basis: "based on the results of an interview and test, taking into account basic knowledge, knowledge of the company's activities and procedures, level of qualification, and personal characteristics."

In the HR system, the USA and Japan are strong competitors. They have different approaches to the same problem and different attitudes towards personnel. In the USA, every eighth employee is a boss, while in Japan, on the contrary, every employee is a boss. However, each of these schools can benefit from the successes achieved and not repeat the same mistakes in the practice of HR management.

The American system of government is built on the basis of independence, enterprise, obvious individualism, optimism and conscientiousness, which are considered the main qualities of Americans. If a person has these qualities, then the road to life opens for him. In general, Americans are very businesslike people - in their life they can change jobs up to 30 times.

Americans are somewhat selfish. They work to succeed at work only with the desire to get more money and improve their reputation. Even if he knows for sure that he cannot carry out the orders of the boss, he says that he will do it - this increases his reputation in the eyes of the management and colleagues.

The main principles of American management: strict individual leadership, delegation (one of the most common models), formal relationships with subordinates, incentives and evaluation based on individual personal results, low guarantees for employees.

The characteristic priorities of the American system of government are:

1. The US is characterized by the desire to achieve success and establish oneself independently, so everyone tries to rely only on their own interests when doing this or that work. As a result, cohesion and a friendly team cannot be observed in American companies.

2. The manager independently controls the team's work and makes decisions quickly. A good manager is distinguished by such personal qualities as the ability to make the right decision, initiative and a clear management structure.

3. The type of behavior that is characteristic of men is characteristic not only of men, but also of women. The main goal of most representatives of society is material progress, success and self-expression. Therefore, women who want to achieve success in one area or another must have a “masculine character” in a figurative sense.

The shortcomings of the American system of governance are as follows:

1. Difficulties in introducing new management methods. Because Americans are very conservative.

2. There are a huge number of recommendations that must be strictly followed.

3. Advantage for narrow specialists.

4. Focus on short-term profit rather than stable income.
5. Decrease in the volume of investments.
6. Increase in consumer spending.

The American HR system is rarely found in its pure form, like the Japanese one. However, they have common characteristics. What are the characteristics of the Japanese management system?

1. One of the main features of the Japanese personnel management system is the system of lifelong (at least long-term) employment. Everything is carefully thought out here - companies cooperate with universities that train specialists in the necessary fields. Thus, before a potential candidate passes the exam, which will become the key to employment, the company will have enough information about him. After the candidate is approved for a given position, he must work as an intern for one year. But after a year, the employee becomes a permanent member of the group, guaranteeing that he will not be fired under any circumstances (of course, if he commits a crime or the company goes bankrupt, this law will be invalid). When an employee resigns of his own free will, he resumes his work, so there are practically no problems with staff turnover in Japan.

2. The decision-making system in Japan is also very interesting. Here, decisions are made collectively, from the average worker to the management, everyone can express their opinion on this or that decision. In fact, one decision goes through several stages - first, the average employees put forward their proposals, and then they bring them to the top management. Ultimately, the decision is submitted to the top management for consideration.

3. A very big disadvantage of the Japanese management system is the close connection between the management personnel and subordinates, encouraging various (formal and informal) relationships. The management of companies is in close contact with workers, often working together with them at the enterprise. On the one hand, such a situation speaks of good management and its ability not to put itself above subordinates, on the other hand, workers do not respect the administration so much, so often in many companies work begins with morning meetings.

4. Salary in Japan depends on the length of service of the employee. Even if a young employee shows excellent abilities in a certain field, he will not be promoted to a higher position until he reaches the required age.

In modern conditions, many Western companies concentrate their efforts on three main areas: comprehensive automation of production processes; improvement of forms and methods of management, including the organization of production and development of the technical and mechanical base; building up potential and improving the qualifications of personnel. Until recently, competition for these resources was the most promising for the creation of new-generation adaptive production systems that existed only in theory [4, p. 143].

Without information and communication, the process of human resource management cannot be effectively organized. It is important to note that each individual employee of an enterprise or organization is a carrier of information, and communication is a means by which people unite to achieve their goals. A manager needs objective information to make personnel decisions. Information is an important element of its activities as a factor in personnel management in the organizational system. Communication as a means of communication has the following principles: - the principle of reliability - a message is not considered complete until it is clear, and this requires attention and verification; - the principle of good faith - the purpose of management messages is to understand each other in order to achieve the goals set between employees in the production process; - The principle of strategy – on this basis, a strategy for increasing communication channels is developed, based on the presentation of the situation [3 , p. 91].

Competence is a very important condition for increasing the efficiency of employees. The term competence is the central concept of the entire concept of personnel management. The term competence was first used in the studies of the American scientist W. McKelville, who showed that the essence of the organization, the core of which is the existing set of powers of all employees. Personnel management is a process of comparing the needs of the enterprise with the available

resources and choosing the forms of influence for their coordination in practice. In this case, resources are the personnel of the enterprise with acquired powers, desires, motives, aspirations.

Authority management can be implemented both at the enterprise level and at the level of individual employees. Competency management at the enterprise level is associated with the following functions: - assessment of available human resources, as well as their capabilities, knowledge and skills; - assessment of the company's personnel needs in accordance with the goals, objectives, strategies set by the company for the coming years; - assessment of the comparison of resource needs on the basis of systematic analysis. Authority management at the enterprise level and at the individual level is an interrelated process, since one complements the other. This ultimately determines suitability for the position held. Evaluation of employee performance encourages them to activate the knowledge, skills and expertise they have previously acquired. It forms the goal of its activity in the workplace, determining whether its powers correspond to the current requirements of functional responsibilities [5, p. 62].

Another important condition for increasing the efficiency of personnel management is motivation of work activity. Officials have always created conditions for motivating their employees, whether they understand it or not. In ancient times, threats and, for some people, rewards served as whips. From the end of the 18th to the 20th century, it was widely believed that if people had the opportunity to earn more money, they would always work harder. Thus, motivation is considered a simple task, and appropriate monetary reward is offered for efforts. This was the basis for the approach of the scientific management school to motivation. In the first and subsequent economic publications, there are many different theories of motivation. Motivation is related to the process of motivating an individual and other employees as a primary task or condition of management activity. Research on employee behavior at work provides some general explanations of motivation and allows for the creation of pragmatic models of employee motivation in the workplace.

Behavioural research has shown that a purely economic approach is insufficient. Leaders have discovered that motivation, the creation of an internal desire to act, is the result of constantly changing complex needs. Managers now need to identify what these needs actually are in order to motivate employees effectively and to explain to them that these needs can be satisfied through good performance. However, needs cannot be directly observed or measured. Their existence can only be assessed by people’s behaviour.

Needs are the motivation for action. Needs can be satisfied with incentives. So, the next condition of motivation is motivation. Incentives are the process of activating the staff to maintain the interest of employees in increasing their productivity. Spiritual and material incentives are important for the staff. This ensures interest in achieving high productivity in the enterprise. This includes creating conditions for the staff to work more efficiently and effectively as a result of hard work. Here, incentives to work allow employees to understand that they can work more efficiently, which leads to the need to work more efficiently.

Although incentives motivate employees to work, they are not enough for effective work. The system of incentives and motivations must be based on a certain base - the normative level of work activity. The fact that an employee enters into an employment relationship means that he or she must perform a number of tasks for wages. In this case, there is still no room for incentives. There is a controlled sphere of activity and it is motivated by fear of punishment for non-compliance [6 , p. 106].

The motivational management system should be developed on the basis of administrative and legal management methods, but does not replace them, since labor stimulation will be effective if the management can achieve the level of their payment. Therefore, the main goal of incentives is not only to motivate a person to work in general, but also to motivate him to do more than what is provided for in labor relations. Based on the economic essence, we propose the following classification of factors influencing the effectiveness of personnel management:

1. Physiological factors: gender; age; health; mental abilities; physical abilities, etc.

2. Technical and technological factors: nature of the tasks to be solved; complexity of work; technical support; level of use of scientific and technical achievements, etc.; working conditions; ratio of the number of personnel categories; size of the enterprise; work schedule; work experience; personal qualities; level of use of personnel, etc.
3. Socio-economic factors: material incentives; social payments; standard of living, etc.
4. Socio -psychological factors : spiritual environment in the team; psychophysiological state of employees; status and recognition; organizational culture of the enterprise; gratitude; career growth prospects in the service, etc.
5. Territorial and situational factors: location of the enterprise; travel time from home to the enterprise; level of competition; inflation; unemployment; income stratification; degree of transformation of enterprises into joint-stock companies, etc.
6. Innovative factors: use of digital technologies; information and know-how; innovative management [7 , p. 226].

Conclusions and suggestions

There are other factors that increase the efficiency of personnel: quality of work, work discipline, culture and corporate values. It is difficult to cover all the factors and conditions that influence the efficiency of personnel within the framework of one article. Working with these factors and conditions is another issue that needs to be studied. Thus, increasing the efficiency of personnel management at an enterprise depends on many factors and conditions, the subsequent study of which will help to develop a strategy for economic development in general for production.

References:

1. Управление персоналом организации: Учебник / Под ред. А.Я. Кибанова. - Москва. ИНФРА-М, 2017.
2. Управление персоналом: Учебник / Под ред. Базарова Т.Ю., Еремина Б.Л. - Москва. ЮНИТИ, 2017.
3. Макарова И.К. Управление персоналом: Схемы и комментарии. Москва. "Юриспруденция", 2012.
4. Основы управления персоналом организации: Учебное пособие / Под ред. К.Х.Абдурахманова. — Тошкент. ТГЭУ, 2018.
5. Абдуллаев М. Personal malakasini oshirish asoslari. Хоразм Маъмун Академияси Ахборотномаси. № 2.
6. Теоретические аспекты влияния социально-экологических факторов на эффективное использование трудовых ресурсов. Нурматов Дильшадбек Набижанович, Абдуллаев Мирзохид Гайибердиевич. Номер: 2 (92) Год: 2014 Страницы: 30-31. 14.02.2014. Издательство: Редакция Журнала научных публикаций аспирантов и докторантов (Курск).
7. Абдуллаев М. Г. АМЕРИКАНСКАЯ И ЯПОНСКАЯ СИСТЕМА УПРАВЛЕНИЯ ПЕРСОНАЛОМ: ПРЕИМУЩЕСТВА И НЕДОСТАТКИ //International Conference on Educational Discoveries and Humanities. – 2025. – С. 84-93.
8. Абдуллаев М. Г. ОСНОВНЫЕ ЭЛЕМЕНТЫ ЭФФЕКТИВНОСТИ СИСТЕМЫ УПРАВЛЕНИЯ ПЕРСОНАЛА //ТЕХНОЛОГИИ СОЦИАЛЬНОЙ РАБОТЫ В РАЗЛИЧНЫХ СФЕРАХ ЖИЗНЕДЕЯТЕЛЬНОСТИ. – 2020. – С. 222-227.
9. Абдуллаев М. Г. ИННОВАЦИЯ КАК ФАКТОР ПОВЫШЕНИЯ КОНКУРЕНТОСПОСОБНОСТИ ПРЕДПРИЯТИЯ //Zbiór artykułów naukowych recenzowanych. – С. 36.
10. Нурматов Д. Н., Абдуллаев М. Г. Теоретические аспекты влияния социально-экологических факторов на эффективное использование трудовых ресурсов //Журнал научных публикаций аспирантов и доторантов. – 2014. – №. 2. – С. 30-31.

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INFLUENCE OF INNOVATIONS ON THE PROFITABILITY OF ENTERPRISES

Gafurova Azizakhon Fatikhovna
PhD, Tashkent State University of Economics
94.aziza@gmail.com

Abstract: *The article examines the impact of innovation activities on the profitability indicators of industrial enterprises of the Republic of Uzbekistan for the period 2018–2023. Based on the analysis of real statistical data, trends in the growth of innovation activity are determined and the relationship between the introduction of innovations and the improvement of the financial results of companies is revealed. The special role of digital and product innovations in increasing the competitiveness and expanding the export opportunities of Uzbek manufacturers is noted. The article offers practical recommendations for the further development of the innovative potential of industry and support for digital transformation.*

Keywords: *innovation, profitability, profitability, innovation efficiency, investment.*

Introduction

In the modern economy, innovations are becoming one of the most important factors determining the success and competitiveness of companies. Every year, the market is becoming more dynamic and saturated, and in order to maintain sustainable growth and profitability, businesses need to adapt to rapidly changing conditions. Innovations allow companies to quickly respond to consumer demands, improve the quality of products and services, and reduce costs. It is thanks to innovations that organizations can not only increase their efficiency, but also open up new sources of income, which is especially important in the context of growing global competition.

Today's consumers are becoming more demanding, expecting personalized offers, convenience and a high level of service, which pushes businesses to actively search for new solutions to meet their needs. Companies that are not ready to implement innovations risk losing their positions and giving way to more flexible and technologically advanced competitors. In this context, the study of the impact of innovations on a company's profit is not only relevant, but also practically significant, as it helps to better understand how modern technologies and new approaches contribute to sustainable business development and its financial success.

Thus, the relevance of the topic is justified by the need to adapt business to modern challenges, the need to improve efficiency and competitiveness, as well as the possibility of creating a long-term growth strategy through the implementation of innovations.

Literature Review

American economist Michael Porter[1], one of the leading experts in the field of competitive strategy. Porter considered innovation as a key element of the competitive advantage of companies. He argued that innovation allows improving productivity and creating a unique offer, which gives the company the opportunity to stand out in the market.

"Profit is the final financial result of the economic activity of an enterprise engaged in entrepreneurial activity" [2]. As a result of the effective work of the enterprise, its capital increases due to profit.

"Profit is the difference in the amount of net assets at the end and at the beginning of a period,

for a given period of production activity, adjusted, if necessary, for amounts withdrawn or added by the owners" [3].

"Profit or loss is the total amount of income minus expenses, excluding the components of other comprehensive income" [4].

The study of the role of innovation in increasing the profitability of enterprises began with the works of J. Schumpeter, who in his works "The Theory of Economic Development" (1934) substantiated that innovation is the main source of entrepreneurial profit arising from a temporary monopoly advantage. He identified product, process and organizational innovations as key types. This theory was later developed in the works of M. Porter [Porter, 1990], where it is argued that technological leadership and innovative strategy form a sustainable competitive advantage and allow achieving superprofits in saturated markets.

Analysis and results

Innovations are one of the most important means of ensuring sustainable development of an enterprise in both the short and long term. Innovations of various types have a positive direct or indirect impact on the volume of production and sales of products, production and sales costs, prices, quality indicators (quality of performance and technical characteristics) and operating costs, which is manifested in the growth of competitiveness of products and demand for them.

The growth of production volume can be ensured by innovations in the field of production technology, production capacity, organization and maintenance of production. Naturally, these innovations are appropriate if there is a stable solvent demand for products. The growth of production volume entails an increase in the volume of sales of products and, consequently, profit from sales. In addition, it ensures a reduction in overall production costs due to savings in fixed costs and, as a result, an increase in profit and profitability of products, as well as a decrease in the cost of a unit of production, which creates the opportunity to reduce the price.

Thus, innovations aimed at increasing the volume of production ensure an increase in profit and profitability, a decrease in the cost and prices of products.

Reduction of production costs is ensured by resource innovations (use of progressive, cheap types of raw materials and materials), product innovations (improvement of product design, development of new products), technological innovations (modernization of existing technologies and development of new ones, modernization of equipment and use of models with higher productivity), organizational innovations.

As a result of the implementation of resource innovations, variable material costs per unit of production are reduced. A reduction in these costs can also occur as a result of product innovation. Labor costs are reduced due to technological and product innovations by reducing the labor intensity of manufacturing products.

Reduction of costs, all other things being equal, ensures growth of profits and profitability of products. In addition, reduction of costs creates conditions for price reduction and effective price competition (due to the greater difference between price and costs, it is possible to vary the price).

Price reduction is possible not only due to reduction of production and sales costs, but also due to innovations in the field of product distribution: by simplifying the structure of distribution channels.

The growth of quality indicators is ensured by resource, product and technological innovations. Thus, innovations aimed at the use of new, high-quality materials contribute to the improvement of strength characteristics, wear resistance, and durability of products. Modernization of products and the development of new types of products also ensure an increase in the level of quality indicators. The improvement of existing and the use of progressive technologies pursue not only the goal of reducing production costs, but also, first of all, improving the quality of products. For example, the use of progressive technological processes of mechanical processing, surface hardening, chemical-thermal treatment contribute to increased wear resistance, durability and strength.

Therefore, innovations aimed at improving product quality provide growth of regulated and comparative indicators and reduction of some economic indicators of competitiveness (for example, operating costs), i.e. increase in the level of competitiveness of products, which results in growth in demand. Naturally, when implementing certain innovations, all expenses and incomes are calculated, especially the effectiveness of innovation projects is assessed (Figure 1).

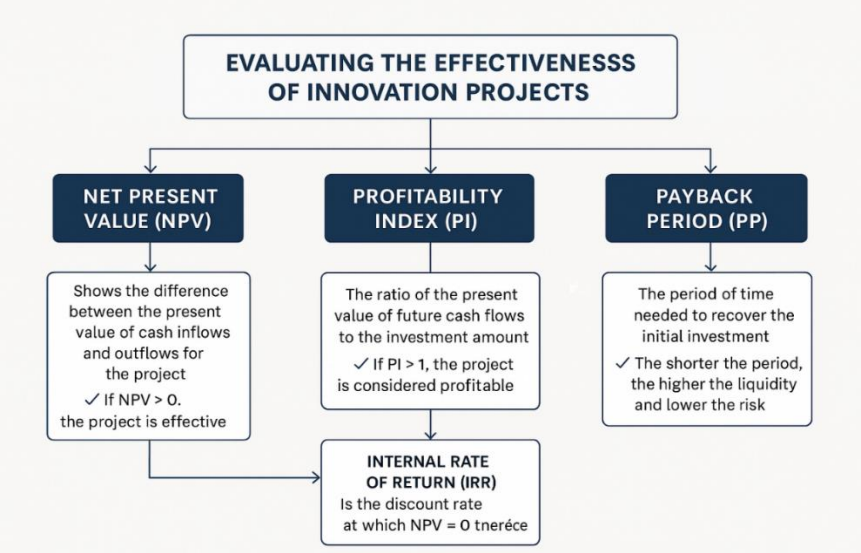

Figure No. 1. Evaluation of the effectiveness of innovative projects.

To justify the feasibility of introducing innovative solutions into the production process of the enterprise, we used a comprehensive system for assessing the effectiveness of projects, including NPV, IRR, PI and payback period, which made it possible to quantitatively assess the contribution of innovations to the future profitability of the enterprise.

Below is a graph reflecting the dynamics of innovation implementation in the industry of Uzbekistan for the period from 2018 to 2023. The data is based on official statistical sources and analytical reviews.

There is a steady increase in the share of enterprises implementing innovations, which indicates positive dynamics in the field of industrial development. The increase in indicators is due to the implementation of the state strategy for innovative development for 2022-2026, aimed at stimulating scientific research and the introduction of new technologies in industry. Particular attention is paid to the digital transformation of production processes, which helps to increase the efficiency and competitiveness of enterprises.

Figure No. 2. Dynamics of innovation implementation in the industry of Uzbekistan (2018-2023).

Here is a graph showing the dynamics of innovation implementation in the industry of Uzbekistan for 2018–2023 based on real statistical data. The graph clearly demonstrates the steady growth of the share of innovation-active enterprises over the past five years.

Over the past five years, a number of measures have been taken within the framework of the Action Strategy for the innovative development of the country, comprehensive support for science and research activities, as well as increasing its efficiency.

In particular, the Ministry of Innovative Development was created to implement a unified state policy, the Law "On Innovation Activity" and the "Concept for the Development of Science until 2030" were adopted, defining the legal framework for regulating relations in the field of innovation.

Conclusions and Recommendations

The analysis conducted confirms the significant and positive impact of innovation on the profitability of industrial enterprises in Uzbekistan. Based on real statistical data from the past five years (2018–2023), a steady increase in innovation activity was observed, which correlated with marked improvements in the key financial indicators of enterprises in the industrial sector.

The implementation of innovations—particularly digital technologies, modernization of production processes, and increased investment in research and development—has led to enhanced profitability, reduced production costs, and expanded market reach. For instance, the share of innovation-active enterprises grew from 9.5% in 2018 to 15.4% in 2023, underscoring the effectiveness of both government policy and private-sector initiatives in promoting industrial innovation.

To ensure further sustainable development and enhance the global competitiveness of Uzbekistan's industrial sector, it is recommended to continue fostering innovation, support digital transformation initiatives, and establish favorable conditions for the adoption of advanced technologies. The successful implementation of these recommendations will help strengthen the position of Uzbek enterprises in both domestic and international markets, while ensuring long-term profit growth and the sustainable economic advancement of the country.

References

1. Annual statistical report of the State Statistics Committee of the Republic of Uzbekistan for 2023. – Tashkent, 2024. – [Electronic resource]. – URL: https://stat.uz (date of access: 05/25/2025).

2. Report of the Center for Economic Research and Reforms under the Administration of the President of the Republic of Uzbekistan (CERR) on the digitalization of industry and the impact of innovation on the economy, 2023. – Tashkent, 2023. – 87 p.

3. Decree of the President of the Republic of Uzbekistan No. UP-60 "On the strategy of innovative development of the Republic of Uzbekistan for 2022–2026" dated 07/06/2022. – [Electronic resource]. – URL: https://lex.uz/docs/6102464 (date of access: 05/25/2025).

4. Schumpeter J. Theory of Economic Development / J. Schumpeter; trans. from English. – Moscow: Direct-Media, 2008. – 400 p.

5. Porter M. The Competitive Advantage of Nations / M. Porter. – New York: Free Press, 1990. – 855 p.

6. Griliches Z. R&D and Productivity: The Econometric Evidence / Z. Griliches. – Chicago: University of Chicago Press, 1998. – 350 p.

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