

# MANAGING BUSINESS PROCESSES OF AN ORGANIZATION IN THE DIGITAL ECONOMY AND THEIR TRANSFORMATION

ZHAO JINGHAN.<sup>1\*</sup>

DBA, China

DOSZHAN R.<sup>1</sup>

PhD, associate professor

<sup>1</sup>Al Farabi Kazakh National University, Almaty, Republic of Kazakhstan

**ABSTRACT.** The article discusses current issues of managing an organization's business processes in the digital economy, as well as their transformation under the influence of digital technologies. The purpose of the research is to study approaches to assessing the effectiveness of digital transformation, to determine its nature and essence at a theoretical level, as well as to conduct an econometric analysis of the contribution of digital changes to improving company efficiency.

The research methodology includes deduction and induction in analyzing the activities of companies implementing digital transformation, as well as the use of analytical methods and regression analysis. In the course of the work, existing approaches to defining digital transformation and evaluating its effectiveness were studied. Based on a regression analysis of the largest companies of the pre-digital era, the hypothesis of a significant impact of digital transformation on short-term profitability was refuted, which allowed us to conclude about its strategic nature and long-term effects.

The originality and value of the research lies in the development of the theoretical foundations for assessing the digital transformation of business, which contributes to the improvement of crisis management and determines the directions of further scientific research in this area. The results obtained allow us to take a fresh look at the processes of digital transformation and their impact on business efficiency.

**KEYWORDS:** digital transformation, business processes, digital economy, company efficiency, econometric analysis, strategic management, crisis management.

## ЦИФРЛЫҚ ЭКОНОМИКАДАҒЫ ҰЙЫМНЫҢ БИЗНЕС- ПРОЦЕСТЕРІН БАСҚАРУ ЖӘНЕ ОЛАРДЫ ТРАНСФОРМАЦИЯЛАУ

ЧЖАО ЦЗИНХАНЬ<sup>1\*</sup>

докторант, ҚХР

ДОСЖАН Р.<sup>1</sup>

экономика ғылымдарының докторы, доцент

<sup>1</sup>Әл-Фараби атындағы ҚазҰУ, Алматы қ., Қазақстан Республикасы

**АНДАТПА.** Мақалада цифрлық экономика жағдайында ұйымның бизнес-процестерін басқарудың өзекті мәселелері, сондай-ақ олардың цифрлық технологиялардың әсерінен өзгеруі қарастырылады. Зерттеудің мақсаты-цифрлық трансформацияның тиімділігін бағалау тәсілдерін зерттеу, оның табиғаты мен мәнін теориялық деңгейде анықтау, сондай-ақ компанияның тиімділігін арттыруға цифрлық өзгерістердің қосқан үлесіне экономикалық талдау жүргізу.

Зерттеу әдістемесі цифрлық трансформацияны жүзеге асыратын компаниялардың қызметін талдау кезінде дедукция мен индукцияны, сондай-ақ аналитикалық әдістер мен регрессиялық талдауды қолдануды қамтиды. Жұмыс барысында цифрлық трансформацияны анықтау мен оның тиімділігін бағалаудың қолданыстағы тәсілдері зерделенді. Цифрлық дәуірге дейінгі ірі компаниялардың регрессиялық талдауы негізінде Цифрлық трансформацияның қысқа мерзімді кірістілікке айтарлықтай әсері туралы гипотеза жоққа шығарылды, бұл оның стратегиялық сипаты мен ұзақ мерзімді әсерлері туралы қорытынды жасауға мүмкіндік берді.

Зерттеудің өзіндік ерекшелігі мен құндылығы Бизнесінің цифрлық трансформациясын бағалаудың теориялық негіздерін дамытуда жатыр, бұл дағдарысты басқаруды жетілдіруге ықпал етеді және осы саладағы одан әрі ғылыми әзірлемелердің бағыттарын анықтайды. Нәтижелер цифрлық трансформация процестеріне және олардың бизнес тиімділігіне әсеріне жаңа көзқараспен қарауға мүмкіндік береді.

**ТҮЙІН СӨЗДЕР:** Цифрлық трансформация, бизнес-процестер, цифрлық экономика, компанияның тиімділігі, эконометрикалық талдау, стратегиялық басқару, дағдарысты басқару.

## УПРАВЛЕНИЕ БИЗНЕС-ПРОЦЕССАМИ ОРГАНИЗАЦИИ В УСЛОВИЯХ ЦИФРОВОЙ ЭКОНОМИКИ И ИХ ТРАНСФОРМАЦИЯ

ЧЖАО ЦЗИНХАНЬ<sup>1\*</sup>

Докторант, КНР

ДОСЖАН Р.<sup>1</sup>

доктор экономических наук, доцент

<sup>1</sup>КазНУ имени аль-Фараби, Алматы, Республика Казахстан

**АННОТАЦИЯ.** В статье рассматриваются актуальные вопросы управления бизнес-процессами организации в условиях цифровой экономики, а также их трансформация под влиянием цифровых технологий. Цель исследования заключается в изучении подходов к оценке эффективности цифровой трансформации, определении ее природы и сущности на теоретическом уровне, а также проведении эконометрического анализа вклада цифровых изменений в повышение эффективности компании.

Методология исследования включает дедукцию и индукцию при анализе деятельности компаний, внедряющих цифровую трансформацию, а также использование аналитических методов и регрессионного анализа. В ходе работы были изучены существующие подходы к определению цифровой трансформации и оценке ее эффективности. На основе регрессионного анализа крупнейших компаний доцифровой эпохи была опровергнута гипотеза о значительном влиянии цифровой трансформации на краткосрочную прибыльность, что позволило сделать вывод о ее стратегическом характере и долгосрочных эффектах.

Оригинальность и ценность исследования заключаются в развитии теоретических основ оценки цифровой трансформации бизнеса, что способствует совершенствованию антикризисного управления и определяет направления дальнейших научных разработок в данной области. Полученные результаты позволяют по-новому взглянуть на процессы цифровой трансформации и их влияние на бизнес-эффективность.

**КЛЮЧЕВЫЕ СЛОВА:** Цифровая трансформация, бизнес-процессы, цифровая экономика, эффективность компании, эконометрический анализ, стратегическое управление, антикризисное управление.

**INTRODUCTION.** The economic crisis caused by the coronavirus pandemic has had a significant impact on the economic landscape worldwide. One of the most notable effects has been the acceleration of digital transformation in all sectors of the economy. Against the backdrop of the growing digital markets compared to the overall economy, digital transformation has become an anti-crisis tool during the current crisis. This has led to its widespread adoption by businesses.

However, before the 2020 crisis, digital transformation was not widely used as a strategic development tool and did not always lead to successful outcomes. Despite the abundance of research and literature on digital business transformation, there is still a lack of understanding about the impact of this tool on business performance. The coronavirus pandemic has caused a significant drop in economic activity, leading to a crisis for many businesses in traditional sectors. According to experts from the World Bank, the rate of decline in the overall economy may be over 5% in 2020.

While leaving aside all the other features of the economic crisis, one of the most notable is that it has acted as an accelerator for digitalization and transformation in various sectors of the economy.

Digital markets have grown rapidly despite the decline in the overall economy, with the global volume of e-commerce expected to increase by over 25% in 2020, and the growth in digital services expected to be around 3%. Similar trends can be observed in the dynamics of total market capitalization in economic sectors in 2020. The high-tech sector (with a capitalization exceeding \$70 trillion) became the leader, with a growth rate of 35% compared to 2019. On the other hand, the oil and gas sector came last, with a capitalization of about \$6 trillion and a decrease of 35% from the previous year.

Experts predict that by 2023, companies that have undergone digital transformation will contribute more than half of global GDP. This indicates the significance of digital transformation in improving company efficiency and driving economic growth. Under these circumstances, digital transformation is becoming a key factor in overcoming the current crisis. According to experts, 60% of businesses worldwide are already implementing digitalization strategies. At the same time, in the context of the transition to the digital economy, which started long before the coronavirus pandemic, businesses and governments cannot succeed without undergoing digital transformation. Simply adjusting traditional

management methods and models is not enough. For this reason, many large industrial companies that were created in the pre-digital era faced a crisis within their companies and decided to carry out digital transformation before the economic crisis (for example, GE and Nike).

The key features of digital transformation for companies in the modern economy during the so-called corona crisis are:

1. The coronavirus pandemic-induced economic crisis has led to a widespread adoption of digital technologies in the economy, with the digital transformation of industries becoming the engine for economic recovery. This transformation has become a widespread phenomenon, covering almost all business entities. Before the pandemic, digital transformation was only used by the largest pre-digital industrial companies to adapt to new technological conditions.

2. Companies are now forced to undergo digital transformation due to external factors such as the economic crisis. Previously, digital transformation was often proactive, either as a response to internal factors or to technological changes in the environment.

3. The anti-crisis nature of digital transformation for companies can be seen from the features mentioned above. Even before the coronavirus pandemic, many companies that were not digital had already started to use digital transformation as a way to overcome the challenges caused by their business model not matching the changing technological landscape of the digital economy.

4. The pandemic crisis has shown that archaic business models are not able to withstand such large and rapid changes in the market. Companies that have invested in digitalizing their businesses have been better prepared for the global crisis. For example, Walmart, Target, and Best Buy - all major retailers - have been investing heavily in online trading for several years. As a result, Walmart saw an increase in revenue in the second quarter of 2020. And Best Buy grew by 97% and 242%, respectively. Overall, the online retail sector grew by approximately a third in the second quarter of 2020.

Despite significant experience, digital transformation has not always been successful - crisis factors in a company's growth have not been overcome. According to studies, 70% of all company digital transformations end in failure [1]. While it may seem that the established goals of digital transformation have been achieved, companies are still in a challenging situation. For instance, during the digital transformation period (2012-2019),

GE saw a significant decrease in key financial and economic metrics: capitalization by 45%, profit by 74.5%, and revenue by 35%.

Today, there are no universal criteria for evaluating the success of digital transformation, and no unified scientific approach to carrying out such transformations. This lack of understanding about the essence and nature of digital transformation makes it difficult to assess its impact on a company's performance [2].

This problem is both scientific and practical, and it is one of the most important in this field. If we can solve this problem, we will be able to theoretically justify the tools used in digital transformation, build a process for implementing such transformations that takes into account the interests of all stakeholders, and define criteria for assessing effectiveness. Thus, one of the main challenges in the development of methodologies and practices for digital transformation of companies is determining approaches to evaluating its effectiveness. In other words, it is necessary to define indicators and functional areas that these indicators relate to, reflecting the impact of digital transformation on a company's performance.

#### **MATERIAL AND METHODS OF RESEARCH.**

All existing research in the field of digital transformation of companies mainly focuses on the practical implementation of this process. Therefore, the scientific development of the essence of digital transformation goes from practice to theory. Most of the research focuses on describing the practical aspects of digital transformation in various industries and sectors of the economy.

The following key areas of research can be identified:

1. Formation of practical recommendations for conducting digital transformation based on an analysis of successes and failures [3; 4; 5].

2. Theoretical analysis of the impact of digital transformation on business processes and strategies.

3. Investigation of the role of technology in digital transformation. Analysis of the nature of digital transformation as a complex process, considering all its elements [4; 6; 8].

Considering the process of digital transformation as a radical change in the business model [7].

The study of the essence and approaches to forming a digital transformation strategy [8]. The analysis shows that there is no consensus on the nature and essence of a company's digital transformation. However, the methodology for implementing it has been developed by the scientific

**Table. 1. Approaches to evaluating the effectiveness of digital transformation of companies**

<b>Approach, its characteristics</b>
<b>Traditional</b> - measuring the effects of a company’s digital transformation based on traditional (financial and (or) operational) indicators in the paradigm of the non-digital era (Ukko et al., 2019]
<b>Mixed</b> - measuring the effects of a company’s digital transformation based on traditional (maintenance costs, return on investment, return on assets) and digital (customer experience, number of unique and active users of digital services, digital exchange) indicators (Verhoef et al., 2019]

and practical community. One key issue in studying the essence of digital transformation remains, which is of practical importance: evaluating the effectiveness of this transformation and its impact on a company's performance. In other words, does digital transformation affect a company's effectiveness, and if so, how can its impact be measured? This issue has been widely discussed in the scientific literature over the past few years, but there has been no consensus reached. In most cases, authors agree that the impact of digital transformation in real terms is difficult to measure and its direct influence on financial performance is insignificant. Among these studies, two areas are particularly notable: (1) developing a set of indicators to reflect the effects of digital transformation, and (2) conducting practical research on how digital transformation impacts company efficiency. Within the framework of the first approach, two methods have been developed to assess the effectiveness of digital transformation - traditional and mixed. These methods differ from each other in terms of the indicators used. (Table 1)

The first method uses traditional indicators that are characteristic of industrial companies from the pre-digital era. These indicators reflect the efficiency of production processes (labor productivity, cost reduction) and the financial performance of companies (profitability, capitalization) and are used to assess the effects of digital transformation.

The second method combines traditional indicators with modern digital indicators. This approach allows for a more comprehensive assessment of the impact of digital transformation on a company's performance.

In general, it can be argued that the most commonly used indicators reflecting the effects of a company's digital transformation are financial, such as growth in profitability and capitalization, since the ultimate goal of new business models generated by digital transformation is to generate revenue and profit and increase the value for investors. At the same time, intermediate results of digital transformation are monitored using indicators of operational process efficiency. At the same time, the emphasis on financial indicators is also influenced by the existing paradigm of the efficiency and effectiveness theory [11], which is based on traditional approaches, including the accounting system established for companies in the pre-digital era. Therefore, a distinguishing feature of traditional pre-digital companies undergoing digital transformation is their focus on financial growth. In contrast, new digital companies aim to increase other indicators of growth (number of users, sales volume), including digital ones, rather than profitability. In the second area, there are also studies that provide conflicting conclusions about the impact of digital transformation on company performance. On the one hand, some studies

**Tabel. 2. Information about the objects of the study**

Industry/sector	Company	Timeframe for digital transformation
Automotive	Volkswagen	2019-2023
	Ford	2015-present
Energy	BP	2016-present
	Shell	2013-present
	Total	2019-present
	ExxonMobil	2019-2025
	Sinopec	2012-2030
	Rosseti	2019-2030
Food	Coca-cola	2018-present
Intersectoral	GE	2013-present
Consumer goods	P&G	2012-present
Sporting goods	Nike	2012-present
Entertainment industry	Disney	2011-present

suggest that there is no positive impact of digital transformation processes on company efficiency. For example, one study based on an analysis of the profitability of public companies in the United States (using the S&P 500 index) found that companies engaged in digital transformation have lower profitability compared to companies that do not undergo such transformation, as measured by the position of the head of digital transformation. On the other hand, there are studies that suggest the significant impact of digital transformation on company efficiency. For instance, according to Westerman et al. (2017), companies that actively implement digital transformation see an increase in income from physical assets by 9%, a 26% increase in net profit, and a 12% increase in market value [12].

One of the challenges in studying the processes of digital transformation in companies is the lack of available practical data on results, as digital transformation is a relatively new tool that is not yet widely used. As more economies around the world have engaged in digital transformation, more businesses have faced the need for such a transformation. For our research purposes, we have used information from publicly available companies, financial data, and information about digital transformations that can be found online. This study analyzes thirteen large international companies, including Russian ones, from various industries and sectors of the economy that have already started implementing digital transformation strategies (as announced in the public domain) (Table 2). These companies represent a unique type of pre-digital businesses, having been created in the context of technological revolutions prior to the digital age. These companies represent a type of company that existed in the pre-digital era. They were created during technological revolutions that preceded the digital revolution. This is significant for our research because it allows us to understand how these companies functioned in a different technological environment.

The methodological foundation of this study is built upon both general scientific techniques (theoretical analysis, synthesis, and generalization) as well as econometric methods, specifically including regression analysis.

Let us formulate the hypothesis for this study, which will be tested through regression analysis: The implementation of digital transformation positively impacts the effectiveness of a company's operations, as measured by traditional metrics calculated within the existing financial and accounting reporting framework.

**RESULTS AND THEIR DISCUSSION.** An analysis of existing approaches to understanding the essence of digital transformation has shown that there is no consensus, but it is possible to identify some basic characteristics that best describe this phenomenon. This knowledge is essential for studying the effects of digital transformation.

To understand the essence of a company's digital transformation, it is important to answer two fundamental questions: what lies at the heart of this transformation, and what are the temporal and managerial aspects of digital transformation? Why does the digital transformation of a company affect its business model? This is because the business model represents the core of a company's operations, which ensures its competitiveness in the long term. This becomes clear when we consider the main components of the business model, as outlined by Osterwalder and Pigneur [15] and Schick and Frankenberger [16]. These components provide answers to four fundamental questions for a company, ensuring its sustainability:

Who is the business for? The target market, or customer, is at the heart of the business model.

What is the business offering? Value proposition - the key activities.

How does the business create its offerings? Value chain, distribution channels, and key resources and suppliers.

How does the company generate revenue? The mechanism for generating income and its flows, including cost structure. The last element is crucial from the company's perspective, as it ensures the financial viability of all business operations and answers the central question of the company: how it creates value for stakeholders, including shareholders. That is why, intuitively perhaps, the measurement of digital transformation effectiveness is based on financial indicators, such as the company's capitalization.

Therefore, the digital transformation of a company involves significant changes to its business model.

1. A shift from the linear value chain typical of the pre-digital era to a decentralized platform built on the network effect, thanks to increased customer and supplier involvement. Value is created by connecting consumers with producers.

2. Customer-centricity and customer orientation - a deeper understanding of customer needs leads to products (services) becoming more personalized and individualized through the use of digital technologies.

3. The formation of a digital business ecosystem

ensures "seamless" interaction between all stakeholders based on digital services. Currently, there is a lack of consensus among scientists regarding the nature of digital transformation in terms of its time and management aspects. This is primarily due to the varying approaches used to measure the effectiveness of digital transformations. Most studies rely on financial and operational indicators that are inherently short-term, which suggests that digital transformation is not seen as a long-term process with delayed positive effects. Therefore, from a practical perspective, these effects have not been fully evaluated.

However, there are some objections to this point of view that can be raised. These objections are based on the company's current digital transformation strategy. On the one hand, digital transformation processes relate to changing the core business model and strategic development of the company. Therefore, all changes caused by digital transformation have a strategic nature and their consequences are seen in the long term.

This does not mean that there are no operational efficiency changes, including positive financial indicators. Such changes do occur, but as practice shows, they are not always sustainable, which can lead to erroneous conclusions about the success of the current transformation. On the other hand, considering the digital nature of the transformation being studied, the positive effects of its implementation should also be digital. However, in this case, we face institutional barriers due to the inconsistency of existing institutions formed during the pre-digital era with the new business conditions brought about by the technological digital revolution.

This topic has been explored in depth in the works of Peres (2013) [17] and Kochetkov (2020) [18]. One of the main challenges is that the current accounting system in companies, including financial accounting, was designed for industrial companies from the pre-digital era and cannot accommodate digital effects. Let's take a look at the main elements of the company's digital transformation process. At the heart of the company's digital transformation lies the formation of an entirely new business model that corresponds to the realities of the digital world and creates its own digital ecosystem. This digital business model is platform-based, a two-sided market model (Tyrol, 2020) [13], with certain economic benefits (significant reduction in transaction costs, lower marginal transformation costs, differentiated pricing on different sides of the

platform, and absence of negative economies of scale due to the network effect (Kochetkov, 2019) [14]. In turn, this platform-based business model relies on digital and IT technologies, including internet technologies, which enable effective channels of communication with all parties involved - consumers and suppliers - to be established. These changes allow us to move away from the traditional, linear value chain towards a decentralized one. The next aspect of digital transformation's nature is its anti-crisis nature, which is due to several reasons:

In most cases, digital transformation is implemented when external, objective factors of a technological crisis occur. These crises are caused by changes in the external environment resulting from technological revolutions. Unlike crises of subjective nature, it is impossible to prevent these technological crises. Therefore, the goal of crisis management in such cases is to use the crisis factors for growth and development.

Digital transformation acts as a new, anti-crisis tool. It is similar in nature to the traditional restructuring tool and is used in response to crises caused by technological factors. The main goal of digital transformation is to ensure the survival of a business in the new technological environment. This is achieved through crisis management, which is essential for business survival [19].

The analysis of the main reasons for the digital transformation of companies, using our sample as an example, has shown that they are mainly due to environmental factors. The top three main causes of digital transformation include: digital challenges caused by the development of the digital economy, competitive pressure, and the financial crisis. Despite the close similarities between digital transformation and traditional anti-crisis restructuring tools, there are some distinct differences between the two. The key differences lie in the subject, purpose, and possibilities of using digital technologies.

Digital transformation is a response to external challenges, so it is not possible to transform any one element of a business model without transforming the whole model. This requires the formation of a completely new digital business model that can only be achieved by changing all elements of the original model. Such a radical change leads to a transformation of other structural elements, such as assets, capital, and ownership structure.

The assessment of the impact of digital transformation on companies in this study is limited by the following factors: 1. The main goals of digital transformation are believed to be increasing the

**Table 3. Regression analysis of the impact of digital transformation on the company's performance indicators**

Regression parameter/dependent variable		Revenue		Operating profit		Net profit	
Type of regression (random-effects)		GLS regression					
Group variable		year		year		year	
R <sup>2</sup> (R-sq)	Within	0.1147		0.0546		0.0726	
	Between	0.253		0.4733		0.472	
	Overall	0.1011		0.1076		0.1232	
corr (u <sub>i</sub> , X) = 0 (assumed) <sup>2</sup>							
Number of objects		130		120		130	
Number of groups		10		10		10	
Objects per group	Min	13		12		13	
	Avg	13.0		12.0		13.0	
	Max	13		13		13	
Wald chi2		14.4		12.54		16.19	
P-value of the hypothesis that the model is adequate (Prob> chi-2) (fashion adequacy test)		0.0001		0.0004		0.0001	
Transformation	Estimated coefficient (coef.)c (millions of dollars)	-85634.02		-9776.66		-6580.899	
	Standard error (Std. Err.)	22564.76		2760.673		1635.718	
	Z-statistic (z)d	-3.80		-3.54		-4.02	
	P-value (P>z)	0.0		0.0		0.0	
	95% confidence interval (95% Conf. Interval)	-129860.1	-41407.9	-15187.48	-4365.84	-9786.848	-3374.951

efficiency of a company's operations, which is measured by a set of traditional metrics. These metrics are calculated based on the company's existing accounting system and include revenue, operating profit, and net profit. These last two metrics are often considered the most important for evaluating a company's performance [11], [20].

The logic behind using these metrics is that they allow us to evaluate all aspects of a company's activity (operational, financial, and investment) and take into account the impact of external factors. Revenue, for example, is the only metric that reflects the effectiveness of a business's interaction with the outside world as a primary factor affecting profitability (even though revenue is not traditionally considered a measure of business efficiency). Operating profit reflects the efficiency of operational activities, while net profit reflects all three types of company activities. However, the proposed indicators are short-term and do not capture strategic changes. Their calculation is based

on the accounting model of financial and economic analysis, as described by Kochetkov (2020) [18].

Instead, indicators based on the cost model of financial analysis, such as the capitalization of a company or its fundamental value, are usually used. These indicators are free from some of the disadvantages of "accounting"-based indicators. However, when constructing a regression model to assess the impact of digital transformation on a company's capitalization, we encountered a statistical insignificance in the coefficient of determination, which prevents us from concluding about a positive or negative impact of digital transformation on capitalization. It has previously been noted that there is currently no consensus among scientists on the impact of digital transformation on a company's economic activity due to the difficulty in determining a universal indicator of digital transformation that reflects the corresponding effects. In some cases, researchers take into account indicators such as R&D spending,

traditional financial and economic metrics, or the presence of a CDO (Chief Digital Officer) when conducting research. However, specific indicators of digital transformation's effectiveness have not been developed in sufficient numbers or made public, which imposes significant limitations on the study.

The main basis for this study are companies whose information about digital transformation and accounting records are publicly available. 3. Business efficiency is influenced by many factors that are difficult to fully identify and quantify, so it is not always possible to accurately estimate the contribution of digital transformation to improved efficiency.

To conduct our research, we built regression models to measure the impact of the digital transformation process (the independent variable) on a company's performance indicator (the dependent variable), assuming that other factors remain constant (assuming). We used the generalized least squares method to account for random effects (regression type) in each performance indicator. Due to the numerous external factors that cannot be included in the model, we did not consider them in our analysis. The model specification is as follows:

$$KPI = \beta_0 + \beta_1 \times \text{transformation} + \varepsilon_k, (1)$$

Where KPI is the corresponding indicator of a company's performance (the dependent variable),  $\beta_0$  is a constant, and  $\beta_1$  is the coefficient for the independent variable of digital transformation. This coefficient shows the effect of digital transformation on the KPI. Transformation is an independent variable that takes the value of 0 if digital transformation has not occurred, and 1 if it has.  $\varepsilon$  is a variable of random error.

The assumption is that the correlation  $u$  (model errors with random effects) with the tested (dependent) variable (in our case, the efficiency indicator) is 0. This prerequisite is necessary to build a model with random effects.

bP-value is the value at which the research hypothesis is rejected. There are usually three levels used in econometrics: 10%, 5% and 1%. In our cases, the P-value does not exceed 1%, which is less than all levels, which means that the hypothesis is not rejected, therefore, the model is adequate.

The passed coefficient shows the influence of a factor (an independent variable, in our case, digital transformation) on the value of a dependent variable (in our case, an efficiency indicator).

the statistical value for a given number of observations, which is taken from a special reference book to determine the P-value.

The regression analysis showed the following

results: the implementation of digital transformation negatively affects such indicators of the company's performance as revenue, operating profit and net profit. This is confirmed by the negative values of the estimated coefficient (Table 3). The process of digital transformation has led to a reduction in the value of dependent variables reflecting the company's performance: revenue during the analyzed period decreased by an average of \$ 85.6 billion, operating profit by \$ 10 billion, net profit by \$6.5 billion.

The results of the regression analysis, which revealed the negative impact of digital transformation on company performance, lead us to the following assumptions:

1. Digital transformation is not the primary factor in improving operational efficiency in the short term. Performance is determined by various factors, including internal and external factors. While it is challenging to formalize these factors within a regression model, they should still be considered. In particular, market conditions play a significant role, such as energy prices in the case of energy companies. These factors have a greater impact on revenue and profits than technological changes within the organization.

2. Digital transformation may be a tool for enhancing business efficiency in the long run. However, when implementing it, it's important to consider a certain time delay, which prevents obtaining high returns on investment in the short term and reflects the effectiveness of transformation on short-term economic indicators. Therefore, this study suggests that evaluating the success of a company's digital transformation cannot be determined by short-term financial and economic metrics. Management that has embarked on digital transformation should understand that aiming for immediate financial gains can lead to a crisis, as there is a delay between introducing digital technologies and seeing their full impact.

3. One of the main reasons for the negative impact of digital transformation on company efficiency is the lack of their own financial resources. This has led to large-scale borrowing, which has created a high level of dependence on external capital. As a result, companies are more vulnerable to fluctuations in financial results due to external factors such as the crisis. The use of financial leverage can amplify these effects, as negative developments in the external environment can lead to a significant decrease in net profit relative to revenue. The high dependence on capital and the presence of net losses indicate the crisis state of most companies

studied. This suggests that the poor financial health of these companies may not allow for an effective digital transformation. If borrowed funds are used as a source of financing, high financial risks may arise due to negative changes in the external environment and the risks associated with ineffective changes in the business model during the digital transformation. The high speed of technological change in the external environment may also contribute to these risks. A change in the business model may not keep up with technological transformations in the economy, or it may shorten the life span of the transformed business. It follows from this that the main risk of digital transformation is the impossibility of considering it as a universal solution for ensuring sustainability in the long term. This assumption is supported by practical research. For example, according to a study by McKinsey, companies that implemented digital transformation in conjunction with a full set of financial recovery measures achieved almost twice the return on equity compared to companies that did not take these measures. Therefore, it is important to note that digital transformation must be accompanied by traditional financial recovery strategies in order to achieve long-term success.

4. The current traditional accounting system, which was established in the pre-digital era, and on which external investors and other stakeholders base their evaluation of a company's performance, is not able to capture the digital changes and impacts of a company's transformation. The results of the study on the relationship between digital transformation and company performance confirm previous research by Li et al. (2018) [21] and Ukko et al. (2019) [20], which found that digital transformation does not directly impact financial performance in the short term, but rather affects operational efficiency (productivity). These researchers emphasize the importance of managerial skills and modernization of business processes as key drivers of digital transformation, but these factors are difficult to quantify in accounting terms [22]. The authors emphasize the long-term focus of digital transformation as a way to smooth out short-term fluctuations in financial indicators and achieve sustainable growth.

**CONCLUSION.** Let's summarize the main points. The economic crisis caused by the coronavirus pandemic and the new technological digital revolution, which began several years ago, have made the digital transformation of companies a crucial aspect of their development. Almost all business entities have undergone this

transformation in order to remain competitive. This massive digital transformation has resulted in a plethora of practical literature about the experience of this transformation. However, there is a lack of a theoretical understanding of this process, as the theoretical knowledge of digital transformation lags behind practice. This lack of a clear theory has led to several scientific, theoretical, and practical problems, which have not yet been resolved. For instance, practice shows that digital transformation is not always successful for companies. Often, companies in crisis situations, after implementing the corresponding transformations, continue to remain in crisis, which leads to incorrect conclusions about the effectiveness of digital transformation. Therefore, an important direction for further development of the theory of company digital transformation is the formation of a theoretical basis for assessing its effectiveness and the theoretical justification for the impact of digital transformation on business performance. A review of scientific and practical literature shows that there is no consensus on these issues. The research conducted using regression analysis of a sample of the largest companies has not allowed us to make a definitive statement about the positive direct impact of digital transformation on a company's financial performance in the short term with a high degree of certainty. This process takes time, and therefore, the results of digital transformation can only be seen from a strategic perspective.

One of the main challenges in assessing the effectiveness of digital transformation is adapting existing institutions to the needs and requirements of the digital economy. Currently, the accounting system does not capture digital effects and therefore cannot show their impact on financial performance. In order to draw more reliable conclusions, further research based on accumulated practical data is needed. The main goal of science and practice in digital transformation is to create a new data management system that meets the requirements of the digital economy. This system should be able to provide a universal indicator that reflects the impact of digital transformation.

One of the most significant findings of our research is that digital transformation can be used as an anti-crisis tool for companies. It's important to note that if a company is facing a crisis, its digital transformation should be accompanied by financial recovery, or at the very least, it should not exacerbate the crisis.

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## СВЕДЕНИЯ ОБ АВТОРАХ:

**Чжао Цзинь Хань\*** - докторант Бизнес школы аль-Фараби, Казахский университет имени аль-Фараби, г. Алматы, Республика Казахстан

E-mail: [bing2025@mail.ru](mailto:bing2025@mail.ru)

**Досжан Райгуль** - доктор экономических наук, доцент, Казахский национальный университет им. аль-Фараби, г. Алматы, Республика Казахстан

E-mail: [changshuo@mail.ru](mailto:changshuo@mail.ru)

**Чжао Цзинь Хань\*** - Эл-Фараби бизнес мектебінің докторанты, Эл-Фараби атындағы қазақ ұлттық университеті, Алматы қ., Қазақстан Республикасы

E-mail: [bing2025@mail.ru](mailto:bing2025@mail.ru)

**Досжан Райгуль** - экономика ғылымдарының докторы, доцент, Эл-Фараби атындағы қазақ ұлттық университеті, Алматы қ., Қазақстан Республикасы

E-mail: [changshuo@mail.ru](mailto:changshuo@mail.ru)

**Zhao Jing Han\*** - DBA of Al Farabi business school, Al Farabi Kazakh national university, Almaty, Republic of Kazakhstan

E-mail: [bing2025@mail.ru](mailto:bing2025@mail.ru)

**Doszhan Raigul** - Doctor of Economic Sciences, Associate Professor, Al Farabi Kazakh national university, Almaty, Republic of Kazakhstan

E-mail: [changshuo@mail.ru](mailto:changshuo@mail.ru)