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## THE IMPACT OF THE DIGITAL ECONOMY ON MANAGEMENT PROCESSES

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### ABSTRACT

*Purpose of the research* is to study changes in management processes under the influence of the digital economy in order to effectively carry out the digital transformation of a company and adapt management to new conditions.

*Methodology.* The methodology and research methodology is based on the use of a monographic method of studying literature and sources, systemic and comparative analysis using observations and analysis of statistical materials.

The theory was developed and validated using scientific evidence derived from the data following a literature analysis.

*Originality / value of the research.* The article analyzes the literature on this topic, which showed that the problem is poorly researched. A diagram of the interaction of the digital economy and management processes was built, which made it possible to identify the composition of changes in the management of the company. The content of the transforming impact of the digital economy on the enterprise is highlighted, for which a scheme of the impact of the digital economy on the management of the company is proposed. Analysis of the digital transformation of business in the largest Kazakhstani telecommunications company Kazakhtelecom revealed changes that should be made in the field of personnel management, the formation of corporate culture, the system of working with clients and the organizational structure of management. Particular attention is paid to the digitalization of the company's business processes, on which the digital model of the company depends, which determines the design of the entire company management system.

*Findings.* The results obtained: some provisions on the methodology of the influence of the digital economy on management processes were systematized and developed, an analysis of the digital transformation of business and management of the Kazakhtelecom telecommunications company was carried out, from which recommendations for adapting management processes to digital changes follow.

*Keywords:* digital economy, management processes, digital transformation, digital strategy, digital model

### INTRODUCTION

The current state of the global economy is characterized by an active transition to a digital economy.

In management, however, there are still many unresolved theoretical and methodological issues, one of which is: how does the digital economy affect management processes, what changes it leads to, how to implement these changes, and adapt company management to the company's digital transformations.

Changes under the influence of the digital economy require a strategy for responding to changes in the external environment, because this will affect the overall performance of the company [1]. Fundamental changes are required in business processes within the company, their adaptation to changes in the digitalization of the economy and enterprises, changes in the level of application of information technologies both outside and inside the company.

There is no definition of «Digital Economy» in the state program «Digital Kazakhstan». It uses the term «Digitalization of sectors of the economy» as a direction for the transformation of traditional sectors of the economy using breakthrough technologies and opportunities that will increase labour productivity and lead to an increase in capitalization. In our opinion, the digital economy is the result of such digitalization, that is, the

result of digital transformations of the economy. Thus, it is the goal and final result of the digitalization of the economy.

The purpose of the study is to study changes in management processes under the influence of the digital economy and digital transformation in a company with an analysis of the practice of such changes in the national company Kazakhtelecom.

The research questions, which are studied in the article, are as follows:

- define the digital economy and highlight indicators of the level of its development, as well as its features;
- define the management process;
- develop principles for transforming the management system during digitalization;
- to classify the impacts in the management process, highlight the essence of the transforming impact of the digital economy on the enterprise and the composition of changes in the management process during the digital transformation of the company;
- to conduct a specific analysis of the impact of the digital economy on management processes using the example of Kazakhtelecom company.

**Literature Review.** There is still very little research on the impact of the digital economy on management processes. There is no answer to which management processes should be influenced and to what influence, which processes and to what extent should be changed. This is a significant methodological flaw that can lead to a decrease in the efficiency of digitalization of the company and a decrease in the efficiency of company management.

To begin with, the very understanding of the digital economy is interpreted ambiguously in the literature. Some authors identify it with electronic commerce [2; 3], others give an abstract broad definition as an innovative economy [4; 5], and still others associate it mainly with transactions [6; 7].

In our opinion, the digital economy should be considered as a full-fledged economy, which, like any economic system, also includes all the main elements and economic phases, but carried out on the basis of digital technologies.

There are many difficulties in assessing the scale of the digital economy, as well as its share in GDP. First of all, because the impact of the digital economy itself on the economy as a whole, in particular its share in GDP, is uncertain. This is understandable, since there is no clear definition of the digital economy. And depending on what is meant by the digital economy, some authors believe that the contribution of the digital economy is from 4 to 20 % of world GDP [8; 9; 10]. In our opinion, the most obvious indicator of the development of the digital economy is the development of the ICT (information and communication technologies) sector, since this is the very sector that belongs to the digital sector. The share of the ICT sector in the economy as a whole can be used to judge the share of the digital economy in the country's economy. It should be said here that some authors believe that it is necessary to include computer services in the digital economy sector. In our opinion, this is not entirely true and we agree with other scientists who believe that it is more accurate to talk about software services [11; 3]. In addition, we also believe that the sector of robotics, big data development, and automated control systems should be included in the digital economy.

Thus, we can conclude that today features of the digital economy are:

1. A special type of product is digital, for example, cloud data, Big Data [12; 13].
2. Digital products do not lose their original properties, and, moreover, they can be improved during further operation.
3. Trading platforms used in the digital economy have no restrictions on the size of space, the volume of the range of products and the number of simultaneously served customers.
4. Significant increase in information flows [14].
5. The emergence of super transnational corporations such as Amazon, Alibaba, Uber.

Speaking about management processes, it should be said that they permeate the entire organization, affecting almost all areas of its activities from bottom to top [15]. From this point of view, management processes are specific for each enterprise.

The literature also contains ambiguous interpretations of management processes:

- functional aimed at control functions [16];

- a targeted approach that focuses on the management objectives [17];
- as actions of management personnel [18].

### MAIN PART OF THE RESEARCH

The methodology of the study is based on the information from Kazakhtelecom leading national telecommunications company and are also the main implementer of digitalization programs in the country.

The empiricism of the article is expressed in specific recommendations for changes in management processes that will contribute to more efficient digital modernization of companies. Empirical data on the digital transformation of Kazakhtelecom company are also given.

Based on the foregoing, it seems to us that the management process, in terms of its content, characteristics and properties, requires the passage of the acquired stages, that is, a sequence of operations (works). The following stages are successively changing: goal-setting, situation analysis, identification of problems, development and adoption of management decisions.

With the digital transformation of a company, the reaction of management can be as follows:

- 1) do not change anything in management,
- 2) act stereotypically, regardless of the situation,
- 3) change the management system in accordance with new tasks, the need to introduce transformations.

The third way is the most expedient. But, in addition to the influence of the digital economy, it is necessary to take into account certain aspects of management in a particular company. In general, the following can act as aspects.

1. Organizational content of the management process. This aspect lies in the fact that in the management process there is a strict sequence in the application of organizational measures of influence in the form of regulation, rationing, training [19].

2. The functional content of the management process. This characteristic is manifested in the fact that it is necessary to keep in mind the sequence of the implementation of the main functions of management in the form of planning, organization, regulation and coordination, control [20].

3. Information characteristic of the management process.

4. The economic content of the management process.

Changes in governance during digitalization should be carried out taking into account certain principles, which should be highlighted as follows.

1) The principle of adaptability, meaning that the management system and management processes must constantly change and adapt to modern requirements and changes in the external environment.

2) The principle of sustainability, which means that the management system should be a relatively stable system in terms of sustainable focus on the implementation of the company's strategy and goals.

3) The principle of structure means that management processes originate from different departments in the form of diverse managerial influences, but at the same time they all have structural and functional unity.

4) The principle of continuity. This principle means that the control cannot be switched off for a moment, and the controlled system should not end up in a control vacuum, without the attention of the control system. Otherwise, it will lead to collapse.

5) The principle of consistency means that management processes are fundamentally consistent and logical, they cannot contradict each other.

6) The principle of cyclicity lies in the fact that the management process should contain analysis and monitoring of efficiency and the achievement of results from the previous stage of management and the new management cycle should build on the results achieved.

The forms of influence themselves result in a certain set of tools for managerial influence, which can also be divided into conditionally constant and conditionally variable (Figure1).

The transformative impact of the digital economy on the enterprise can be viewed from many angles [21]. For example, it definitely has an impact on productivity growth, growth in value added, impact on employment, and income dynamics [22]. The digital economy is considered as an effective measure to mitigate the negative economic impact of the Corona Virus Disease 2019 (COVID-19) epidemic [23].

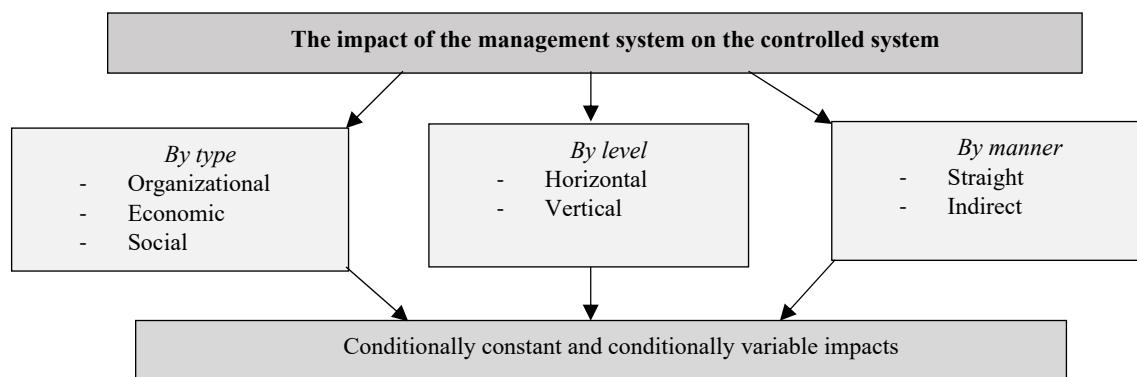


Figure 1 – Classification of impacts in the management process.

Note – compiled by the authors

The development and use of digital infrastructure in the form of digital platforms and digital solutions is leading to the following changes:

- enterprises expand their business beyond national boundaries and become global, using Internet technologies, organizing business and trade on a global scale;
- the costs of transactions, marketing and direct interaction with customers are sharply reduced;
- even start-up enterprises from the very beginning become transnational, they also search for customers around the world, employees, gain access to global markets for training, supply of materials.

In our understanding, management processes are enterprise management, but presented under the cut of managerial actions and processes at any stage of company management. From this point of view, when we talk about the impact of the digital economy on management processes, we begin to understand it as the impact of digital technologies, digitalization processes that take place in the world on the process of company management, on what changes in the course of company management occur and should occur.

The transformative impact of the digital economy on the enterprise can be viewed from many sides. For example, its unambiguous impact on management processes. When we talk about the impact of the digital economy on management processes, we begin to understand it as the impact of digital technologies, digitalization processes that occur in the world on the company's management process, on what changes occur and should occur during the company's management (Figure 2).

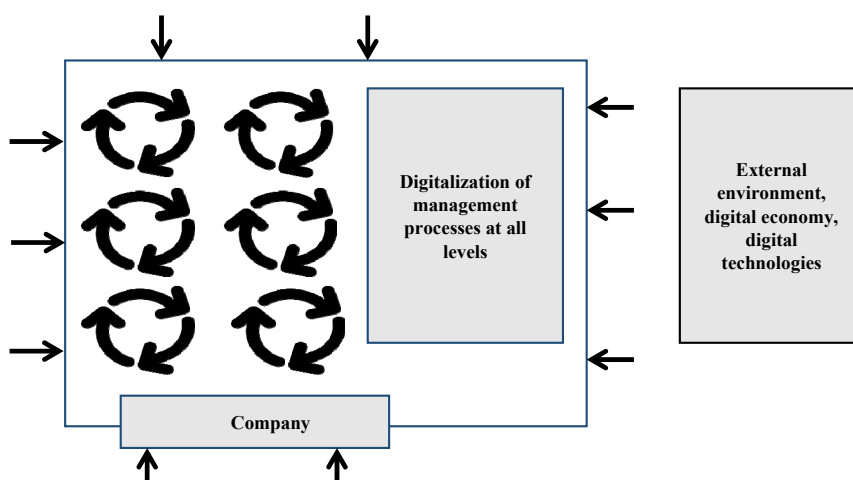


Figure 2 – Diagram of the impact of the digital economy on company management

Note – compiled by the authors

At the same time, the influence of the digital economy can be both from the outside, acting both from the external environment and from the inside, when it comes to the digitalization of certain management processes, individual stages of management, or even the entire management of the company. As a result of the influence of the external environment, there is a change in the management process within the company itself. Figures 2 and 3 show the general changes in the process of managing a company in the context of digital transformation.

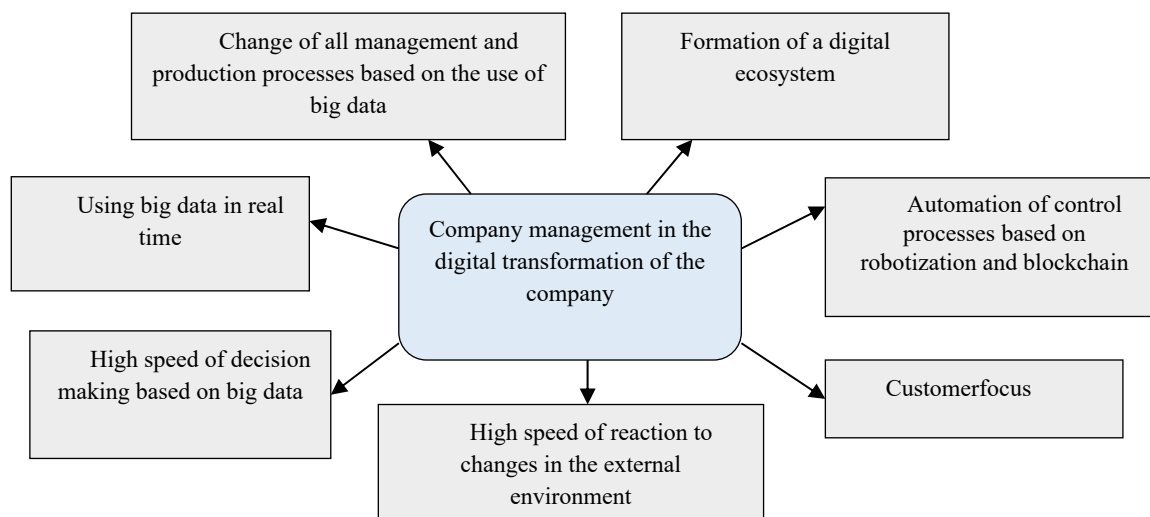


Figure 3 – Changes in the management process in the digital economy and digital transformation of the company

Note – compiled by the authors

Analysis of the impact of the digital economy on management processes on the example of Kazakhtelecom.

Kazakhtelecom is the leading national telecommunications company and is also the main implementer of digitalization programs in the country.

By 2025, Kazakhstan plans to raise its rating from 52nd to 25th place in the world in terms of digitalization. For this purpose, the state program «Digital Kazakhstan» was adopted [24]. It focuses on 5 areas:

- digitalization of economic sectors,
- digitalization of the activities of state bodies,
- infrastructure development,
- creation of an innovation ecosystem and
- development of human capital.

In the *first direction*, the digitalization of such social spheres as health care, education, housing and communal services, transport and security is taking place.

The *second direction* of the program is «Digital State». Kazakhstan already ranks 33rd in the UN e-government development index. However, development will continue now and it is planned to transfer 80 % of public services to electronic format with the transition to proactive services for the population and business, thereby ensuring accessibility and transparency.

The *third direction* is being implemented in the form of creating a developed infrastructure to cover communication networks. We are talking about the development of fiber-optic communication lines. To date, they have already covered more than 12 million Kazakhstanis.

The *fourth direction* will increase the productivity and competitiveness of the leading sectors of the economy – oil and gas, metallurgy, trade.

The *fifth direction* – the creation of an innovative ecosystem includes the creation of the international tech-nopark Astana Hub, and the development of venture financing. Acceleration programs Garage and Fintech-stars, Laboratory C-Labwere introduced. It is planned to create 100-200 start-up projects annually.



Key technological trends – the Internet of Things, artificial intelligence, blockchain, 3D printing and big data in Kazakhstan are beginning to influence industries, and in the near future it is planned that they will become the main levers of their transformation. For example, blockchain technology is being tested in the National Bank for transactions of citizens with securities, and the Government for citizens uses it to register ownership of real estate and create a unified state cadastre based on this technology.

The impact of digital transformation on management processes.

Kazakhtelecom developed a digitalization strategy back in 2019, but with the onset of the pandemic, it accelerated its implementation and actively carried out digitalization of its core business, development of new digital businesses and digital transformation of the network.

The new digital model of «Kazakhtelecom» JSC is based on the transformation of production within the company, renewal of the organizational structure, development of corporate culture, adapted to the new digital conditions of the company.

Business model change. As part of the digital transformation, Kazakhtelecom has changed its business approach to working with clients and developing new products. First of all, they began to use the Agile method, in which tasks are not descended in the form of assignments, but are set to employees in the form of final goals that teams are oriented towards. As a result, the company finished 2020 with record indicators. The increased demand for telecommunications services has led to the fact that more than half of the revenue comes from data transmission services.

The company has also developed a cost reduction program. As a result, EBITDA increased by 75 % compared to 2019. EBITDA margin was 50.4 %.

A number of acquisitions and mergers have resulted in Kazakhtelecom becoming a key operator controlling over 60 % of the country's mobile communications market. The company identified 10 main areas in which he began to develop new types of business in the company, including: artificial intelligence solutions, financial solutions, video analytics solutions, e-commerce solutions, security solutions, blockchain, etc.

The change in the organizational structure has become a large-scale project. 14 regional branches of the company were consolidated into 6 regional directorates. The commercial direction of the Company was also divided into retail and corporate segments.

The basis of the company's digital model is a new model of working with a client. The company has set a goal – 100 % of services in the digital economy should be available online. In this case, customers can receive a full range of services and support without being physically present at the department and calling contact centers. And this was accomplished in a meek time.

To improve the efficiency of customer service, a unified strategy for the development of customer paths I-Engage and I-Join was formed. This was made possible through an end-to-end analysis of customer experience and identification of bottlenecks in all channels, including contact centers, sales centers, dealers, service centers, company website and mobile application.

Kazakhtelecom has created a fundamentally new digital model of working with clients, which can be taken as a model by other companies and businesses. To quickly build such an exemplary business model, a special unit was created in which five project teams were formed that work on the principle of Agile. New KPIs were established, tied to the incentive system.

By analogy with the world's leading telecommunications leaders Turkcell, AT&T, SingTel, Telefonica, Kazakhtelcom plans to enter the industries adjacent to the main activity. In this case, clients will be provided with new services in the field of IT, FinTech, media, user-generated content, cloud technologies, cybersecurity and eSports.

This, of course, will lead to an increase in the load on the technical infrastructure. To ensure the network bandwidth and its availability, Kazakhtelecom plans to develop the 5G standard. In addition, network functions will need to be virtualized and cloudified.

In particular, the company's digital tools for interacting with subscribers were increased to seven, including: WhatsApp Business, Telegram, an online assistant, and a new personal account on the corporate portal. In order to further simplify and speed up the process of interaction between subscribers and the company, the online channels were integrated with the Egov database. This integration made it possible to 100 % identify

the company's client, and thus get away from paper statements, signing everything using an electronic digital signature.

A special mobile application was developed, which also became an integral part of the unified ecosystem of communication with the company's subscribers. The operator's subscriber departments were significantly reduced, as the use of the WhatsApp-channel attracted 95 % of all calls to it. The company switched to a 24/7/365 mode of operation. And it is very convenient for people.

In order to improve the quality of service, the company introduced the FRR (First Request resolution) indicator in 2020, that is, the solution to the client's problem from the first call.

A lot of work in the system of management processes was done to verify the subscriber base of Kazakhtelecom JSC. This means «binding» a subscriber's contact mobile number to his personal account in the company's IS. This database was in need of a serious update, and the company carried out a full verification. As a result of such verification, clients are completely relieved of the need for physical calls to the subscriber departments of Kazakhtelecom JSC. Subscribers can go through verification themselves using the «Personal Account» on the company's portal [25].

The company has also developed its own Fintech platform, KT Pay, and is using it within the group as one of the tools for collecting monthly fees. Also, Kazakhtelecom has created 3 e-commerce sites to date.

The advantages of digitalization in the processes of management and development of HR are actively used by Kazakhtelecom in the course of digital transformation. Digital transformation brings benefits from a workforce management perspective.

The digitalization of the company's business processes ensures the centralization of the main functions through the automation of business processes. In addition, many jobs are already being robotized.

Secondly, the company began to move from a regional to a divisional management model. Sales functions in the corporate and retail segment are centralized, business processes are unified and automated, digital sales channels are rapidly growing and expanding, and mobile applications are being used.

Thirdly, all these processes in management put forward new requirements for the competencies and professional training of personnel.

Fourth, internal HR processes are also changing. For example, new technology solutions are being implemented in many areas of HR, starting with recruiting and hiring. New IT platforms are used here, which allow to reduce the search time for candidates, using various sources of selection.

Fifth, with regard to personnel training, it is becoming the most important factor in the development and transformation of the company. Kazakhtelecom is trying to apply the best training practices in this area. The company began to work extensively on the use of personnel adaptation processes based on and through gamification.

The corporate culture of the Company is undergoing fundamental changes, the essence of which is to change the performing corporate culture with a fundamentally new entrepreneurial and customer-oriented culture. To this end, the company has developed five key values – customer focus, responsibility, entrepreneurial spirit, digital culture and outstanding solutions, which fit into the acronym CREDO (Client, Responsibility, Enterprisership, Digital Culture, Outstanding decisions).

## **OBTAINED RESULTS (CONCLUSIONS)**

Studying the digital economy and digital transformation of companies makes it relevant to study their impact on the management processes of companies.

The study explored the following questions:

- the concept of the digital economy, indicators and features of its development;
- methodological issues of adapting the management process to the digital transformation of the company in the form of a list and the essence of changing various aspects of management;
- present a model of management change in Kazakhtelecom in the course of its digital transformation.

The study of the transformative impact of the digital economy on the enterprise is expressed through the types of impact, which can be divided into organizational, economic and social. The purposeful influence of the control system on the controlled one can also be carried out in different ways: conditionally constant and conditionally variable.

The content of the influence of the digital economy is associated with changes in the company's business model and with continuous changes in the business processes that ensure the management of the company.

Analysis of changes in a leading telecommunications company showed that its elements were a new strategy and a new digital model of the company, based on customer focus and transition to online working methods. But also the company was forced to rebuild the corporate culture of motivation in the Company, the organizational structure of management.

10 main directions of business development, a change in the organizational structure, a fundamentally new approach to working with clients, the introduction of new indicators for assessing the quality of service have become the main characteristics of changes in the company in the context of its digital transformation.

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## ЦИФРЛЫҚ ЭКОНОМИКАНЫҢ БАСҚАРУ ҮРДІСІНЕ ӘСЕРІ

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### АНДАТПА

*Зерттеудің мақсаты* – компанияның цифрлық трансформациясын тиімді жүзеге асыру және менеджментті жаңа жағдайларға бейімдеу үшін цифрлық экономиканың әсерінен басқару үрдісіндегі өзгерістерді зерттеу.

*Әдістемесі.* Зерттеу әдістемесі әдебиеттер мен дереккөздерді зерттеудің монографиялық әдісін қолдануға, бақылаулар мен статистикалық материалдарды талдауды пайдалана отырып жүйелі және салыстырмалы талдауға негізделген.

Теориялық бөлім әдебиеттік талдаудың нәтижесінде ғылыми дәлелдер арқылы әзірленді және расталды.

*Зерттеудің бірегейлігі / құндылығы.* Жасалған талдау бұл мәселенің нашар зерттелгенін көрсетті. Цифрлық экономика мен басқару үрдісінің өзара әрекеттесу диаграммасы салынды, ол компанияны басқарудағы өзгерістер құрамын анықтауға мүмкіндік берді. Цифрлық экономиканың кәсіпорынға түрлендіруші әсерінің мазмұны атап өтілген, ол үшін цифрлық экономиканың компанияны басқаруға әсер ету схемасы ұсынылған. «Қазақтелеком» ірі қазақстандық телекоммуникациялық компаниясында бизнестің цифрлық трансформациясын талдау персоналды басқару, корпоративтік мәдениетті қалыптастыру, клиенттермен жұмыс істеу жүйесі және басқарудың ұйымдық құрылымы саласында енгізілуі тиіс өзгерістерді анықтады. Компанияның бүкіл басқару жүйесінің дизайнын анықтайтын компанияның цифрлық моделі тәуелді болатын компанияның бизнес-процестерін цифрландыруға ерекше назар аударылады.

*Зерттеу нәтижелері:* цифрлық экономиканың басқару процестеріне әсер ету әдіснамасы бойынша кейбір ережелер жүйелендірілді және әзірленді, «Қазақтелеком» телекоммуникация компаниясының бизнесі мен менеджментінің цифрлық трансформациясына талдау жүргізілді. Олардың ішінен басқару үрдісін сандық өзгерістерге бейімдеу бойынша ұсыныстар берілді.

*Түйін сөздер:* цифрлық экономика, басқару үрдісі, цифрлық трансформация, цифрлық стратегия, цифрлық модель.

## ВЛИЯНИЕ ЦИФРОВОЙ ЭКОНОМИКИ НА ПРОЦЕССЫ УПРАВЛЕНИЯ

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### АННОТАЦИЯ

*Цель исследования* – исследование изменений процессов управления под влиянием цифровой экономики для эффективного проведения цифровой трансформации компании и адаптации управления к новым условиям.

*Методология.* Методология и методика исследования основана на использовании монографического метода изучения литературы и источников, системного и сравнительного анализа с использованием наблюдений и анализа статистических материалов.

Теория была разработана и подтверждена с использованием научных данных, полученных на основе данных, полученных после анализа литературы.

*Оригинальность / ценность исследования.* В статье проведен анализ литературы по данной теме, который показал, что проблема малоизучена. Построена схема взаимодействия цифровой экономики и процессов управления, которая позволила выявить состав изменений в управлении компанией. Освещено содержание трансформирующего воздействия цифровой экономики на предприятие, для чего предложена схема воздействия цифровой экономики на управление компанией. Анализ цифровой трансформации бизнеса в крупнейшей казахстанской телекоммуникационной компании «Казахтелеком» выявил изменения, которые необходимо внести в области управления персоналом, формирования корпоративной культуры, системы работы с клиентами и организационной структуры управления. Особое внимание уделено цифровизации бизнес-процессов компании, от чего зависит цифровая модель компании, определяющая построение всей системы управления компанией.

*Результаты исследования.* Систематизированы и разработаны некоторые положения о методологии влияния цифровой экономики на процессы управления, проведен анализ цифровой трансформации

бизнеса и управления телекоммуникационной компании «Казакхтелеком», из чего даны рекомендации по адаптации процессов управления к цифровым изменениям.

*Ключевые слова:* Цифровая экономика, процессы управления, цифровая трансформация, цифровая стратегия, цифровая модель.

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#### CANVAS PROGRAM ROLE IN STUDENTS' ACHIEVEMENT: TECHNOLOGY ACCEPTANCE AND ACADEMIC RESISTANCE MODELS (ON AN EXAMPLE OF NARXOZ UNIVERSITY)

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#### ABSTRACT

*The purpose of the study* is to explore how Technology Acceptance (TAM) and Academic resistance (ARM) Models are working for Moodle and Canvas adoption at Narxoz University.

*Methodology.* The methodological basis of the study is an interview of 9 teachers. The interview focused on the teachers' perceptions and experience of using Moodle and Canvas platform. This study hypothesized TAM and ARM application for Canvas use.

The questions aimed to explore how TAM and ARM could explain the teachers' practice in Moodle and Canvas platform. Then data collected through interviews submitted to Atlasti. Any interest in using Canvas identified by Thematic analysis.

*The originality / value of the research.* The easy use of TAM is not properly working for Canvas. The contribution of this study to existing literature will be that no outputs of how TAM and ARM are working related to Canvas platform at Narxoz University.

*Findings.* In overall, most teachers are satisfied with quality of Canvas with some following suggestions for improvements:

- The use of Canvas by teachers related to ARM cognitive and emotional attitudes are different.
- The course design has the same structure. There is no any other imagination related to course design. Some functions of Canvas are obviously unclear for teachers.
- Canvas should help monitor students at risk for support. From this point of view, PLA (predictive learning analytics) system should work to monitor students' performance.