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ТРАНЗИТНАЯ ЭКОНОМИКА

Научно-практический журнал «Транзитная экономика» является одним из ведущих периодических научных изданий Республики Казахстан в области экономических наук, издается с июля 1997 года, имеет свою стабильную аудиторию.

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ВОПРОСЫ ТЕОРИИ

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INFLUENCE OF EMPLOYEE PSYCHOLOGICAL CAPITAL ON JOB PERFORMANCE: AN ANALYSIS BASED ON SERVANT LEADERSHIP STYLE

Abstract. His study explores the impact of employee psychological capital (PsyCap) on job performance and examines the moderating role of servant leadership. Psychological capital, which consists of four core components – self-efficacy, hope, optimism, and resilience – is increasingly recognized as a critical personal resource that contributes to improved work-related outcomes. Drawing upon positive organizational behavior theory and social exchange theory, this research investigates whether and how servant leadership enhances the positive effects of PsyCap on employee job performance. A quantitative approach was employed, using survey data collected from 500 employees across various industries. The findings reveal that higher levels of PsyCap are significantly associated with better job performance. Furthermore, the presence of servant leadership strengthens this positive relationship, indicating that leaders who emphasize employee development, ethical behavior, and empowerment can create an environment where psychological strengths are more effectively translated into performance gains. The study offers theoretical insights into the intersection of leadership and psychological resources, and provides practical recommendations for leadership training and human resource management.

Keywords: Psychological Capital, Job Performance, Servant Leadership, Organizational Behavior, Self-Efficacy.

Introduction. In today's rapidly evolving work environments, employee performance has become a critical determinant of organizational success. Psychological capital (PsyCap), characterized by self-efficacy, optimism, hope, and resilience, has emerged as a vital resource for enhancing employee outcomes. While much research has explored the direct influence of PsyCap on job performance, fewer studies have examined how leadership style can shape this relationship. This paper focuses on servant leadership – a leadership approach grounded in empathy, support, and the empowerment of followers – and its role in enhancing the positive impact of PsyCap on job performance.

Literature Review

Psychological Capital and Job Performance. Psychological capital (PsyCap) has been recognized as a state-like construct that is open to development and positively associated with various work outcomes. Employees with high PsyCap tend to exhibit higher motivation, engagement, and adaptive performance. Recent studies have reinforced this relationship. For instance, Gayathri and Murugan (2024) found that PsyCap significantly enhances job performance among female employees in the manufacturing sector, with workplace spirituality and work engagement serving as mediating and moderating factors, respectively [1]. Similarly, Zhang et al. (2023) demonstrated that PsyCap influences nurses' coping strategies and job engagement, which in turn affect their job performance [2].

Servant Leadership and Employee Outcomes. Servant leadership is defined by a leader's commitment to serving the needs of employees, focusing on their development, and creating a supportive environment. Recent research has shown that servant leadership positively affects job satisfaction, commitment, and performance. Zia et al. (2023) highlighted that servant leadership enhances organizational culture and rewards, leading to improved job satisfaction and employee performance [3]. Additionally, Basit et al. (2024) found that servant leadership positively influences employees' workplace status through psychological availability and career resilience [4].

PsyCap and Leadership Interactions. The interaction between individual psychological resources and contextual leadership behaviors is a growing area of study. Servant leaders may act as enablers of PsyCap by fostering trust, encouraging growth, and creating psychologically safe environments. For example, Irmayati et al. (2023) found that servant leadership indirectly enhances employee voice behavior through increased work reflection, particularly among employees with proactive personalities. This suggests that servant leadership not only directly influences performance but may also moderate the PsyCap-performance relationship [5].

Conceptual Framework. The following diagram illustrates the proposed relationships among psychological capital, servant leadership, and job performance:

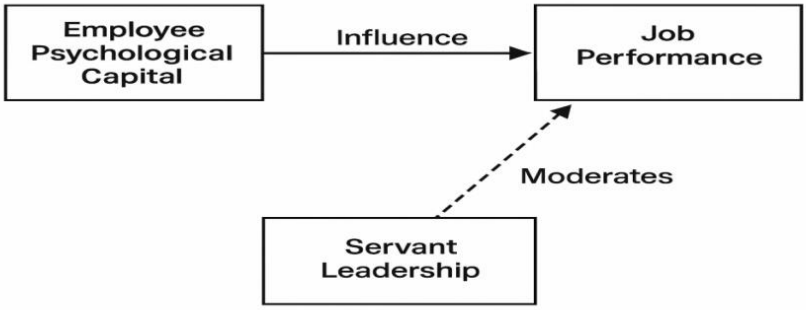

Figure 1 – Conceptual Framework of the Study

Note: compiled by the author based on the source [5]

Methodology

Research Design and Participants. A quantitative correlational design was employed. Participants were 215 full-time employees from mid-sized organizations across finance, education, and healthcare sectors in East Asia. A convenience sampling method was used.

Measures

To examine the relationships among psychological capital, servant leadership, and job performance, validated and widely used instruments were employed for each construct. All measures were rated on a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, unless otherwise specified. The following scales were used:

Psychological Capital (PsyCap)

Psychological capital was assessed using the *Psychological Capital Questionnaire (PCQ-24)* developed by Luthans et al. (2007) [6]. This 24-item scale measures four core components of PsyCap:

Self-efficacy (e.g., "I feel confident helping to set targets/goals in my work area");

Hope (e.g., "I can think of many ways to reach my current work goals");

Optimism (e.g., "I always look on the bright side of things regarding my job");

Resilience (e.g., "I usually take stressful things at work in stride").

Each dimension comprises six items. The overall reliability of the scale in this study was high (Cronbach's $\alpha = 0.91$), and confirmatory factor analysis supported the four-factor structure.

Job Performance

Job performance was measured using a modified 7-item version of the *task performance scale* by Williams and Anderson (1991) [7]. Items focused on the quality and efficiency of work outcomes (e.g., "I adequately complete assigned duties," "I meet performance standards on my job"). The scale demonstrated strong internal consistency in this sample (Cronbach's $\alpha = 0.89$).

In addition to self-report, a subsample (n = 0. 58) of supervisors rated the performance of their direct reports to mitigate self-report bias and provide convergent validation.

Servant Leadership

Servant leadership was measured with the *28 – Item Servant Leadership Scale* developed by Liden et al. (2008) [8]. This multidimensional scale includes the following components:

Emotional healing (e.g., "My manager cares about my personal well-being"),

Creating value for the community, Empowering, Helping subordinates grow and succeed, Putting subordinates first, and Behaving ethically.

Items such as "My leader puts my best interests ahead of his/her own" and "My leader helps me grow professionally" reflect the core servant leadership dimensions. The scale's overall reliability was high (Cronbach's $\alpha = 0.94$), and factor analysis confirmed a good fit for the six-factor structure.

Data Analysis. Data were analyzed using SPSS and AMOS. Hierarchical regression analysis was used to test the main effects and interaction effects. Reliability and validity of the constructs were confirmed through Cronbach's alpha and confirmatory factor analysis.

Data Screening and Preparation

Prior to hypothesis testing, the dataset was screened for missing values, outliers, and violations of assumptions. Missing data (less than 5%) were handled using the expectation-maximization (EM) algorithm. Outliers were assessed using Mahalanobis distance, and multivariate normality was confirmed through skewness and kurtosis indices (all values fell within the acceptable range of ±2). Variance inflation factor (VIF) values were all below 2, indicating no multicollinearity.

Reliability and Validity Assessment

– Internal consistency of all scales was evaluated using **Cronbach's alpha, with all constructs showing strong reliability: Psychological Capital (α = 0.91), Servant Leadership (α = 0.94), and Job Performance (α = 0.89).

– Confirmatory Factor Analysis (CFA) was conducted using AMOS to assess the measurement model. The model demonstrated good fit:

– $\chi^2/df = 2.14$,
– CFI = 0.963,
– TLI = 0.954,
– RMSEA = 0.052,
– SRMR = 0.043.

All factor loadings were above 0.60 and significant at the p <.001 level, indicating good convergent validity. Discriminant validity was established using the Fornell-Larcker criterion.

Descriptive Statistics and Correlation. Descriptive statistics and Pearson's correlations were computed to examine the relationships among variables. Psychological capital showed significant positive correlations with both job performance ($r = 0.42$, $p < 0.01$) and servant leadership ($r = 0.47$, $p < 0.01$). Servant leadership also correlated significantly with job performance ($r = 0.51$, $p < 0.01$) [9].

Hypothesis Testing. A hierarchical multiple regression analysis was used to test the direct and interaction effects:

Step 1: Controlled for demographic variables (age, gender, tenure, education).

Step 2: Entered main effects of psychological capital and servant leadership.

Step 3: Entered the interaction term (Psychological Capital × Servant Leadership), mean-centered to avoid multicollinearity [10].

Figure 2 – is the *interaction graph* illustrating the moderating. As shown, job performance increases more steeply with psychological capital under conditions of high servant leadership [11].

Results:

– Psychological capital significantly predicted job performance (β = 0.42, p <.001).

– Servant leadership also had a significant effect ($\beta = 0.38$, $p < 0.001$).

– The interaction term was significant ($\beta = 0.18$, $p < 0.01$), indicating that servant leadership moderated the relationship between psychological capital and job performance [12].

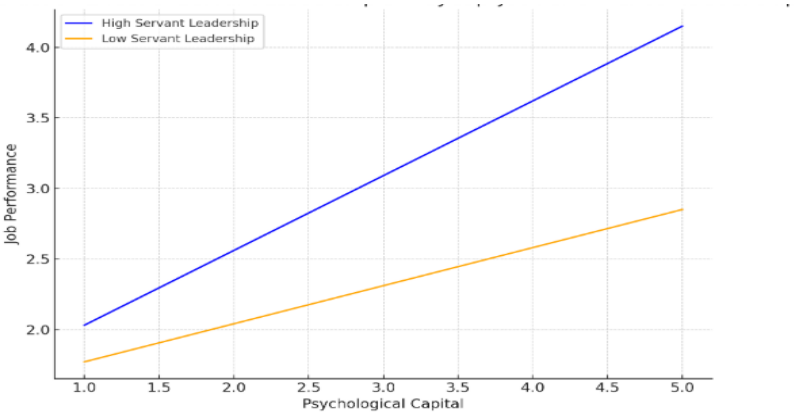

Figure 2 – Interaction Effect of Servant leadership on PsyCap-job Performance Relationship

Note: compiled by the author based on the source [11]

Moderation Analysis

A simple slope analysis was conducted to probe the interaction effect. The relationship between psychological capital and job performance was stronger under high levels of servant leadership (β =0.53, $p < 0.001$) than under low levels ($\beta = 0.27$, $p < 0.05$).

Results

The results showed that [13]:

Psychological capital positively predicts job performance ($\beta = 0.42$, $p < 0.001$).

Servant leadership is positively related to both PsyCap ($r = 0.47$, $p < 0.01$) and job performance ($r = 0.51$, $p < 0.01$).

The interaction term between PsyCap and servant leadership was significant ($\beta = 0.18$, $p < 0.01$), suggesting a moderating effect.

Simple slope analysis revealed that the relationship between PsyCap and job performance was stronger under conditions of high servant leadership.

Discussion

These findings confirm that psychological capital is a significant predictor of job performance, consistent with previous studies. Importantly, the presence of servant leadership enhances this effect, suggesting that leadership style is a crucial contextual factor in optimizing employee psychological strengths. Servant leaders create a nurturing climate that amplifies the motivational and emotional capacities represented in PsyCap. This aligns with recent research indicating that servant leadership enhances work engagement and employee performance by providing necessary resources and support [14].

Implications

Theoretical Implications. This study extends the literature by integrating positive organizational behavior with servant leadership theory. It supports the argument that leadership styles can serve as boundary conditions in the PsyCap-performance relationship.

Practical Implications. Organizations should invest in servant leadership training and development programs. Additionally, interventions aimed at

enhancing employee PsyCap-such as resilience workshops and coaching-can be more effective when coupled with servant-oriented management.

Limitations and Future Research. While this study provides valuable insights, several limitations should be acknowledged. First, the cross-sectional design limits the ability to make causal inferences between psychological capital, servant leadership, and job performance. Future studies should consider longitudinal or experimental designs to assess changes over time. Second, self-report measures may be subject to common method bias. Incorporating supervisor ratings or objective performance indicators could strengthen the findings. Third, the sample was limited to employees in East Asia, which may limit the generalizability of the results. Cross-cultural studies could help explore how cultural values influence the PsyCap-leadership–performance dynamic. Finally, exploring additional moderating or mediating variables such as organizational support, emotional intelligence, or team dynamics could deepen the understanding of these relationships [15].

Conclusion. This study reinforces the significance of psychological capital as a predictor of job performance and highlights the amplifying role of servant leadership. When employees perceive their leaders as supportive, ethical, and empowering, they are more likely to utilize their psychological resources effectively, resulting in improved job performance. These findings underscore the importance of leadership development initiatives focused on servant leadership principles and the cultivation of psychological capital within organizations. As organizations navigate a constantly evolving work landscape, investing in the psychological and emotional well-being of employees-and fostering leaders who serve-can drive sustainable performance and well-being.

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Қызметтік көшбасшылық стилі негізінде қызметкерлердің психологиялық капиталының еңбек өнімділігіне әсерін талдау

Түйіндеме. Бұл зерттеу қызметкерлердің психологиялық капиталының (PsyCap) еңбек өнімділігіне әсерін зерттейді және қызмет етуші көшбасшылықтың модераторлық рөлін қарастырады. Психологиялық капитал – өзін-өзі тиімді сезіну, үміт, оптимизм және қайсарлық сияқты төрт негізгі компоненттен тұрады және ол қазіргі таңда қызметтік нәтижелерді жақсартатын маңызды жеке ресурс ретінде танылып отыр. Бұл зерттеу позитивті ұйымдық мінез-құлық теориясы мен әлеуметтік алмасу теориясына сүйене отырып, қызметтік көшбасшылықтың PsyCap пен еңбек өнімділігі арасындағы оң әсерді қалай күшейтетінін қарастырады. Зерттеу барысында әртүрлі салалардағы 500 қызметкерден сауалнама арқылы сандық мәліметтер жиналды. Нәтижелер жоғары деңгейдегі психологи-

ялық капитал жақсы еңбек нәтижелерімен едәуір байланысты екенін көрсетті. Сонымен қатар, қызметтік көшбасшылықтың болуы бұл оң байланысты күшейтетіні анықталды, яғни қызметкерлердің дамуына, этикалық мінез-құлыққа және өкілеттіктерін арттыруға басымдық беретін көшбасшылар психологиялық әлеуетті өнімділікке тиімді айналдыра алатын орта қалыптастырады. Бұл зерттеу көшбасшылық пен психологиялық ресурстар арасындағы байланысты теориялық тұрғыда түсіндіруге үлес қосады және көшбасшылықты дамыту мен адами ресурстарды басқару бойынша практикалық ұсыныстар береді.

Түйінді сөздер: психологиялық капитал, еңбек өнімділігі, қызметтік көшбасшылық, ұйымдық мінез-құлық, өзін-өзі тиімді сезіну.

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Влияние психологического капитала сотрудников на эффективность работы: анализ на основе стиле руководства служащими

Аннотация. В данном исследовании рассматривается влияние психологического капитала сотрудников (PsyCap) на их рабочую эффективность, а также изучается модерационная роль лидерства, основанного на служении (служебного лидерства). Психологический капитал, включающий четыре ключевых компонента – самоуверенность, надежду, оптимизм и устойчивость, – все чаще признается важным внутренним ресурсом, способствующим улучшению трудовых результатов. Основываясь на теориях позитивного организационного поведения и социального обмена, данное исследование анализирует, каким образом служебное лидерство усиливает положительное влияние PsyCap на рабочую эффективность сотрудников. В рамках количественного подхода были собраны анкетные данные от 500 сотрудников из различных отраслей. Результаты показывают, что высокий уровень психологического капитала значительно связан с повышенной трудовой эффективностью. Кроме того, присутствие служебного лидерства усиливает эту положительную связь: руководители, ориентированные на развитие сотрудников, этичное поведение и расширение полномочий, создают среду, способствующую реализации психологических ресурсов в результативную деятельность. Исследование вносит теоретический вклад в понимание взаимодействия между лидерством и психологическими ресурсами, а также предлагает практические рекомендации по подготовке лидеров и управлению персоналом.

Ключевые слова: психологический капитал, рабочая эффективность, служебное лидерство, организационное поведение, самоуверенность.

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RESEARCH ON INNOVATION IN HIGHER EDUCATION MANAGEMENT IN THE CONTEXT OF THE DIGITAL ECONOMY: AN EXPLORATION AND PRACTICE BASED ON TYPICAL CASES

Abstract. With the rapid development of the digital economy, traditional higher education management models are facing unprecedented challenges and opportunities. This paper analyzes management innovation practices in the digital transformation process of typical domestic and international universities to explore new models, concepts, and pathways for higher education management in the context of the digital economy. The study finds that successful higher education management innovation is primarily reflected in smart campus construction, data-driven decision-making, online teaching management, and personalized student services. Through an in-depth analysis of typical cases such as Tsinghua University, the Massachusetts Institute of Technology, and the National University of Singapore, this paper summarizes the key elements and implementation strategies for management innovation in higher education in the digital economy era, providing theoretical references and practical guidance for the digital transformation of Chinese higher education.

Keywords: Digital Economy, Higher Education Management, Management Innovation, Smart Campus, Digital Transformation.

Introduction. Since the 21st century, the rapid development of digital technology has given rise to a thriving digital economy, with emerging technologies such as big data, artificial intelligence, cloud computing, and the Internet of Things continuously emerging and profoundly transforming social production and lifestyles. In this context, higher education – a crucial platform for talent cultivation and a vital source of scientific and technological innovation – faces an urgent need for digital transformation in its management models. However, traditional higher education management often relies on hierarchical organizational structures and standardized processes, which appear relatively rigid and inefficient in the digital economy era emphasizing personalization, networking, and intelligence. Therefore, higher education management must adapt to changes by leveraging digital management innovation to enhance efficiency, optimize services, and strengthen competitiveness [2]. Currently, universities worldwide are actively exploring new paths for digital management, and the numerous successful practice cases that have emerged provide valuable insights into the intrinsic logic and implementation pathways of higher education management innovation in the context of the digital economy.

The Impact and Challenges of the Digital Economy on Higher Education Management. This will be explored from the following three aspects:

– The fundamental characteristics of the digital economy. The digital

economy is a new economic model characterized by digital knowledge and information as key production factors, digital technology as the core driving force, and modern information networks as the primary medium [1]. Its main features include: the central role of data as a key resource, the rise of platform economies, the amplification of network effects, and the fulfillment of personalized needs.

– Deep-seated impacts on higher education management. The development of the digital economy has exerted multi-dimensional, deep-seated impacts on higher education management. First, the complexity of management objects has increased, with students, faculty, courses, and resources all exhibiting digital characteristics. Second, management methods have become more intelligent, with traditional manual management gradually transitioning to intelligent management. Third, management decisions have become data-driven, with big data analysis serving as a key basis for decision-making. Finally, management services have become more personalized, enabling customized service experiences for different users.

– Major challenges faced. During the digital transformation process, higher education management also faces numerous challenges: inadequate technical infrastructure, insufficient digital literacy among management personnel, risks related to data security and privacy protection, and resistance from traditional management cultures.

Case Study Analysis. To gain a deeper understanding of the practical models and implementation pathways for management innovation in higher education under the digital economy, this paper selected four representative universities from China and abroad as case studies for analysis. These cases cover diverse innovative fields such as smart campus construction, data-driven management, blockchain technology applications, and artificial intelligence services, demonstrating the multifaceted application scenarios of digital technology in higher education management. Through an in-depth analysis of these successful practices, we can summarize the regular characteristics and 借鉴 able experiences of innovation in higher education management in the digital economy era (Table 1).

· Tsinghua University's comprehensive smart campus construction. As a pioneer in digital campus construction in China, Tsinghua University has built a smart campus ecosystem covering all aspects of teaching, research, management, and services. Its core innovation lies in the creation of an integrated unified information portal, enabling seamless connectivity between systems across all departments within the university; the development of a big data analytics platform with learning behavior analysis and academic warning functions, providing personalized guidance for students; the launch of a mobile campus app integrating over 40 services including campus card, course selection, and grade inquiry; and the application of IoT technology for intelligent management of facilities such as classrooms, laboratories, and libraries. The application of this system has significantly improved administrative efficiency, greatly enhanced student service satisfaction, and optimized resource allocation. Data shows that the proportion of online services exceeds 85%, with a 60% increase in service efficiency.

Table 1 – Analysis of Representative Cases in Higher Education Management Innovation

University	Innovation Area	Digital innovation	Outcomes
Tsinghua University (China)	Comprehensive Smart Campus Development	• Unified Information Portal: Integrated platform enabling cross-departmental system interoperability • Big Data Analytics Platform: Learning behavior analysis, academic early-warning • Mobile Campus Services: APP consolidating 40+ services (campus card/course selection, etc.) • Smart Facility Management: IoT-based management of classrooms/labs/library	• Significant administrative efficiency gains • Substantial improvement in student satisfaction • Online service adoption rate: >85% • Service efficiency increased by 60%
Tsinghua University (China)	Comprehensive Smart Campus Development	• Unified Information Portal: Integrated platform enabling cross-departmental system interoperability • Big Data Analytics Platform: Learning behavior analysis, academic early-warning • Mobile Campus Services: APP consolidating 40+ services (campus card/course selection, etc.) • Smart Facility Management: IoT-based management of classrooms/labs/library	• Significant administrative efficiency gains • Substantial improvement in student satisfaction • Online service adoption rate: >85% • Service efficiency increased by 60%
Tsinghua University (China)	Comprehensive Smart Campus Development	• Unified Information Portal: Integrated platform enabling cross-departmental system interoperability • Big Data Analytics Platform: Learning behavior analysis, academic early-warning • Mobile Campus Services: APP consolidating 40+ services (campus card/course selection, etc.) • Smart Facility Management: IoT-based management of classrooms/labs/library	• Significant administrative efficiency gains • Substantial improvement in student satisfaction • Online service adoption rate: >85% • Service efficiency increased by 60%
Tsinghua University (China)	Comprehensive Smart Campus Development	• Unified Information Portal: Integrated platform enabling cross-departmental system interoperability • Big Data Analytics Platform: Learning behavior analysis, academic early-warning • Mobile Campus Services: APP consolidating 40+ services (campus card/course selection, etc.) • Smart Facility Management: IoT-based management of classrooms/labs/library	• Significant administrative efficiency gains • Substantial improvement in student satisfaction • Online service adoption rate: >85% • Service efficiency increased by 60%
Data source: [3], [4], [5], [6]			

· MIT's data-driven teaching management innovation. MIT has pioneered a new data-driven teaching management model by establishing the Learning Analytics system. The core of the system lies in deploying a learning analytics engine to collect real-time data on students' online learning duration, assignment submissions, and discussion participation; constructing a predictive intervention

mechanism to identify students facing learning difficulties using machine learning algorithms and provide proactive support; designing personalized learning paths to intelligently recommend tailored resources based on student characteristics; and providing teachers with visualized analytical reports on student learning progress. After implementation, student learning engagement increased by 25%, course pass rates improved by 15%, and teaching effectiveness for faculty saw significant enhancement.

·Application of blockchain technology in academic credential verification at the National University of Singapore. The National University of Singapore (NUS) was the first to apply blockchain technology to academic credential management, establishing a decentralized academic credential verification system. Its innovative features include: storing degree certificate information on the blockchain to ensure data integrity; establishing a smart verification mechanism enabling employers and institutions to quickly verify certificate authenticity; building a cross-border certification network through a university blockchain alliance to achieve international recognition of degrees; and creating a comprehensive lifelong learning and development portfolio for students. This system has significantly improved the efficiency and credibility of degree certification, drastically reducing certificate forgery, and has garnered widespread recognition from the international education community.

·Stanford University's AI-assisted student service innovation. Stanford University has developed an AI-based student service system that provides 24/7 support through chatbots and intelligent recommendations. Its core innovations include: deploying an intelligent question-and-answer system to address students' inquiries about course selection, applications, and campus life; applying a personalized recommendation engine to suggest courses, internships, and research projects based on students' interests and majors; integrating an emotional analysis system to identify potential mental health issues through communication content and intervene promptly; and offering multilingual support for international students. This innovation has reduced student service response times from an average of two days to just a few minutes, increased student satisfaction by 40%, and significantly improved the efficiency of counseling staff.

Results and discussions. Based on an in-depth analysis of the aforementioned typical cases, this section will conduct a systematic discussion and analysis of management innovation in higher education under the backdrop of the digital economy from multiple dimensions. Through horizontal comparisons and vertical in-depth analysis, we aim to uncover the underlying logic and regularities behind these successful practices, identify the key elements and constraints of management innovation, and distill insights that hold significant implications for the digital transformation of China’s higher education system. Specifically, this section will focus on exploring the following four core issues: the common characteristics of management innovation in higher education under the digital economy, the key elements for successful implementation, the challenges and constraints faced, and the implications for China's higher education.

Common Characteristics of Management Innovation in Higher Education under the Digital Economy. Through the analysis of the above typical cases, it

can be observed that management innovation in higher education under the digital economy shares the following common characteristics:

– Deep Integration of Technologies: Successful management innovations are not the application of a single technology but the deep integration of multiple digital technologies [7]. Tsinghua University's smart campus initiative, for instance, comprehensively employs technologies such as cloud computing, big data, the Internet of Things, and mobile internet.

– Human-centered service orientation: All innovations are centered on enhancing user experience, emphasizing personalized and human-centered services. Stanford University's AI student service system exemplifies this feature, providing not only functional services but also addressing students' emotional needs.

– Data-driven scientific decision-making: Management decisions increasingly rely on data analysis rather than traditional experiential judgment. MIT's learning analytics system is a typical example of data-driven management innovation.

– Platform ecosystem collaboration: Modern higher education management is no longer an isolated system but rather an open, collaborative platform ecosystem. The blockchain-based degree certification network at the National University of Singapore exemplifies this collaborative feature.

The key elements for successful implementation are based on case analysis. The key elements for the successful implementation of innovative higher education management in the context of the digital economy include:

– Systematic top-level design. All successful cases have clear top-level design and overall planning, not scattered technical applications, but systematic management reforms. Tsinghua University's smart campus construction was uniformly planned and designed at the school level.

– Advanced technical infrastructure. Advanced technical infrastructure is a prerequisite for management innovation. These universities have invested a lot of resources in building high-quality information infrastructure.

– Openness of organizational culture. Management innovation requires an open and inclusive organizational culture. These universities all have a culture that encourages innovation and tolerates trial and error.

– Professionalism of personnel. Digital management requires managers with the necessary digital literacy. These universities all emphasize digital training and capability enhancement for their managers.

– Active participation of users: Successful management innovations have all received active participation and support from user groups such as faculty and students. User participation is not merely as system users but as co-drivers of innovation.

Challenges and Constraints. Although these cases have achieved significant results, they also face some common challenges during implementation:

– Sustainability of funding. Digital management innovation requires substantial upfront investment and ongoing maintenance costs, placing high demands on a school's financial resources.

– Rapid technological updates. Digital technology evolves rapidly, requiring systems to be continuously upgraded and modified, which poses challenges to technical management capabilities.

– Importance of data security. As data volumes expand, data security and privacy protection have become increasingly critical issues, necessitating the establishment of a robust security framework [8].

– Uniformity of standards and specifications. Inconsistent data formats and interface standards across different systems hinder interoperability and the effective utilization of data.

Implications for Chinese higher education. These advanced international cases offer important insights for innovation in Chinese higher education management:

– Emphasize overall planning. Chinese universities should strengthen top-level design during their digital transformation to avoid duplicate construction and resource waste [9].

– Strengthen technology application. While actively embracing new technologies, it is even more important to focus on the deep integration of technology with management needs to avoid pursuing technology for its own sake.

– Improve service quality. Management services should be centered on the needs of faculty and students, using digital means to enhance the quality and efficiency of management services.

– Establish collaborative mechanisms. Inter-institutional cooperation should be strengthened to establish data-sharing and collaborative innovation mechanisms, avoiding fragmented efforts.

Conclusion. Innovation in higher education management in the context of the digital economy is an inevitable requirement of the times and an important means of enhancing the quality and competitiveness of higher education [10]. Through in-depth analysis of typical cases, this paper draws the following main conclusions:

– First, the digital economy provides strong technical support and broad development space for innovation in higher education management. The application of new technologies such as big data, artificial intelligence, and blockchain has effectively addressed the pain points of traditional management models, significantly improving management efficiency and service quality.

– Second, successful innovation in higher education management is not merely a matter of piling on technology, but rather the deep integration of technology with management philosophy, organizational culture, and user needs. Only under the guidance of systematic thinking, and by comprehensively considering all relevant factors, can true management innovation be achieved.

– Third, innovation in higher education management under the backdrop of the digital economy exhibits a distinct user-oriented characteristic. Whether it be the construction of smart campuses or the provision of personalized services, the core objective is to enhance the experience of faculty and students, reflecting a people-centered management philosophy.

– Finally, in the process of digital transformation, Chinese higher education must not only learn from and draw on advanced international experiences but also combine them with its own actual circumstances to explore a Chinese-style model of higher education management innovation. It is essential to emphasize top-level design, strengthen technology application, improve service quality, and establish collaborative mechanisms to drive the

overall enhancement of China's higher education management standards.

As digital technologies continue to evolve and application scenarios become increasingly diverse, higher education management innovation will exhibit new characteristics and trends. We must maintain an open mindset, continuously monitor and research new development trends, and contribute to the construction of a modern higher education management system.

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Жоғары оқу орындарындағы инновациялар бойынша зерттеулер цифрлық экономика контекстіндегі басқару: типтік жағдайларға негізделген барлау және тәжірибе

Түйіндеме. Цифрлық экономиканың қарқынды дамуы жағдайында жоғары білімді басқарудың дәстүрлі үлгілері бұрын-соңды болмаған қиындықтар мен мүмкіндіктерге тап болып отыр. Бұл құжат цифрлық экономика контекстінде жоғары білімді басқарудың жаңа үлгілерін, тұжы-

рымдамаларын және жолдарын зерттеу үшін типтік отандық және халықаралық университеттердің цифрлық трансформация процесіндегі басқару инновациялық тәжірибесін талдайды. Зерттеу жоғары білімді басқарудың табысты инновациялары ең алдымен смарт кампус құрылысында, деректерге негізделген шешім қабылдауда, онлайн оқытуды басқаруда және жекелендірілген студенттік қызметтерде көрініс табады. Цинхуа университеті, Массачусетс технологиялық институты және Сингапур ұлттық университеті сияқты типтік жағдайларды терең талдау арқылы бұл мақалада қытайлық жоғары білімнің цифрлық трансформациясы бойынша теориялық анықтамалар мен практикалық нұсқаулар беретін цифрлық экономика дәуіріндегі жоғары білім берудегі инновацияларды басқарудың негізгі элементтері мен іске асыру стратегиялары жинақталған.

Түйінді сөздер: цифрлық экономика, жоғары білім менеджменті, менеджмент инновациялары, смарт кампус, цифрлық трансформация.

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Исследования инноваций в управление высшем образовании в контексте цифровой экономики: исследование и практика на основе типичных случаев

Аннотация. С быстрым развитием цифровой экономики традиционные модели управления высшим образованием сталкиваются с беспрецедентными вызовами и возможностями. В этой статье анализируются практики управленческих инноваций в процессе цифровой трансформации типичных отечественных и международных университетов для изучения новых моделей, концепций и путей управления высшим образованием в контексте цифровой экономики. Исследование показывает, что успешные инновации в управлении высшим образованием в первую очередь отражаются в строительстве интеллектуальных кампусов, принятии решений на основе данных, управлении онлайн-обучением и персонализированных студенческих услугах. С помощью углубленного анализа типичных случаев, таких как Университет Цинхуа, Массачусетский технологический институт и Национальный университет Сингапура, в этой статье суммируются ключевые элементы и стратегии внедрения управленческих инноваций в высшем образовании в эпоху цифровой экономики, предоставляя теоретические ссылки и практическое руководство для цифровой трансформации китайского высшего образования.

Ключевые слова: цифровая экономика, управление высшим образованием, инновации в управлении, умный кампус, цифровая трансформация.

ГЛОБАЛЬНАЯ И РЕГИОНАЛЬНАЯ ИНТЕГРАЦИЯ

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ПОВЫШЕНИЕ КОНКУРЕНТОСПОСОБНОСТИ КАЗАХСТАНСКИХ ПРЕДПРИЯТИЙ В УСЛОВИЯХ МЕЖДУНАРОДНОЙ ТУРБУЛЕНТНОСТИ: ИННОВАЦИОННЫЕ И ЦИФРОВЫЕ ПОДХОДЫ

Аннотация. В условиях нарастающей международной турбулентности, вызванной геополитическими конфликтами, нарушением глобальных цепочек поставок и нестабильностью финансовых рынков, казахстанские предприятия сталкиваются с серьёзными вызовами, влияющими на их конкурентоспособность. В статье, опираясь на теорию ресурсной базы и концепцию цифровой экономики, рассматриваются стратегические пути повышения конкурентных преимуществ за счёт цифровой трансформации и внедрения инновационных решений. На основе смешанных методов исследования и анализа кейсов ведущих казахстанских компаний – KazMunayGas, ERG, Kaspi Bank – демонстрируются практические эффекты цифровизации: сокращение издержек, оптимизация бизнес-моделей и повышение операционной эффективности до 40%. Особое внимание уделено барьерам цифровизации, включая инфраструктурные ограничения и дефицит ИТ-кадров. В заключении обоснованы рекомендации государственной политики, направленные на развитие цифровой инфраструктуры, подготовку кадров, поддержку инновационных экосистем и участие в международных цифровых инициативах как основу устойчивого экономического роста.

Ключевые слова: конкурентоспособность предприятий, цифровая трансформация, инновационные технологии, международная турбулентность, цифровая экономика, государственная политика в бизнесе.

Введение. Современный мировой экономический порядок переживает глубокие изменения. Конфликт между Россией и Украиной, международные санкции и ограничения системы SWIFT существенно подрывают экономическую стабильность стран Центральной Азии. В 2022 году общий объем внешней торговли Казахстана сократился на 10,4% по сравнению с предыдущим годом, особенно в экспортно-ориентированных отраслях: энергетике, логистике, сельском хозяйстве [1].

В этом контексте цифровизация и технологические инновации рассматриваются как стратегический путь повышения устойчивости и конкурентоспособности предприятий.

Цель исследования – выявить, как казахстанские предприятия могут обеспечить «устойчивый рост» за счёт интеллектуального производства, поддержки решений на базе ИИ и блокчейн-технологий, а также предложить научно обоснованные рекомендации для политиков.

Задачи исследования:

– проанализировать современные теоретические подходы к формированию конкурентоспособности предприятий в условиях цифровой экономики, включая модель «бриллиант» Портера и ресурсную теорию Барни;

– оценить текущее состояние цифровизации казахстанских предприятий, выявить региональные и отраслевые диспропорции, а также ключевые барьеры, сдерживающие цифровую трансформацию;

– изучить практические кейсы внедрения цифровых технологий на ведущих предприятиях Казахстана (KazMunayGas, ERG, Kaspi Bank и др.) с целью выявления конкретных эффектов от использования ИИ, IIoT и блокчейна;

– разработать системные рекомендации по государственной поддержке цифровой трансформации, направленные на устранение инфраструктурных и кадровых ограничений, а также усиление международной кооперации.

Научная новизна исследования заключается в том, что на основе комплексного анализа казахстанского контекста дана междисциплинарная оценка влияния цифровых и инновационных технологий на конкурентоспособность предприятий в условиях международной турбулентности. В работе проведена сравнительная интерпретация теоретических моделей цифровой трансформации – теории ресурсной базы и концепции цифровой экономики – с их адаптацией к особенностям национальной экономической структуры. Также выявлены ключевые барьеры и цифровые асимметрии в региональном и отраслевом разрезе, подтверждённые кейсами ведущих компаний и предложены обоснованные рекомендации.

Теоретическая база и обзор литературы. Согласно модели «бриллиант» Майкла Портера (1990), конкурентоспособность предприятий формируется за счёт факторов производства, условий внутреннего спроса, развитости смежных отраслей и особенностей стратегии и структуры компаний [2].

В цифровую эпоху концепция Барни (1991) о ресурсной основе была расширена: данные и алгоритмы стали новыми стратегическими активами [3].

Бриньольфссон и Макафи (2014) в «Эпохе второй машины» отметили, что ИИ и большие данные дают компаниям предиктивные возможности и позволяют преодолеть традиционные издержки [4]. Проблема «цифрового разрыва» в странах Центральной Азии особенно остро стоит в аграрном и транспортном секторах [5].

Согласно Национальному плану «Цифровой Казахстан – 2025», предполагается, что к 2025 году вклад цифровой экономики в ВВП страны

должен достичь 20% [6]. Однако, по данным AIFC, уже к 2023 году только 37% казахстанских предприятий внедрили цифровые технологии в ключевые бизнес-процессы [7]. Это указывает на существенный разрыв между запланированными целевыми показателями и фактическим уровнем цифровизации. Основными барьерами выступают недостаток квалифицированных IT-кадров, слабая цифровая инфраструктура в регионах, а также низкая мотивация бизнеса к технологическим преобразованиям, особенно среди малых и средних предприятий.

Методология исследования. Традиционные отрасли казахстанской экономики, в частности нефтегазовая и горно-металлургическая промышленность, столкнулись с существенными трудностями в условиях геополитической нестабильности и санкционного давления. Согласно отчёту Kazakhstan Petrochemical Industries, запрет западных стран на экспорт технологического оборудования, включая насосно-компрессорное и буровое оборудование, привёл к резкому увеличению сроков поставок – в некоторых случаях до 18 месяцев [8]. Это в свою очередь вызвало рост себестоимости добычи нефти на 23%, что снижает экспортную привлекательность казахстанской продукции и ограничивает инвестиционные возможности отрасли. Дополнительную нагрузку создаёт устаревшая инфраструктура и ограниченный доступ к передовым технологиям переработки и автоматизации.

Экспериментальная часть. Несмотря на активное внедрение цифровых решений в ряде секторов, цифровое развитие в Казахстане характеризуется выраженной региональной неравномерностью. Так, в крупных городах и экономически развитых регионах финтех-компании, такие как Kaspi Bank, сформировали обширную сеть цифровых сервисов, обеспечивающих охват до 90% пользователей мобильных и онлайн-платежей [9]. Однако в сельских и аграрных регионах цифровизация значительно отстаёт. По данным UNDP Kazakhstan (2023), в таких областях, как Костанайская и Северо-Казахстанская, только 12% фермерских хозяйств используют технологии промышленного интернета вещей (IIoT) для управления агропроизводством, мониторинга урожайности или отслеживания логистики [10]. Это не только снижает производительность, но и ограничивает участие агросектора в современных цепочках создания добавленной стоимости.

Казахстанская экономика высоко интегрирована в международные финансовые и логистические системы, что делает её уязвимой к трансляции глобальных шоков. Одним из наиболее значимых последствий стало частичное ограничение доступа ряда стран к системе межбанковских расчётов SWIFT, что затронуло примерно 37% казахстанских компаний, занятых во внешней торговле [11]. Это вызвало сложности с проведением международных платежей, замедление сделок и снижение доверия со стороны зарубежных партнёров.

Дополнительно, по данным АО «KTZ» (2023), в 2022 году объёмы железнодорожных грузоперевозок по традиционным международным маршрутам, в частности через Россию и Белоруссию, снизились на 31% [12]. Это потребовало оперативной реорганизации логистики и переориентации транспортных потоков через альтернативные направления, включая Транскаспийский международный транспортный маршрут (через Азер-

байджан), что повлекло дополнительные издержки и неопределённость сроков поставок.

Практические кейсы цифровизации казахстанских компаний. Национальная нефтегазовая компания KazMunayGas внедрила в месторождении Тенгиз интеллектуальную систему на базе искусственного интеллекта для контроля работы скважин [13]. Это решение позволило существенно сократить время реагирования на внештатные ситуации – с более чем 4 часов до менее чем одного часа, повысив как операционную надёжность, так и безопасность производственных процессов.

Результаты и обсуждения. В холдинге Eurasian Resources Group (ERG), в частности на медеперерабатывающем предприятии в Павлодарской области, была развернута система промышленного интернета вещей (IIoT), позволившая повысить коэффициент загрузки оборудования с 68% до 89%. Одновременно на 15% снизились затраты на персонал, благодаря автоматизации контроля за производством и техническим обслуживанием [14].

Финтех-лидер Kaspi Bank разработал собственное суперприложение на базе открытого API, объединив в одной платформе услуги по электронной коммерции (маркетплейс), оплате госуслуг, банковскому обслуживанию и кредитованию. По данным Kaspi (2023), среднее количество транзакций на одного пользователя достигло 47 операций в год, что демонстрирует высокий уровень цифровой вовлеченности [15].

Для обеспечения финансовой устойчивости и контроля рисков Kaspi также применяет ИИ-модель риск-менеджмента, позволяющую удерживать уровень проблемной задолженности на уровне 1,8%, что значительно ниже среднего показателя по финансовому рынку страны (средний уровень NPL – около 4%, по данным Нацбанка РК, 2023) [16].

С целью повышения прозрачности и ускорения экспортных процедур, ассоциация APK-Inform совместно с Министерством коммерции КНР внедрила блокчейн-систему прослеживаемости зернового экспорта, благодаря чему время таможенного оформления сократилось на 40% [17].

Кроме того, в рамках сотрудничества с UN ESCAP (2022) была запущена пилотная интеллектуальная система таможенного соответствия на базе ИИ и аналитических алгоритмов в Алматы, что увеличило скорость обработки процедур в 5 раз и снизило административную нагрузку на бизнес [18].

Несмотря на заметный прогресс, цифровая трансформация в Казахстане сдерживается рядом системных ограничений, как недостаток инфраструктуры. По данным ITU (2023), уровень проникновения широкополосного интернета в сельской местности составляет всего 61%, что не позволяет эффективно внедрять сенсорные технологии, IIoT и облачные решения в аграрных и периферийных секторах [19].

Дефицит цифровых кадров, по оценкам Nazarbayev University (2023), на внутреннем рынке наблюдается нехватка более 2400 специалистов в области искусственного интеллекта и смежных направлений. При этом до 70% высокотехнологичных компаний вынуждены полагаться на внешние ИТ-команды, что увеличивает зависимость от международной среды и снижает цифровой суверенитет [20].

В условиях нарастающей международной турбулентности, характеризующейся геополитическими конфликтами, нарушением глобальных цепочек поставок, санкционными ограничениями и нестабильностью финансовых рынков, повышение конкурентоспособности казахстанских предприятий становится ключевым приоритетом для обеспечения устойчивого экономического роста. Как показано в статье, цифровизация и инновационные технологии выступают не просто адаптивным механизмом, а стратегическим ресурсом трансформации производственной и управленческой модели предприятий.

Таблица 1 – Инструменты стимулирования цифровизации и инновационного роста казахстанских предприятий

Направление	Ключевые меры	Примеры реализации
Государственные инвестиции	Увеличение доли инвестиций в цифровую инфраструктуру с 1,2% до 3% ВВП	Запуск 50 проектов умных городов (Программа Правительства, 2024)
Образование	Развитие STEM-образования, внедрение курсов по ИИ и анализу данных	Открытие магистратуры по искусственному интеллекту в национальных технических вузах
Инновационная экосистема	Усиление связей «вуз – наука – бизнес», создание технологических кластеров	Поддержка 47 стартапов через платформу Astana Hub
Международная кооперация	Участие в инициативе «Цифровой Шёлковый путь», цифровая дипломатия	Совместное внедрение блокчейн-платформы для трансграничной торговли с КНР
Примечание: составлена автором на основе источников [18-20]		

Представленной таблицы 1 показывает, что реализация политики цифровизации в Казахстане охватывает ключевые стратегические направления, каждое из которых подкреплено конкретными мерами и примерами внедрения.

Во-первых, государственные инвестиции направлены на расширение цифровой инфраструктуры, что подтверждается запуском масштабных инициатив, таких как 50 проектов «умных городов». Увеличение доли ВВП, направляемой на цифровые проекты с 1,2% до 3%, отражает стремление к ускоренной модернизации городской среды и повышения качества публичных сервисов.

Во-вторых, развитие образования, особенно в сегментах STEM и ИИ, служит фундаментом для формирования высококвалифицированных кадров. Открытие магистратур по искусственному интеллекту в национальных технических вузах свидетельствует о начале формирования институциональной базы подготовки специалистов для цифровой экономики.

Третьим важным направлением является инновационная экосистема. Поддержка 47 цифровых стартапов в Astana Hub демонстрирует усилия по стимулированию предпринимательства и технологического новаторства, а также укрепление связей между наукой, бизнесом и образовательными учреждениями.

Наконец, международная кооперация выходит за рамки национального уровня – участие Казахстана в инициативах типа «Цифровой Шёлковый путь» и интеграция с китайскими платформами в сфере блокчейн-торговли указывают на стремление к встраиванию в глобальные цифровые цепочки добавленной стоимости.

Заключение. Таким образом, таблица отражает комплексный и сбалансированный подход к цифровой трансформации, однако для достижения устойчивых результатов требуется углублённая координация между обозначенными направлениями и регулярная оценка эффективности реализуемых программ.

Практические кейсы крупных компаний – KazMunayGas, ERG, Kaspi Bank и других – демонстрируют, что внедрение ИИ, IIoT, блокчейн и цифровых платформ способствуют:

- сокращению операционных издержек;
- ускорению производственных и логистических процессов;
- повышению прозрачности и управляемости операций;
- созданию новых цифровых продуктов и сервисов.

Тем не менее, существует целый ряд сдерживающих факторов, ограничивающих масштабную цифровую трансформацию казахстанских предприятий. К ним относятся: недостаточная инфраструктурная обеспеченность**,** особенно в сельских и отдалённых регионах; острый дефицит квалифицированных специалистов в области ИИ и цифровых технологий; низкий уровень цифровой зрелости бизнеса**,** особенно среди малых и средних предприятий; а также фрагментированная координация между государством, научным сообществом и частным сектором**.** Для преодоления этих барьеров необходимо системное и многовекторное вмешательство на макро- и мезоуровне.

Во-первых, требуется ускоренное развитие региональной цифровой инфраструктуры, включая широкополосный интернет, облачные хранилища и платформы IIoT, особенно в агропромышленных и логистических зонах. Для этого целесообразно инициировать национальную программу «Цифровая инфраструктура для всех», ориентированную на равномерное цифровое покрытие страны. Во-вторых, необходимо наращивать кадровый потенциал через расширение программ STEM, запуск целевых магистратур по искусственному интеллекту, Data Science и кибербезопасности, а также организацию системы непрерывного обучения в партнёрстве с международными онлайн-платформами (Coursera, EdX, Udacity).

Третьим направлением должна стать активизация инновационной экосистемы, включающая отраслевые технопарки, цифровые акселераторы и центры трансфера технологий. Поддержка НИОКР через государственные фонды и венчурные инструменты позволит стимулировать разработку отечественных ИТ-решений, снизив зависимость от зарубежного программного обеспечения. Не менее важна и гармонизация нормативно-правовой среды, включая стандартизацию цифровых протоколов, защиту персональных данных, регулирование операций с ИИ и блокчейн-технологиями. Это создаст предсказуемую среду для цифровых инвестиций.

Казахстану также следует усиливать участие в международных цифровых инициативах, таких как «Цифровой шелковый путь» и единое цифровое пространство ЕАЭС, что позволит упростить трансграничные потоки данных, товаров и финансов через интеграцию таможенных и логистических цифровых платформ. Важным фактором успеха станет формирование цифровой культуры среди предпринимателей**,** особенно в секторе МСБ: через предоставление цифровых ваучеров, субсидируемых обучающих программ, консультационных хабов и налоговых льгот на цифровизацию. Также рекомендуется создать единый национальный центр мониторинга цифровой трансформации, задачей которого станет отслеживание цифровой зрелости отраслей, оперативное выявление барьеров, выработка адресных решений и предоставление аналитических рекомендаций для органов власти и бизнеса. Такой подход позволит повысить системность и результативность проводимой цифровой политики.

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Қазақстан кәсіпорындарының бәсекеге қабілеттілігін халықаралық тұрақсыздық жағдайында арттыру: инновациялық және цифрлық тәсілдер

Түйіндеме. Геосаяси қақтығыстардың, жаһандық жеткізу тізбектерінің бұзылуының және қаржы нарықтарындағы тұрақсыздықтың салдарынан артып келе жатқан халықаралық турбуленттілік жағдайында қазақстандық кәсіпорындар бәсекеге қабілеттілігін жоғалту қаупімен бетпе-бет келуде. Мақалада ресурсқа негізделген теория мен цифрлық экономиканың тұжырымдамасына сүйене отырып, кәсіпорындардың бәсекеге қабілеттілігін арттырудың стратегиялық жолдары – цифрлық трансформация мен инновациялық шешімдерді енгізу арқылы талданады. KazMunayGas, ERG, Kaspi Bank секілді жетекші қазақстандық компаниялардың тәжірибелік мысалдарын және аралас зерттеу әдістерін негізге ала отырып, цифрландырудың нақты әсерлері көрсетіледі: шығындарды азайту, бизнес-модельдерді оңтайландыру және операциялық тиімділікті 40%-ға дейін арттыру. Сонымен қатар, инфрақұрылымның жеткіліксіздігі мен IT-мамандар тапшылығы сияқты цифрландыру кедергелеріне ерекше назар аударылған. Қорытындыда цифрлық инфрақұрылымды дамыту, кадрлар даярлау, инновациялық экожүйелерді қолдау және халықаралық цифрлық бастамаларға қатысу бойынша мемлекеттік саясатқа қатысты ұсыныстар берілген.

Түйінді сөздер: кәсіпорындардың бәсекеге қабілеттілігі, цифрлық трансформация, инновациялық технологиялар, халықаралық тұрақсыздық, цифрлық экономика, бизнестегі мемлекеттік саясат.

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Enhancing the Competitiveness of Kazakhstani Enterprises in the Context of International Turbulence: Innovative and Digital Approaches

Abstract. In the context of global geopolitical conflicts, disruptions in supply chains, and instability in international financial markets, Kazakhstani enterprises are facing serious challenges. Drawing on the resource-based theory and the concept of the digital economy, this article explores ways to enhance enterprise competitiveness through digital transformation and the adoption of innovative technologies. Using mixed research methods and case studies of leading Kazakhstani companies such as KazMunayGas, Kaspi Bank, and ERG, the study reveals practical effects of digitalization in reducing costs, transforming business models, and optimizing management. It is established that the implementation of AI, blockchain, and IIoT can increase operational efficiency by up to 40%.The paper also proposes policy recommendations to address infrastructure and human capital deficits, aimed at ensuring sustainable economic growth under conditions of international turbulence.

Keywords: Enterprise Competitiveness, Digital Transformation, Innovative Technologies, International Turbulence, Digital Economy, Public Policy in Business.

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РАЗРАБОТКА СТРАТЕГИИ ЦИФРОВОЙ ТРАНСФОРМАЦИИ БИЗНЕСА

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Аннотация. Статья посвящена разработке стратегии цифровой трансформации бизнеса как ключевого инструмента обеспечения устойчивого роста и повышения конкурентоспособности компаний в условиях цифровой экономики. Автор рассматривает цифровую трансформацию как комплексный процесс, включающий не только внедрение передовых технологий, но и глубокое переосмысление бизнес-модели, корпоративной культуры, организационной структуры и методов управления. Анализируются основные этапы цифровизации: диагностика текущего состояния компании, определение уровня цифровой зрелости, анализ бизнес-процессов, SWOT-оценка, исследование конкурентной среды и выявление направлений, где технологии могут дать максимальный эффект. Подчеркивается важность клиентоцентричности как ключевого драйвера успешных преобразований. Определяются стратегические цели цифровой трансформации – повышение операционной эффективности, сокращение издержек, улучшение клиентского опыта, внедрение новых цифровых продуктов и переход к платформенным бизнес-моделям.

Рассматриваются современные технологии: облачные решения, искусственный интеллект, большие данные, блокчейн, интернет вещей, роботизация процессов. Особое внимание уделяется необходимости их интеграции без нарушения согласованности текущих процессов. Затрагиваются вопросы финансового обеспечения цифровизации: источники инвестиций, гибкая финансовая модель, учет как текущих, так и долгосрочных расходов. Выделяется роль человеческого капитала: подготовка персонала, развитие цифровых компетенций, формирование инновационной корпоративной культуры. Отдельный раздел посвящен управлению рисками, связанными с киберугрозами, правовыми ограничениями, технологической неопределенностью и зависимостью от внешних поставщиков. Автор подчеркивает необходимость регулярного мониторинга результатов цифровых проектов и применения финансовых и нефинансовых показателей для корректировки стратегии. Делается вывод, что цифровая трансформация – это непрерывный процесс стратегических изменений, обеспечивающий компаниям устойчивый рост, укрепление рыночных позиций и создание новых источников дохода в условиях глобальной цифровой конкуренции.

Ключевые слова: цифровая трансформация, стратегия развития, бизнес-модель, инновации, устойчивый рост, конкурентоспособность, цифровая экономика, искусственный интеллект, большие данные, блокчейн, интернет вещей, роботизация, управление рисками, корпоративная культура, цифровые технологии.

Введение. Цифровая трансформация бизнеса становится одним из ключевых факторов устойчивого развития и повышения конкурентоспособности компаний в условиях динамично развивающейся цифровой экономики. Этот процесс предполагает не только внедрение современных технологий, но и глубокую перестройку существующих бизнес-моделей, пересмотр организационной структуры, формирование инновационной корпоративной культуры и совершенствование методов управления [1].

Стратегическая направленность цифровой трансформации заключается в том, что цифровые инициативы должны быть встроены в общую концепцию долгосрочного развития компании, а не рассматриваться как разрозненные проекты или временные меры реагирования на вызовы внешней среды.

Компании, которые последовательно интегрируют цифровые решения во все ключевые аспекты своей деятельности, получают комплексные преимущества. Они повышают операционную эффективность, сокращают издержки, ускоряют процессы принятия управленческих решений, укрепляют свои позиции на рынке и создают новые источники дохода. Использование облачных технологий, инструментов искусственного интеллекта, анализа больших данных, блокчейна, интернета вещей и роботизации процессов открывает возможности для повышения производительности, повышения точности прогнозирования, персонализации клиентского опыта и формирования инновационных бизнес-моделей.

Материалы и методы. Однако успешная цифровизация невозможна без системного подхода, четкого стратегического видения и рационального распределения ресурсов. Недооценка сложности трансформационных процессов, а также ошибки при разработке или реализации стратегии цифровой трансформации могут привести к росту операционных затрат, снижению производительности и упущенным рыночным возможностям [2].

В современных условиях цифровая трансформация перестала быть факультативным инструментом – она превратилась в необходимое условие для выживания, устойчивого роста и долгосрочного развития бизнеса, способного соответствовать вызовам глобальной конкуренции и ускоряющимся технологическим изменениям.

Экспериментальная часть. Для анализа цифровой трансформации использовались методы SWOT-анализа, исследования уровня цифровой зрелости компаний, сравнительного анализа лучших отраслевых практик, а также диагностики внутренних бизнес-процессов [3]. В качестве источников информации были применены труды ведущих специалистов в области менеджмента, стратегии и инновационного развития [1-5].

На основе полученных данных сформирована системная модель разработки стратегии цифровизации, включающая определение приоритет-

ных направлений внедрения технологий, создание финансовой модели с учётом различных источников инвестиций, а также разработку кадровой стратегии, ориентированной на развитие цифровых компетенций персонала. Рассмотрены ключевые аспекты интеграции инноваций в корпоративную культуру, включая механизмы обучения, мотивации и вовлечения сотрудников, что является важнейшим условием успешной реализации проектов цифровой трансформации.

Таблица 1 – Примеры технологий и их влияние на эффективность бизнеса

Технология	Эффект внедрения	Пример применения
Искусственный интеллект	Автоматизация аналитики, рост точности прогнозов	Системы рекомендаций
Облачные вычисления	Снижение затрат на инфраструктуру, масштабируемость	ERP-системы в облаке
Блокчейн	Повышение прозрачности операций	Цифровые цепочки поставок
Интернет вещей	Мониторинг оборудования, снижение простоев	Умные заводы
Роботизация процессов	Ускорение операций, уменьшение ошибок	Финансовый учёт
Примечание: таблица составлена автором на основе источников [1-5]		

Результаты и обсуждения. Выявлено, что компании, формирующие стратегию цифровой трансформации с учётом корпоративной культуры и обучения сотрудников, демонстрируют более высокие показатели устойчивости проектов [3, 4]. Финансовое планирование и управление рисками являются определяющими факторами успеха. Комплексная диагностика процессов и интеграция инноваций в существующую модель позволяют минимизировать издержки и повысить гибкость бизнеса [5].

Заключение. Цифровая трансформация представляет собой не разовую инициативу, а непрерывный и эволюционный процесс стратегических изменений, который охватывает все уровни организации - от корректировки бизнес-модели и корпоративной культуры до внедрения современных технологий и переосмысления принципов управления.

Этот процесс требует системного подхода, позволяющего согласовывать цели цифровизации с общими приоритетами компании, а также высокой гибкости, обеспечивающей способность быстро адаптироваться к изменениям внешней среды и технологическим трендам.

Немаловажным фактором является вовлечение персонала на всех уровнях управления: успешная трансформация невозможна без команды, обладающей цифровыми компетенциями, готовой к инновациям и открытой к обучению.

Компании, которые осознанно интегрируют цифровые технологии в свою стратегию, получают долгосрочные конкурентные преимущества. Они ускоряют темпы роста за счёт повышения операционной эффективности, сокращения издержек и создания новых цифровых продуктов и сервисов. В результате усиливается их устойчивость к рыночным колебаниям, а клиентский опыт становится более персонализированным и ценным.

Отказ от цифровизации или её поверхностный характер приводит к утрате рыночных возможностей, снижению эффективности бизнес-процессов и повышенному риску вытеснения со стороны более гибких, инновационных конкурентов. Таким образом, цифровая трансформация – это не только инструмент повышения производительности и рентабельности, но и обязательное условие выживания и развития бизнеса в глобальной цифровой экономике, где лидерство определяется скоростью адаптации и качеством внедряемых решений.

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Сандық бизнесті трансформациялау стратегиясын әзірлеу

Түйіндеме. Мақалада бизнестің цифрлық трансформация стратегиясын әзірлеу тақырыбы қарастырылады. Цифрлық трансформация компаниялардың тұрақты дамуын қамтамасыз ету және бәсекеге қабілеттілігін арттырудың маңызды құралы ретінде сипатталады. Бұл тек жаңа технологияларды енгізумен шектелмей, бизнес-модельді, корпоративтік мәдениетті, ұйымдық құрылымды және басқару тәсілдерін түбегейлі қайта қарауды қамтитын кешенді процесс болып табылады. Зерттеуде цифрландырудың негізгі кезеңдері талданады: компанияның ағымдағы жағдайын бағалау, цифрлық жетілу деңгейін анықтау, бизнес-процестерді зерттеу, SWOT-талдау жүргізу, бәсекелестік ортаны талдау және технологиялардың ең жоғары әсер бере алатын бағыттарын айқындау. Клиентке бағдарланған тәсілдің табысты өзгерістердің басты қозғаушы күші екендігі атап өтіледі. Цифрлық трансформацияның стратегиялық мақсаттары анықталады: операциялық тиімділікті арттыру, шығындарды азайту, клиент тәжірибесін жақсарту, жаңа цифрлық өнімдерді енгізу және платформалық бизнес-модельдерге көшу. Бұлтты шешімдер, жасанды интеллект, үлкен деректер, блокчейн, заттар интернеті және процестерді роботтандыру сияқты технологияларды үйлесімді интеграциялау қажеттілігі қарастырылады. Сонымен қатар, цифрлық жобаларды қаржыландыру мәселелері ашылады: инвестиция көздері, икемді қаржылық модель құру, қысқа және ұзақ мерзімді шығындарды теңгеру. Адами капиталдың рөлі ерекше атап өтіледі: қызметкерлерді оқыту, цифрлық құзыреттерді дамыту және инновациялық корпоративтік мәдениетті қалыптастыру табыстың шешуші факторлары болып табылады. Автор киберқауіптер, құқықтық шектеулер, технологиялық белгісіздік және сыртқы

жеткізушілерге тәуелділік сияқты тәуекелдерді басқару қажеттілігін көрсетеді. Цифрлық жобалардың тиімділігін тұрақты бақылау мен қаржылық және қаржылық емес көрсеткіштерді қолдану стратегияны түзетуге мүмкіндік береді. Мақалада цифрлық трансформация үздіксіз стратегиялық процесс ретінде сипатталып, компаниялардың тұрақты өсімге жетуіне, нарықтағы орнын нығайтуына және жаңа табыс көздерін қалыптастыруына жағдай жасайтыны қорытындыланады.

Түйінді сөздер: цифрлық трансформация, даму стратегиясы, бизнес-модель, инновациялар, тұрақты өсу, бәсекеге қабілеттілік, цифрлық экономика, жасанды интеллект, үлкен деректер, блокчейн, заттар интернеті, процестерді роботтандыру, тәуекелдерді басқару, корпоративтік мәдениет, цифрлық технологиялар.

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Development of a strategy for digital transformation of business

Abstract. The article explores the development of a digital transformation strategy as a vital tool for ensuring sustainable growth and improving business competitiveness in the digital economy. Digital transformation is presented as an integrated process that goes beyond implementing advanced technologies to include a comprehensive rethinking of business models, corporate culture, organizational structures, and management practices. The study examines the key stages of digitalization: assessing the company's current state, determining digital maturity, analyzing business processes, performing SWOT analysis, exploring the competitive landscape, and identifying areas where technology can deliver maximum impact. The importance of a customer-centric approach is emphasized as the main driver of successful transformation. The article defines strategic goals of digital transformation, such as improving operational efficiency, reducing costs, enhancing customer experience, introducing new digital products, and adopting platform-based business models. It reviews major technologies - cloud computing, artificial intelligence, big data, blockchain, the Internet of Things, and robotic process automation – and highlights the need for seamless integration into existing workflows. The financial dimension is analyzed in detail: potential funding sources, building a flexible financial model, and balancing both short-term and long-term costs. Human capital is identified as a critical success factor, with emphasis on employee training, digital skills development, and the creation of an innovative corporate culture. The article also addresses risk management, including cybersecurity threats, regulatory barriers, technological uncertainty, and reliance on external vendors. Regular performance monitoring and the use of both financial and non-financial metrics are highlighted as essential tools for adjusting transformation strategies. The study concludes that digital transformation is a continuous strategic process that enables companies to achieve sustainable growth, strengthen their market position, and develop new revenue streams in an era of global digital competition.

Keywords: Digital transformation, Development strategy, Business model, Innovation, Sustainable growth, Competitiveness, Digital economy, Artificial intelligence, Big data, Blockchain, Internet of Things, Robotic process automation, Risk management, Corporate culture, Digital technologies.

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МЕТОДИКА ОЦЕНКИ УРОВНЯ РИСКА ПРОМЫШЛЕННОГО ПРЕДПРИЯТИЯ

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Аннотация. Статья раскрывает вопросы классификации рисков промышленного предприятия с точки зрения современных авторов. Автор раскрывает методику проведения оценки рисков предприятия. Анализ рисков позволяет организациям предвидеть потенциальные проблемы и подготовиться к ним заранее. Это особенно важно в условиях нестабильной экономической среды, когда неожиданные события могут значительно повлиять на бизнес. Кроме того, эффективное управление рисками способствует улучшению репутации компании, повышению доверия со стороны клиентов и партнеров, а также снижению затрат на устранение последствий рисков. Понимание и управление этими рисками помогает компаниям принимать обоснованные решения и минимизировать потенциальные убытки. Важно отметить, что анализ рисков является непрерывным процессом, который требует постоянного мониторинга и пересмотра для обеспечения актуальности и эффективности.

Ключевые слова: риск, оценка, предприятие, минимизация, финансовый, методы.

Введение. Предпринимательством является самостоятельная, инициативная деятельность граждан, кандасов и юридических лиц, направленная на получение чистого дохода путем использования имущества, производства, продажи товаров, выполнения работ, оказания услуг, основанная на праве частной собственности (частное предпринимательство) либо на праве хозяйственного ведения или оперативного управления государственного предприятия (государственное предпринимательство). Предпринимательская деятельность осуществляется от имени, за риск и под имущественную ответственность предпринимателя.

Субъекты предпринимательства при осуществлении предпринимательской деятельности, государственные органы, должностные лица государственных органов при осуществлении государственного регулирования предпринимательства обязаны соблюдать требования Конституции Республики Казахстан, настоящего Кодекса и иных нормативных правовых актов Республики Казахстан [1].

Анализ рисков – это процесс, направленный на идентификацию,

оценку и приоритизацию рисков, которые могут повлиять на достижение целей организации. Риски могут быть связаны с различными аспектами бизнеса, включая финансовые, операционные, стратегические и репутационные.

Экспериментальная часть. Существует несколько методов анализа рисков, которые можно разделить на две основные категории: качественные и количественные. Оба подхода имеют свои преимущества и недостатки, и часто используются в сочетании для получения наиболее полной картины рисков.

Качественный анализ рисков фокусируется на идентификации и оценке рисков на основе их вероятности и воздействия. Этот метод часто используется на начальных этапах анализа, когда точные данные могут быть недоступны. Основные инструменты качественного анализа включают:

– SWOT-анализ: Оценка сильных и слабых сторон, возможностей и угроз. Этот метод позволяет получить общее представление о внутренней и внешней среде компании и выявить ключевые факторы, влияющие на ее деятельность.

– Анализ сценариев: Разработка различных сценариев развития событий и оценка их последствий. Этот метод помогает подготовиться к различным вариантам развития ситуации и разработать соответствующие стратегии.

– Экспертные оценки: Сбор мнений экспертов для идентификации и оценки рисков. Экспертные оценки могут быть особенно полезны в условиях неопределенности, когда точные данные отсутствуют.

– Количественный анализ рисков

– Количественный анализ рисков использует математические и статистические методы для оценки вероятности и воздействия рисков. Этот метод требует наличия точных данных и часто используется для более детального анализа. Основные инструменты количественного анализа включают:

– Моделирование Монте-Карло: Использование случайных чисел для моделирования различных сценариев и оценки вероятности рисков. Этот метод позволяет получить статистически обоснованные оценки рисков и их последствий.

– Анализ чувствительности: Оценка влияния изменений ключевых параметров на результаты. Этот метод помогает выявить наиболее критичные факторы, влияющие на риск, и определить, как изменения этих факторов могут повлиять на результаты.

– Деревья решений: Визуализация различных вариантов решений и их последствий. Деревья решений помогают структурировать процесс принятия решений и оценить возможные исходы каждого варианта.

Проведение анализа рисков включает несколько ключевых шагов, которые помогут структурировать процесс и обеспечить его эффективность.

1. Идентификация рисков

Первым шагом является выявление всех возможных рисков, которые могут повлиять на бизнес. Это можно сделать с помощью мозгового штурма, анализа данных и консультаций с экспертами. Важно учитывать

как внутренние, так и внешние факторы. Внутренние факторы могут включать организационные изменения, финансовые проблемы и кадровые вопросы, в то время как внешние факторы могут включать экономические условия, законодательные изменения и конкуренцию.

2. Оценка рисков

После идентификации рисков необходимо оценить их вероятность и воздействие. Это можно сделать с помощью качественных и количественных методов, описанных выше. Оценка рисков помогает определить, какие из них требуют наибольшего внимания. Важно учитывать как краткосрочные, так и долгосрочные последствия рисков, а также их взаимосвязь с другими рисками.

3. Приоритизация рисков

На основе оценки рисков необходимо определить их приоритеты. Это поможет сосредоточиться на наиболее критичных рисках и разработать стратегии для их управления. Приоритизация может быть выполнена с использованием матрицы рисков, которая визуализирует вероятность и воздействие каждого риска. Матрица рисков позволяет наглядно представить распределение рисков и определить, какие из них требуют немедленного внимания, а какие могут быть отложены на более поздний срок.

4. Разработка стратегий управления рисками

Для каждого приоритетного риска необходимо разработать стратегии управления. Это могут быть меры по снижению вероятности возникновения риска, минимизации его воздействия или полному устранению риска. Важно также определить ответственных за реализацию этих стратегий. Стратегии управления рисками могут включать:

– Избежание риска: Изменение планов или процессов для исключения риска.

– Снижение риска: Внедрение мер, направленных на уменьшение вероятности или воздействия риска.

– Передача риска: Перекладывание риска на третью сторону, например, через страхование или аутсорсинг.

– Принятие риска: Признание риска и подготовка к его последствиям.

Мониторинг и пересмотр рисков

Анализ рисков – это непрерывный процесс. Необходимо регулярно пересматривать и обновлять оценку рисков, чтобы учитывать изменения в бизнес-среде и новые данные. Это поможет своевременно выявлять новые риски и корректировать стратегии управления. Мониторинг рисков включает:

– Регулярные проверки: Периодический пересмотр рисков и оценка их актуальности.

– Анализ инцидентов: Изучение произошедших инцидентов для выявления новых рисков и улучшения существующих стратегий управления.

– Обратная связь: Сбор мнений сотрудников и других заинтересованных сторон для улучшения процесса управления рисками.

Проведение оценки рисков является важной стадией технологии риск-менеджмента. В предпринимательской деятельности современных казах-

станских предприятий все негативные последствия неэффективных управленческих решений сводят к трем главным угрозам:

– внезапного снижения размера прибыли;

– вынужденного нахождения денежных средств для покрытия расходов на уменьшение доли потерь;

– возникновения дополнительного количества расходов, связанных с возмещением убытков и последствиями возникшего ущерба [2, с. 51].

Формы предпринимательских убытков принимаются во внимание в трех вариациях выражения: абсолютной, относительной и промежуточной. Методология проведения оценки потенциальных убытков выделяет, в зависимости от рассматриваемых ресурсов, следующие их разновидности:

1. Материальные.
2. Трудовые.
3. Стоимостные.
4. Временные.
5. Специальные.
6. Интеллектуальные.
7. Информационные.

Представленная классификация содержит практически все вероятные виды рисков возникновения неблагоприятных событий, которые могут произойти на каждом предприятии. Методология оценки риска предпринимательских убытков в экономической литературе рассмотрена достаточно широко, и включает в себя взгляды большого числа специалистов. Ее прикладное развитие по интерпретации экономиста Токаренко Г.С., по нашему мнению, представляет наибольший практический интерес [3, с. 51].

Данный автор, в предпринимательской деятельности выделил ряд уровней (ступеней, зон) риска:

– минимальный (потери прибыли до 25%);

– повышенный (потери прибыли от 25 до 50%);

– критический (потери прибыли от 50 до 75%);

– недопустимый (потери прибыли от 75 до 100% и более, близки к размеру собственных средств или превышают их) [4, с. 4].

Каждому уровню риска соответствует вероятностная характеристика степени риска и того, что убыток окажется выше допустимого предприятием уровня. Для оценки предпринимательского риска используют три группы методов (рисунок 1).

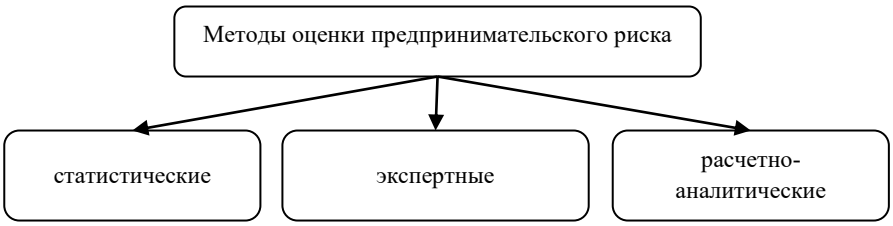

Рисунок 1 – Классификация методов оценки предпринимательского риска

Примечание: составлено автором на основании источника [4, с. 2]

Рассмотрим данные методы более подробно.

Статистические методы состоят в анализе статистических потерь, которые выявляются в аналогичных видах предпринимательской деятельности в прошлых периодах. Затем по ним устанавливают частоту определенных уровней потерь и по данной частоте прогнозируют потенциал возникновения потерь.

Экспертные методы оценивания предпринимательского риска могут быть реализованы с помощью исследования взглядов опытных предпринимателей или специалистов в данной отрасли предпринимательской деятельности. Однако данный метод сложен в сборе материала и обработке, а также дальнейшей интерпретации полученных данных, т.к. практически невозможно получить путем опроса весь спектр желаемых экспертных оценок.

Расчетно-аналитические методы, основанные на построении кривой вероятности убытков и оценки на данной основе показателей предпринимательского риска опираются на элементах теории игр. Также в целях оценки рисков могут быть широко использованы прикладные математические методы

В таблице 1 представим формулы расчета предпринимательского риска по различным методикам.

Таблица 1 – Методика расчета уровня предпринимательского риска

Метод	Трактовка	Формулы
1	2	3
Статистический метод измерения риска	В целях проведения расчета потенциала возникновения убытков анализируют все статистические данные предприятия, которые касаются результативности осуществления предприятия текущей деятельности	Уровень финансового риска: УР = ВР х РП, (1) где, УР – уровень соответствующего финансового риска; ВР – вероятность возникновения данного финансового риска; РП – размер возможных финансовых потерь при реализации данного риска
Метод анализа целесообразности затрат	Сориентирован на процесс идентификации потенциальных зон риска, отталкиваясь от наличествующих на предприятии источников покрытия запасов и затрат	$F + Z + R^a = Uc + Rn + Rp$ где F- основные средства и вложения; Z – запасы и затраты; Ra – денежные средства, краткосрочные финансовые вложения, дебиторская задолженность и прочие активы; Uc – источники собственных средств; КТ – средне-, долгосрочные кредиты и заемные средства; Kt – краткосрочные (до 1 года) ссуды, не погашенные в срок; Rp – кредиторская задолженность и заемные средства

1	2	3
Аналитический метод	Предполагает, что риск может быть снижен при более четком осмыслении действия механизма формирования прибыли от основной деятельности предприятия с учетом различных факторов внутренней и внешней среды	В финансовом анализе эффективности инвестиций в основном используются четыре показателя: период окупаемости Пок = Вложения/Прибыль; чистый приведенный доход ЧПД = ЧДП – ИК где, ЧПД – сумма чистого приведенного дохода по реальному инвестиционному проекту; ЧДП – сумма чистого денежного потока; ИК – сумма инвестиций в реализацию реального проекта (при разновременности вложений приведенная к настоящей стоимости). внутренняя норма доходности $NPV_p = \Sigma \frac{St\ at}{(1+r0)t}$
Метод аналогов	Анализ рисков предпринимательской деятельности предполагает детальное исследование данных о результатах влияния неблагоприятных факторов прочих аналогичных направлений деятельности	
Примечание: составлено автором на основании источника [5, с. 53]		

Методы проведения оценки риска базируются на анализе финансовой отчетности предприятия, и в первую очередь его баланса, отчета о прибылях и убытках. Кроме того, ряд авторов считает целесообразным использование статистических данных управленческого учета, которые необходимы для выработке эффективного управленческого решения. Используются также и анализ внешних факторов, воздействующих на деятельность предприятия.

Заключение. Показатели риска деятельности предприятия и методы проведения его оценки создают потенциальную возможность принятия важных решений и планирования ряда мероприятий по его минимизации и снижению воздействия на финансовую деятельность. На наш взгляд, рассмотренные методы оценки риска выбираются руководством предприятия самостоятельно, однако при этом они должны обеспечить максимум необходимой информации.

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Өнеркәсіптік кәсіпорынның тәуекел деңгейін бағалау әдістемесі

Түйіндеме. Мақалада қазіргі заманғы авторлар тұрғысынан өнеркәсіптік кәсіпорынның тәуекелдерін жіктеу мәселелері ашылады. Автор кәсіпорынның тәуекелдерін бағалау әдістемесін ашады. Тәуекелдерді талдау ұйымдарға ықтимал проблемаларды болжауға және оларға алдын ала дайындалуға мүмкіндік береді. Бұл әсіресе күтпеген оқиғалар бизнеске айтарлықтай әсер етуі мүмкін тұрақсыз экономикалық ортада өте маңызды. Сонымен қатар, тәуекелдерді тиімді басқару компанияның беделін жақсартуға, клиенттер мен серіктестердің сенімін арттыруға және тәуекелдердің салдарын жоюға кететін шығындарды азайтуға ықпал етеді. Осы тәуекелдерді түсіну және басқару компанияларға негізделген шешімдер қабылдауға және ықтимал шығындарды азайтуға көмектеседі. Маңыздысы, тәуекелдерді талдау – бұл өзектілік пен тиімділікті қамтамасыз ету үшін үнемі бақылауды және қайта қарауды қажет ететін үздіксіз процесс.
Түйінді сөздер: тәуекел, бағалау, кәсіпорын, азайту, қаржылық, әдістер.

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Methodology for assessing the risk level of an industrial enterprise

Abstract. The article reveals the issues of risk classification of an industrial enterprise from the point of view of modern authors. The author reveals the methodology for conducting an enterprise risk assessment. Risk analysis allows organizations to anticipate potential problems and prepare for them in advance. This is especially important in an unstable economic environment, when unexpected events can significantly affect a business. In addition, effective risk management helps to improve the company's reputation, increase the trust of customers and partners, and reduce the cost of eliminating the consequences of risks. Understanding and managing these risks helps companies make informed decisions and minimize potential losses. It is important to note that risk analysis is an ongoing process that requires constant monitoring and revision to ensure relevance and effectiveness.
Keywords: Risk, Assessment, Enterprise, Minimization, Financial, Methods.

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РАЗВИТИЕ МИРОВЫХ ТЕНДЕНЦИЙ НА РЫНКЕ БЫСТРОГО ПИТАНИЯ В ЭКОНОМИЧЕСКИХ УСЛОВИЯХ КАЗАХСТАНА

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Аннотация. Мировое потребление рынка быстрого питания продолжает расти высокими темпами, создавая огромные возможности для брендов фаст-фуда. Увеличение дискреционных расходов и растущее предпочтение полуфабрикатам благоприятно отразилось на мировом рынке фастфудов. Рынок фаст фуда пребывает сейчас на стадии трансформации, учитывая новые потребности потребителей, уровень их доходов, новые тренды рынка. Задача обновленного формата фастфуда учитывать тенденции на здоровый образ жизни, домашнюю кухню, при этом сохраняя самые главные атрибуты рынка – цена и скорость.

Цель исследования – проанализировать основные тенденции мирового рынка быстрого питания и обозначить особенности, перспективы местного казахстанского рынка фаст фуда, учитывая при этом влияние тренда на здоровый образ жизни в данном сегменте и его проявленность в Казахстане. Методологической основой исследования являются анализ, обобщение данных по изменениям на рынке быстрого питания в новых условиях, а также сравнение и экстраполяция. В рамках исследования проведен опрос населения г. Алматы в возрасте 18-30 лет в количестве 2360 человек. На основе опроса определены основные тенденции местного рынка, его отличие от мирового, специфика. Научная и практическая значимость работы заключается в выявлении зависимости локального рынка быстрого питания от глобальных тенденций, их предупреждение и успешное внедрение с ориентацией на нивелирование фактора вредного влияния на здоровье потребителей и вовлеченности в мировой тренд на здоровое питание насколько в рамках рынка фаст фуда. Основные результаты работы могут быть использованы участниками рынка быстрого питания на предмет соответствия глобальным трендам, как следствие удовлетворения новых потребностей потребителей в динамично изменяющихся условиях рынка.

Ключевые слова: фаст фуд, халал, потребительские предпочтения, глобальные тенденции, здоровое питание, проблемы рынка быстрого питания.

Ведение. Современный рынок быстрого питания является одной из наиболее динамично развивающихся отраслей пищевой индустрии. Согласно данным международных аналитических агентств, его объём ежегодно увеличивается, что связано с изменением образа жизни населения, урбанизацией, ростом занятости и ускорением темпов жизни. Для потребителей ключевыми факторами выбора становятся скорость обслужива-

ния, доступная цена и стандартизированное качество, что и определяет конкурентные преимущества сектора рынка быстрого питания.

Однако глобализация и развитие новых потребительских практик вносят существенные коррективы в функционирование этого рынка. С одной стороны, усиливается интерес к экологичности, безопасности и полезности продукции, с другой – сохраняется потребность в доступности и удобстве. В результате в мировой индустрии быстрого питания сформировались новые тренды: внедрение растительных альтернатив мясу, развитие халал-направления, акцент на здоровое питание и инновационные форматы обслуживания.

Для Казахстана данные тенденции имеют особое значение. С одной стороны, страна активно перенимает западные и азиатские модели потребления, с другой – сохраняет национальные традиции и культурные особенности питания. Наблюдается неравномерность распространения сетей быстрого питания по регионам, влияние уровня доходов населения, а также рост интереса к локальным брендам, предлагающим продукцию, адаптированную под вкусы и привычки казахстанских потребителей. Важным фактором также выступает значительная доля мусульманского населения, что способствует активному развитию халал-сегмента.

Таким образом, исследование мировых тенденций и их проявленности в Казахстане имеет как научное, так и практическое значение. Оно позволяет выявить степень адаптации глобальных трендов на локальном уровне, определить специфику потребительских предпочтений и выработать рекомендации для игроков рынка. В этой связи цель настоящего исследования заключается в анализе основных тенденций мирового рынка быстрого питания и обозначении особенностей и перспектив его развития в Казахстане.

Методы исследования

В исследовании применялся комплекс методов, включающий анализ, сравнение, экстраполяцию, а также эмпирические социологические методы. Такой подход позволил объединить теоретическую и прикладную составляющие исследования.

Общая методологическая рамка. На первом этапе был проведён анализ глобальных тенденций на рынке быстрого питания на основе статистических данных, международных отчётов и научной литературы. Далее использовался метод сравнения, позволивший выявить сходства и различия между мировым и казахстанским рынком. Метод экстраполяции применялся для прогнозирования дальнейших изменений на локальном рынке.

Анкетирование как эмпирическая база. Период проведения: апрель-май 2022 года. География: г. Алматы, Республика Казахстан. Количество респондентов: 2360 человек. Возрастная категория: 18-30 лет (наиболее активные потребители фастфуда). Гендерное распределение: мужчины – 49%, женщины – 51%. Метод отбора: квотная выборка по полу и возрасту, что обеспечило относительную репрезентативность выборки. Форма проведения: онлайн-анкета, распространённая через социальные сети и мессенджеры. Инструментарий: сочетание закрытых, полуоткрытых и откры-

тых вопросов; оценка доверия и предпочтений по 5-балльной шкале Лайкерта.

Статистическая обработка данных. Первичная обработка осуществлялась в MS Excel, данные сводились в таблицы и диаграммы. Для повышения достоверности проводился анализ распределений, расчёт средних значений и долей.

Этические аспекты. Респонденты информировались о целях исследования, участие было добровольным и анонимным. Это позволило минимизировать искажения в ответах.

Примеры вопросов: 1. Какому бренду фастфуда Вы доверяете в большей степени? 2. Как Вы оцениваете качество продукции местных и международных брендов? 3. Какие факторы наиболее важны при выборе заведения быстрого питания (цена, скорость, качество, халал, полезность)?

Обзор литературы

В литературе по проблематике индустрии быстрого питания выделяются несколько направлений, релевантных для данного исследования: (1) критические исследования культуры фаст-фуда и её социальных последствий, (2) исследования потребительских предпочтений и трансформации спроса под влиянием трендов здорового питания, (3) исследования новых продуктовых форматов (растительные альтернативы, гибридные продукты) и (4) анализ влияния культурных и религиозных факторов (включая халал-сегмент) на развитие локальных рынков.

Критическая парадигма и теоретические основания. В классических работах, посвящённых феномену быстрого питания, отмечается влияние сетевой стандартизации на потребительское поведение и общественные практики (Ритцер Дж., 1993). Эрик Шлоссер (Шлоссер Э., 2001) подробно анализирует негативные социальные и профессиональные последствия массового распространения индустрии фаст-фуда. Эти работы формируют теоретическую основу для понимания макросоциальных эффектов, связанных с распространением сетевых форматов.

Тренды здорового питания и продуктовые инновации. Современные аналитические отчёты и академические исследования фиксируют рост интереса к здоровому питанию, что стимулирует внедрение альтернатив мясу (plant-based), расширение ассортимента полезных и функциональных продуктов, а также изменение маркетинговых коммуникаций в пользу экологичности и прозрачности состава (Food and Beverage Market Research Report, 2022). Ряд исследований подчёркивает, что растительные аналоги мяса и гибридные форматы чаще всего внедряются сначала в крупных международных сетях, а затем – адаптируются локальными игроками (пример – партнерства Beyond Meat/Impossible Foods с KFC, Burger King и др.).

Культурные, религиозные и локальные факторы. Для многих рынков (особенно с высокой долей мусульманского населения) важным драйвером является халал-стандарт; исследования ITC и профильных аналитиков показывают стабильный рост глобального рынка халал-продуктов (Halal Goes Global, 2022). В условиях Казахстана халал-фактор логично коррелирует с высокой степенью доверия к локальным брендам, позиционирующим продукцию как соответствующую национальным стандартам и традициям.

Потребительские предпочтения и восприятие качества. Исследования в области маркетинга показывают, что доверие потребителей формируется под влиянием нескольких ключевых факторов: прозрачность состава, локальная идентичность бренда, цена и доступность (Ng & Kelloff, 2013; Marketing to Women, 2005). Для молодёжной аудитории важную роль играет соцмедийная активность бренда и соответствие ценностям (экофрендли, здоровый образ жизни).

Локальные исследования и пробелы в литературе. Несмотря на наличие международных исследований, аналитических отчётов и кейсов крупных сетей, в академической литературе наблюдается дефицит систематизированных эмпирических работ, посвящённых именно казахстанскому рынку фаст-фуда. Это обстоятельство обосновывает необходимость данного эмпирического исследования и делает его вклад в локальную научную повестку.

В своем бестселлере «Нация фаст-фуда» Эрик Шлоссер заставляет задуматься о том, что, возможно, будет намного лучше, если вы избежите проезда и просто отправитесь домой, чтобы приготовить себе еду. Шлоссер рассказывает все, от появления McDonald’s до того, как гамбургерный гигант повлиял на культуры по всему миру. Попутно Шлоссер разоблачает грызунов, найденных на кухнях быстрого питания, переутомленных и низкооплачиваемых сотрудников за кассовыми аппаратами, растерзанных рабочих, пытающихся не отставать от чреватой авариями скорости в мясокомбинатах, и в заключении, комплексную корпоративную жадность, которая движет всей отраслью. Нация фаст-фуда заставит потерять аппетит (Эрик Шлоссер, 2001).

Джордж Ритцер ввел новое определение «Макдональдизация общества» в своей одноименной книге. Ритцер предполагает, что в конце 20-го века социально структурированная форма ресторана быстрого питания стала организационной силой, представляющей и расширяющей процесс рационализации в сфере повседневного взаимодействия и индивидуальной идентичности. McDonald's 1990-х годов служит моделью случая (George Ritzer, 1993). Согласно обзору 2002 года на соответствующий академический текст, в книге был введен термин «макдональдизация» для научного дискурса как способ описания социального процесса, который порождает «отупляющую одинаковость» (Gilbert, Elllen D., 2002).

Весь вопрос рынка фаст-фуда изучался многими авторами. В целом индустрия быстрого питания рассматривалась исследователями как оказывающая негативное влияние на здоровье, а также часто рассматривалась как метафорическое понятие, когда основные характеристики этого рынка проявлялись в других сферах, а также в обществе в целом.

Культура фаст-фуда имеет тенденцию отдавать предпочтение расфасованным, быстрым, дешевым и удобным продуктам вместо экологичных и здоровых вариантов. Эта культура не ограничивается потреблением продуктов питания, но влияет на то, как лидеры ведут свой бизнес. По мере роста неопределенности и сложности в глобальном бизнесе менталитет фаст-фуда породил реактивных людей, а не вдумчивых и тщательных лидеров. Мы называем эту тенденцию «лидерством фаст-фуда», потому что эта метафора обеспечивает основу для понимания распространенного бес-

хозяйственности и средств, чтобы помешать практикам распространять культуру фаст-фуда. Мы предлагаем несколько признаков лидера фастфуда: немедленное удовлетворение, поверхностное видение и нереалистичные ожидания. Не существует быстрого и удобного способа отучить организации от постоянной диеты из фаст-фуда, но мы предлагаем хорошие первые шаги: цените качество выше скорости, стремитесь к изменениям и инвестируйте в устойчивость. Начав возвращать здоровые ценности, можно избавиться от вредных привычек (Нг, Эрнест; Келлофф, Эшли, 2013).

McDonald's, как основной ассоциированный игрок на рынке фастфуда, вызвал огромный интерес у исследователей и ему посвящено немало работ.

McDonald, многомиллиардная транснациональная корпорация, узнаваемая почти всем населением мира; кроме того, он рассматривается как образец модернизации, санитарии и ответственного управления. В этой книге рассматривается появление McDonalds в странах Восточной Азии и делается попытка изучить влияние, которое он оказывает на глобализацию и локализацию. Некоторые ученые считают Макдональда американским культурным империализмом; они утверждают, что «именно доминирование популярной культуры имеет наибольшее значение в постмодернистском, постсоциалистическом, постиндустриальном мире» (Watson, 2006).

Так в современной литературе стал появляться термин макдональдизация. Макдональдизация – это процесс, посредством которого принципы ресторана быстрого питания начинают доминировать во все большем количестве слоев американского общества, а также остального мира (Ritzer, 1993:1). Для Ритцера макдональдизация – это когда общество принимает характеристики ресторана быстрого питания. Процесс макдональдизации можно резюмировать следующим образом: «принципы ресторанов быстрого питания начинают доминировать во все большем количестве секторов недавней количественной оценки всемирной гомогенизации культур в результате глобализации» (Pieterse, Jan Nederveen, 2009). Еще более негативное отношение к индустрии быстрого питания вообще и к McDonald's в частности выразилось в следующей работе. В своем бестселлере журналист Эрик Шлоссер ведет хронику истории индустрии быстрого питания и описывает влияние этой отрасли на экономику и общество США. Он исследовал индустрию быстрого питания в течение многих лет. Шлоссер взял интервью у рабочих скотобойни; скотоводы; картофелеводы; работники фаст-фуда, учредители и франчайзи; и семьи, потерявшие близких из-за пищевого отравления. В ходе своих обширных исследований и путешествий для этой книги он открыл много малоизвестных, часто тревожных истин об индустрии быстрого питания. Автор выделил вредные компоненты фаст-фуда и показал их тесную связь с ожирением и последующим негативным влиянием на здоровье (Eric Schlosser, 2001).

Результаты и обсуждения

Устойчивый стереотип о том, что рынок фастфуда – это всегда быстрая и нездоровая еда в настоящее время претерпевает некоторую трансформацию. Обороты, которые набирает в последнее десятилетие тренд на здоровое питание не могли обойти сферу быстрого питания. Безусловно, сложившийся стереотип чрезвычайно силен и более того, может показать-

ся, что его невозможно изменить. Однако глобальные изменения в этом отношении уже запущены. Рассмотрим основные из них, а также проследим тенденции казахстанского рынка в этом отношении.

Повышенное внимание к экологическим проблемам мира, к проблемам ожирения и здорового образа жизни в целом способствует пересмотру продуктов в сфере фастфуда.

Употребление в пищу растительного мяса является одним из ключевых направлений современного тренда флекситарианства – стремления сокращать потребление животного мяса и заменять его растительными альтернативами. Подобная практика всё чаще ассоциируется с заботой о здоровье и экологией.

Согласно данным Markets and Markets, объём мирового рынка альтернативных мясных продуктов в 2022 году оценивался в 12,1 млрд долл. США. Прогнозируется, что к 2025 году этот показатель более чем удвоится (Food and Beverage Market Research Report, 2022).

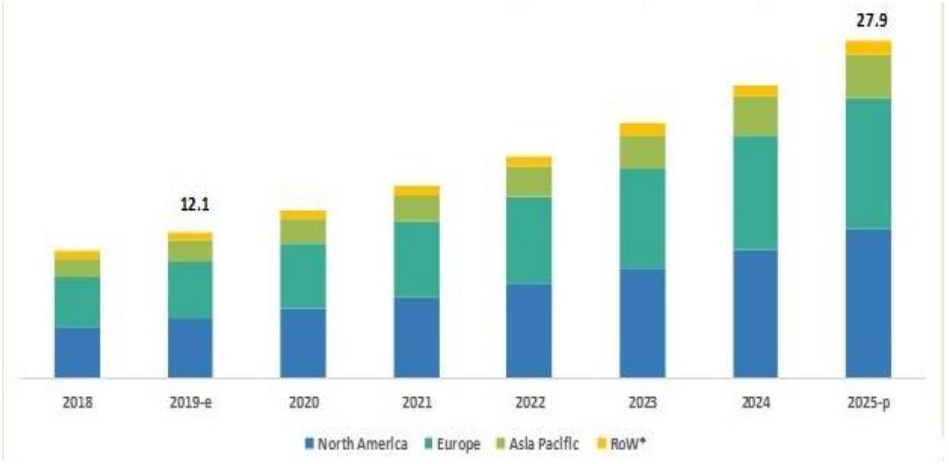

Рисунок 1. Региональная структура рынка растительного мяса, млрд долл. США (Food and Beverage Market Research Report, 2022)

Примечание: RoW включает Южную Америку, Ближний Восток и Африку

Наиболее популярными производителями растительного мяса в США являются компании Beyond Meat и Impossible Foods. Их продукция создаётся на основе горохового и соевого белка, а также специальных добавок, придающих котлетам вкус и текстуру, близкие к мясу животного происхождения. По итогам второго квартала 2022 года доход компании Beyond Meat от ресторанов и сервисов общественного питания увеличился на 483% по сравнению с аналогичным периодом прошлого года, а доход от продаж через продуктовые сети – на 192%. С момента первичного размещения акций в мае 2019 года их стоимость возросла более чем на 528% (Food and Beverage Market Research Report, 2022).

Компания Impossible Foods, укрепив позиции на рынке США, начала экспансию в Европу. Оба бренда активно сотрудничают с ведущими сетя-

ми быстрого питания (McDonald's, KFC, Burger King, Subway), интегрируя растительные продукты в их меню.

Показателен кейс компании KFC: в августе 2019 года сеть стала первой национальной сетью быстрого питания в США, которая представила продукт на основе растительного куриного мяса. Совместно с Beyond Meat был разработан продукт Beyond Fried Chicken, доступный для тестовых продаж в одном из ресторанов Атланты. Результаты эксперимента превзошли ожидания: очередь покупателей растянулась на несколько кварталов, а весь объём продукции был распродан менее чем за пять часов. Компания охарактеризовала этот результат как «чудо Kentucky Fried», отметив, что за один день продажи растительного куриного мяса превысили недельный объём реализации традиционного блюда popcorn chicken (KFC leads as first national US EST to test plant based chicken, 2009).

В то время как в США рынок активно развивается, в Казахстане альтернативы растительным бургерам Beyond Meat или Impossible Foods практически отсутствуют. В неспециализированных магазинах доступны лишь соевое мясо и овощные котлеты. В специализированных вегетарианских и диетических магазинах ассортимент несколько шире – можно приобрести сосиски и колбасы из злаков и бобовых, вегетарианские пельмени, паштеты и растительные стейки.

В Казахстане не настолько сильно развиты вегетарианство, экоактивизм, поэтому нет сильного влияния и навязывания потребления растительного продукта. Хотя необходимо отметить, что в последние несколько лет культ здоровья, здорового питания, здорового тела усилился, и доля людей, отказывающихся от потребления мяса, возросла. Для казахстанского потребителя растительное мясо воспринимается скорее, как нечто искусственное, ненатуральное, а значит неполезное.

Диетологи также сомнительно отзываются об искусственном мясе, так как это продукт глубокой переработки. Врачи рекомендуют приготовить растительные котлеты дома. Растительный бургер фабричного производства содержит в своем составе обработанную сою или горох, а также вещества, которые придают приемлемый вид и вкус продукту. По словам американского диетолога Кэтрин Перес, в обработанной сое не содержатся ключевые питательные вещества обычной сои, а также обработанный продукт может иметь вредные для здоровья соединения (Are Beyond Meat's plant-based burgers healthier than red meat, 2019)

С 2015 по 2018 года мировое потребление мяса увеличилось на 8%, по данным фирмы Euromonitor International. Большинство экспертов мясной отрасли в Казахстане не считают увлечение растительным мясом угрозой для рынка животного мяса. Они рассматривают растительные продукты как экзотику или развлечение для покупателей с высоким уровнем дохода. Даже через 10 лет, отмечают эксперты, доля продуктов из растительного мяса в потребительской корзине казахстанских покупателей будет незначительной (Food and Beverage Market Research Report, 2022).

В этой связи предполагается, что производители фастфуда будут больше миксовать продукты животного и растительного происхождения. Вместо того, чтобы становиться вегетарианцами, производители бургеров будут стараться готовить более полезную еду с высоким содержанием овощей. Предполагается также, что производители будут стараться гото-

вить еду с меньшим количеством холестерина, а добиться этого можно будет, увеличив в составе котлет количество растительных ингредиентов.

В противовес американскому тренду на растительное мясо существует тренд на халал-индустрию. Мусульмане составляют более четверти населения планеты, и игнорировать потребности такого рынка стратегически невыгодно для любого производителя. При этом нужно отметить, что не только мусульмане являются потребителями халяль продукции, нередко и люди, не исповедующие Ислам, выбирают эти продукты за их качество и безопасность.

Глобальный рынок халяльной продукции, куда входят как продовольственные продукты, так и непродовольственные товары, оценивается специалистами примерно в 2,1 трлн. долл. США, обеспечивающий 1,6 млрд людей и этот рынок обеспечивает ежегодный прирост в 25-30% (Halal Goes Global, 2022).

Согласно Стандарту качества для халяльных продуктов маркируется особым образом только та пища, которая приготовлена в соответствии с мусульманскими традициями, а значит, не содержит свинину, мертвечину и кровь. Кроме того, продуктом «духовного происхождения» будет считаться мясо животного, подвергнутого убою по канонам этой религии. Убой представляет собой целый ритуал, во время которого нужно прочитать молитву и перерезать скоту сонную артерию, чтобы из туши полностью вытекла кровь. По мнению гурманов, благодаря этой процедуре у халяльного мяса такой приятный изысканный вкус.

Особые требования предъявляются к халяльным продуктам и на этапе переработки. Так, при изготовлении колбас либо любых других мясных товаров на заводе должно использоваться только охлажденное, а не замороженное мясо.

Среди лидеров рынка фастфуда сертификат Халал имеется пока только у KFC. Но и другие мировые игроки задумываются о данной перспективе, в первую очередь, для того, чтобы иметь еще один весомый повод позиционировать используемые ингридиенты как натуральные. В тоже время многие местные игроки рынка фастфуд проявляют большую активность и возможность получения статуса Халал, что безусловно является конкурентным преимуществом на многих локальных рынках.

Если мы обратимся к рынку Казахстана, его специфике, то прежде всего предлагается рассмотреть рисунок 2 с основными игроками рынка фастфуд с разбивкой на мировых и локальных представителей.

Исходя из данных сводной таблицы можно сделать несколько выводов:

– По количеству точек лидерами рынка среди мировых игроков является KFC, среди местных – Bahandi.

– Отзывы, выраженные в оценках посетителей выше у местных игроков, нежели мировых.

– Количество точек продаж у мировых игроков в несколько раз выше местных.

Таблица 1 – Основные представители рынка фастфуда в Казахстане (сводные данные по количеству точек и рейтингу в Google, 2022)

№	Бренд	Страна происхождения	Средняя оценка (Google Rate)	Количество отзывов	Количество точек в РК	Количество точек в Алматы
1	KFC	США	4,1	435 540	52	23
2	Burger King	США	4,2	6 645	47	16
3	McDonald's	США	4,3	5 000	16	10
4	Hardees	США	4,0	562	12	6
5	Papa John's Kazakhstan	США	4,5	1 143	–	6
6	Mr. Donerci	Турция	4,2	1 629	–	4
7	Degirmen	Турция	4,1	1 555	–	20
8	Ozyurt	Турция	4,5	1 428	–	1
9	Cicek Мангал	Турция	4,4	907	–	1
10	DoDo Pizza	Россия	4,6	3 440	–	10
11	Bahandi Burger	Казахстан	4,5	887	–	20
12	Red Dragon	Казахстан	4,0	494	–	26
13	Yuframe Burger	Казахстан	4,2	800	5	2
14	BurritoGo Almaty	Казахстан	4,4	250	–	3
15	Korean Street Food	Корея	4,3	1 075	–	2
Источник: составлено авторами на основе данных Google Rate, 2022						

Рассмотрим основные отличительные features of the basic fastfood market players:

– Слоган KFC звучит как «Ваша безопасность – наш приоритет!» Мы всегда используем только свежее цельное куриное мясо самого высокого качества. Потому и поставщиков мы выбираем с особой тщательностью. Зато мы точно уверены в том, что наше куриное мясо – самое лучшее. Свежее цельное куриное мясо – это не только гарантия уникального вкуса ваших любимых блюд: нежных кусочков курицы в хрустящей панировке, острых куриных крыльев, стрипсов, сандвичей и салатов. Это еще и уверенность в том, что вы получаете блюда высочайшего качества! (About KFC company, 2022)

– Burger King – Главное отличие бургеров в Burger King – способ приготовления, при котором мясо жарится на настоящем открытом огне. Этот способ придает говядине особенный вкус и аромат, к тому же известно, что мясо, приготовленное на гриле, более полезное, чем жареное на масле: лишний жир при приготовлении на гриле стекает в специальные желобки, уменьшая калорийность блюда. Слоганом компании является

«Make it your way». К примеру, существует около 260 тысяч различных вариантов сочетания ингредиентов при приготовлении воппера: с сыром и без сыра, с луком и без, с огурцами и без них и т. Д (BurgerKing, 2022).

– Hardees отмечает, что их фирменные бургеры из 100% говядины приготовлены на открытом огне, а куриное меню полностью состоит из 100% цельное куриное филе.

– Местный представитель Bahandi имеет слоган «Вкус настоящего мяса». А Bahandi Burger это бургеры на 100% из натурального мяса, без ГМО, соевых продуктов, консервантов. Из преимуществ выделяются следующие факторы:

- народный бренд, отличное соотношение цены и качества;
- большие и сочные котлеты;
- всегда свежая продукция, свои свежеиспеченные булочки;
- экологичные продукты;
- фирменные компоты (Bahandi burger, 2022).

– Gippo – местная компания фастфуд сектора, которая имеет пищевое производство полного цикла. Они не используют в производстве замороженные продукты, только охлажденные, закупая ингредиенты у местных поставщиков. Почти все составляющие продуктов, включая мясо и овощи, – казахстанского производства. Булочки также выпекаются самостоятельно из муки высшего сорта. Компания предъявляет к поставщикам высокие требования качества. Имеет положительный имидж на рынке.

Авторами был проведён опрос местного населения г. Алматы в возрасте 18-30 лет (n = 2360). Один из вопросов касался доверия потребителей к составу продукции производителей фастфуда.

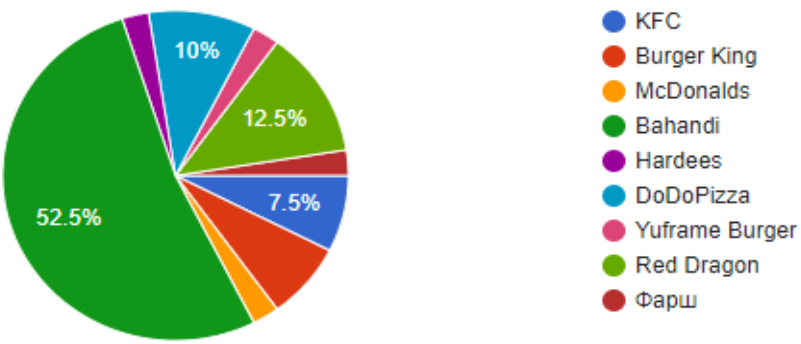

Рисунок 2. Доверие потребителей к брендам фастфуда в Алматы (результаты опроса, % от числа респондентов, n = 2360)

Источник: составлено авторами на основе данных опроса, 2022

А самым вредным представителем казахстанского фастфуд рынка по результатам опроса явился McDonalds (41%).

Бренды, названные как «наиболее вредные» (один ответ)

– McDonald's: 41% (968 респондентов).

Это показатель отражает восприятие бренда как связанного с нездоровым питанием; его следует интерпретировать в контексте истории критики индустрии фаст-фуда и высокой узнаваемости бренда.

Общественное восприятие возможности трансформации фаст-фуда в сторону здорового питания.

По результатам опроса, 50% респондентов (1180 человек) выразили сомнение в том, что индустрия фаст-фуда в целом и быстро сможет трансформироваться в сегмент здорового питания. Это указывает на скептицизм потребителей, несмотря на отдельные успешные примеры продуктовых инноваций.

Интерпретация результатов.

1. Локальные бренды (например, Bahandi) получают более высокий уровень доверия за счёт позиционирования на натуральности, локальном происхождении ингредиентов и соблюдении халал-стандартов – это согласуется с выводами обзора литературы о значимости культурных факторов.

2. Международные сети доминируют в численности точек продаж и узнаваемости, что даёт им стратегическое преимущество по охвату рынка; однако их имидж может страдать из-за ассоциаций с нездоровой пищей.

3. Инновационные продуктовые форматы (растительные аналоги, гибридные продукты) пока не получили широкого распространения в Казахстане, что связано с культурной спецификой и восприятием «искусственности» таких продуктов.

Ограничения и достоверность. Исследование опирается на выборку из г. Алматы в возрастном диапазоне 18–30 лет, что ограничивает обобщение результатов на всю популяцию Казахстана. Дальнейшие исследования целесообразно провести с репрезентативной выборкой по регионам и возрастным группам, а также применить дополнительные методы (фокус-группы, глубинные интервью, количественный анализ продаж).

Таким образом, можно сделать вывод о том, что глобальные тренды на рынке казахстанского фастфуда проявлены в большей степени в сторону халал-тренда в виду национальной специфики. Также необходимо отметить данную проявленность и на уровне доверия местных потребителей к местным фастфуд игрокам, в то время как мировые американские представители фастфуд индустрии фигурируют как самые обширные по количеству точек, узнаваемости.

Заключение. Проведённый анализ показал, что мировые тренды (здоровое питание, растительные продукты, халал-направление) находят отражение на казахстанском рынке, однако степень их проявленности различна. Казахстанский потребитель больше доверяет локальным игрокам, особенно в части натуральности и халал-стандарта. В перспективе ожидается развитие комбинированных продуктов, сочетающих мясные и растительные ингредиенты.

Результаты исследования также указывают на то, что локальные бренды демонстрируют более высокий уровень доверия со стороны респондентов, чем международные сети. Это объясняется адаптацией к культурным особенностям и ориентацией на качество ингредиентов. В то же время глобальные игроки обладают преимуществом за счёт масштабов и узнаваемости бренда.

Анализ опроса подтвердил, что значительная часть потребителей обеспокоена вопросами вреда традиционного фастфуда и сомневается в возможности его полного перехода в сегмент здорового питания. Тем не менее формирование новых продуктовых ниш (растительные альтернативы, халал-продукция, гибридные форматы) создаёт предпосылки для трансформации рынка.

Практическая значимость исследования заключается в возможности применения его выводов операторами рынка при разработке стратегий позиционирования и адаптации продуктовых линеек к ожиданиям потребителей. Полученные результаты могут быть полезны также государственным органам и экспертным сообществам при формировании политики в сфере здорового питания и регулирования ресторанного бизнеса.

Ограничением исследования является географическая локализация выборки (только Алматы), что требует дальнейших исследований в других регионах Казахстана для более полной картины. Перспективой будущих исследований может стать углублённый сравнительный анализ региональных различий, а также изучение долгосрочных тенденций потребительского поведения в условиях цифровизации и устойчивого развития.

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Қазақстанның экономикалық жағдайындағы фаст фуд нарығындағы жаһандық тренденциялардың дамуы

Түйіндеме. Фаст-фуд нарығының жаһандық тұтынуы жоғары қарқынмен өсуде, бұл фастфуд брендтері үшін үлкен мүмкіндіктер тудырады. Дискрециялық шығындарды ұлғайту және ыңғайлы тағамдарға артықшылық беру жаһандық фастфуд нарығы үшін жақсы болды. Қазір фастфуд нарығы тұтынушылардың жаңа қажеттіліктерін, олардың табыс деңгейін, нарықтың жаңа тенденцияларын ескере отырып, трансформация сатысында тұр. Жаңартылған фаст-фуд форматының міндеті – нарықтың ең маңызды атрибуттары – баға мен жылдамдықты сақтай отырып, салауатты өмір салтына, үйде тамақ дайындауға тенденцияларды ескеру. Зерттеудің мақсаты – әлемдік фастфуд нарығындағы негізгі тенденцияларды талдау және трендтің осы сегменттегі салауатты өмір салтына әсерін және оның көрінісін ескере отырып, жергілікті қазақстандық фастфуд нарығының ерекшеліктері мен келешегін анықтау. Зерттеудің әдіснамалық негізі талдау, жаңа жағдайдағы фастфуд нарығындағы өзгерістер туралы мәліметтерді жалпылау, сонымен қатар салыстыру және экстраполяция болып табылады. Зерттеу аясында Алматы қаласының 18-30 жас аралығындағы тұрғындарына 2360 адам қатысты сауалнама жүргізілді. Сауалнама негізінде жергілікті нарықтың негізгі тенденциялары, оның әлемдік нарықтан айырмашылығы, ерекшеліктері анықталды. Жұмыстың ғылыми-тәжірибелік маңыздылығы жергілікті фастфуд нарығының жаһандық трендтерге тәуелділігін анықтауда, олардың алдын алуда және тұтынушылардың денсаулығына зиянды әсер ету факторын теңестіруге және салауатты тамақтанудың жаһандық трендіне тартуға бағытталған табысты жүзеге асыруда. фастфуд нарығының шегінде. Жұмыстың негізгі нәтижелерін жылдам өзгеретін нарық конъюнктурасында тұтынушылардың жаңа қажеттіліктерін қанағаттандыру нәтижесінде әлемдік трендтерге сәйкестік тұрғысынан фастфуд нарығының қатысушылары пайдалана алады.

Түйінді сөздер: фастфуд, халал, тұтынушылардың қалауы, әлемдік тенденциялар, пайдалы тамақтану, тез тамақтану нарығының проблемалары.

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Development of Global Trends in the Fast Food Market in the Economic conditions of Kazakhstan

Abstract. The global consumption of the fast food market continues to grow at a high rate, creating huge opportunities for fast food brands. Increasing discretionary spending and a growing preference for convenience foods has been good for the global fast food market. The fast food market is now at the stage of transformation, taking into account the new needs of consumers, their level of income, new market trends. The task of the updated format of fast food is to take into account the trends towards a healthy lifestyle, home cooking, while maintaining the most important attributes of the market - price and speed. The purpose of the study is to analyze the main trends in the global fast food market and identify the features and prospects of the local Kazakhstani fast food market, while taking into account the impact of the trend on a healthy lifestyle in this segment and its manifestation in Kazakhstan. The methodological basis of the study is analysis, generalization of data on changes in the fast food market in the new conditions, as well as comparison and extrapolation. As part of the study, a survey of the population of Almaty at the age of 18-30 years was conducted in the amount of 2360 people. Based on the survey, the main trends of the local market, its difference from the world market, and specifics were identified. The scientific and practical significance of the work lies in identifying the dependence of the local fast food market on global trends, their prevention and successful implementation with a focus on leveling the factor of harmful effects on consumer health and involvement in the global trend for healthy eating as far as within the fast food market. The main results of the work can be used by fast food market participants in terms of compliance with global trends, as a result of meeting new consumer needs in dynamically changing market conditions.

Keywords: Fast Food, Halal, Consumer Preferences, Global Trends, Healthy Eating, Fast Food Market Problems.

МАКРОЭКОНОМИЧЕСКАЯ ПОЛИТИКА

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ҚҰС ШАРУАШЫЛЫҒЫН ИННОВАЦИЯЛЫҚ ДАМЫТУ: ЭКОНОМИКАЛЫҚ ЖӘНЕ ТЕХНОЛОГИЯЛЫҚ МӘСЕЛЕЛЕР

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Түйіндеме. Мақалада Қазақстандағы құс шаруашылығының инновациялық даму үрдістері талданады. Сонымен қатар, зерттеу ҚР Ұлттық статистика бюросының ресми деректері, құс өсірушілер одағының есептері және ғылыми әдебиеттер негізінде жүргізілді. Әдістемелік тұрғыдан салыстырмалы және экономикалық талдау тәсілдері қолданылды. Нәтижесінде құс шаруашылығының дамуына ықпал ететін негізгі инновациялық факторлар ретінде селекция, өндірістік процестерді автоматтандыру, экологиялық стандарттарды сақтау және цифрландыру айқындалды. Инновациялық технологияларды енгізу өндіріс тиімділігін арттырып, өнім сапасын жақсартуға және бәсекеге қабілеттілікті күшейтуге мүмкіндік беретіні дәлелденді. Қорытынды бөлімде құс шаруашылығының инновациялық дамуы ұлттық азық-түлік қауіпсіздігін қамтамасыз етудің және агроөнеркәсіптік кешеннің стратегиялық басымдықтарын іске асырудың маңызды алғышарты екені тұжырымдалды. Зерттеудің ғылыми жаңалығы – бұрынғы еңбектерден айырмашылығы, бұл зерттеу құс шаруашылығында инновациялардың жүйелі әсерін бағалаумен ерекшеленеді. Практикалық маңызы – алынған нәтижелерді мемлекеттік саясатта, шаруашылық деңгейінде немесе инвестициялық жобаларда қолдануға болатынын көрсету. Кедергі болатын факторлар ретінде қаржыландыру тапшылығы, инфрақұрылымның жеткіліксіздігі, заманауи технологияларды енгізудегі қиындықтар, білікті кадрлардың жетіспеушілігін атап өтуге болады. Стратегиялық бағыттары – биотехнологияны дамыту, экспорт әлеуетін арттыру, жасанды интеллект пен цифрлық платформаларды енгізу болып табылады.

Түйінді сөздер: құс шаруашылығы, инновациялық даму, агроөнеркәсіптік кешен, автоматтандыру, цифрландыру, азық-түлік қауіпсіздігі, бәсекеге қабілеттілік.

Кіріспе. *Зерттеу мақсаты* – Қазақстандағы құс шаруашылығының инновациялық даму үрдістерін талдау, оның дамуына кедергі болатын факторларды анықтау және стратегиялық басым бағыттарды айқындау.

Зерттеу әдістері – зерттеу Ұлттық статистика бюросының деректері, құс өсірушілер одағының есептері мен ғылыми еңбектер негізінде жүргізілді. Салыстырмалы және экономикалық талдау әдістері пайдаланылды.

Құс шаруашылығы саласындағы жоғары инновациялық белсенділік, негізінен, материалдық-техникалық және селекциялық-асылдандырумен қамтамасыз ету кәсіпорындарының ғылыми-техникалық қарқынды дамуының нәтижесі болып табылады.

Қазақстан Республикасында құс шаруашылығын дамыту 2021-2030 жылдарға арналған агроөнеркәсіптік кешенді дамыту тұжырымдамасы [1] мен 2018-2027 жылдарға арналған салалық даму бағдарламасы [2] шеңберінде жүзеге асырылуда. Алайда мемлекет тарапынан қолдау шаралары қабылданғанына қарамастан, отандық құс шаруашылығында инновацияларды ілгерілету процесі жаңа технологияларды енгізу мен игеру барысында бірқатар қиындықтармен ұштасып отыр.

Қазіргі ғылыми әдебиеттерде құс шаруашылығын инновациялық тұрғыда дамыту мәселелерін қарастырған шетелдік және отандық ғалымдардың еңбектері кеңінен орын алған. Ауыл шаруашылығында еңбек өнімділігін инновациялар арқылы арттырудың негізгі қағидаларын Жангирова Р.Н. [3], Абжалелова Ш.Р., Ерназарова У.С. және Челекбай А.Д. [4] жан-жақты талдаған. Қазақстанның құс шаруашылығы кешенін жаңғыртуға бағытталған зерттеулерге Стамкулова К.У. [5], Габбасова Ж., Доссанова А. және Лим С.С. [6] белсенді атсалысып, саланың тұрақты дамуын қамтамасыз ету тетіктерін зерделеген, бұл тәжірибе Қазақстан үшін құнды үлгі ретінде қарастырылады.

Зерттеулерді талдай отырып, құс шаруашылығы саласындағы инновациялық даму үдерісі теориялық және әдістемелік тұрғыдан әлі де толық зерделенбегені байқалады. Бұл мәселе тек ғылыми негіздемелерге ғана емес, сондай-ақ инновациялық процестерді басқару тәжірибесіне де қатысты. Осыған орай, зерттеудің мақсаты – Қазақстандағы құс шаруашылығының инновациялық даму үрдістерін талдау, оның дамуына кедергі болатын факторларды анықтау және стратегиялық басым бағыттарды айқындау.

Зерттеу материалдары мен әдістері. Бұл зерттеуде Қазақстандағы құс шаруашылығының инновациялық даму үрдістерін талдау және оның болашақ бағыттарын айқындау үшін әлемдік және ұлттық тәжірибеде қолданылатын материалдар мен әдістер негізге алынды. Теориялық базаны отандық және шетелдік ғалымдардың еңбектері, ҚР Ұлттық статистика бюросының жылдық статистикалық жинақтары, сондай-ақ Қазақстан құс өсірушілер одағының аналитикалық есептері құрады.

Нәтижелер және оны талқылау

Құс шаруашылығында инновациялық технологияларды қолдану ерекше маңызға ие. Бұл тұрғыда мемлекеттің негізгі міндеттерінің бірі – саланың тұрақты дамуын қамтамасыз ететін басты фактор ретінде асыл тұқымды құс шаруашылықтарын сақтау мен қолдауды күшейту болып табылады.

Аграрлық экономистердің бірқатар зерттеулерінде осы факторлардың мазмұны жұмыртқа өндірісіне қатысты көрсетілген.

1-кесте. Жұмыртқа өндірісіндегі ғылыми-техникалық прогрестің факторлары мен бағыттары

Факторлар	Ғылыми-техникалық прогресс бағыттары
Биологиялық	Жоғары өнімді тұқымдарды селекциялау, құстардың генетикалық потенциалын арттыру
Техникалық	Жабдықтарды жаңарту, автоматтандырылған жүйелерді енгізу
Технологиялық	Жоғары өнімді тұқымдарды селекциялау, құстардың генетикалық потенциалын арттыру
Экологиялық	Өндірістік процестерді оңтайландыру, азықтандыру және күту технологияларын жетілдіру
Экономикалық	Экологиялық таза өнім өндіру, қалдықтарды қайта өңдеу технологияларын енгізу
Ұйымдастырушылық	Өндіріс шығындарын азайту, жұмыртқа өнімділігін арттыру
Құқықтық	Логистикалық тізбектерді жетілдіру, басқару жүйелерін автоматтандыру
Әлеуметтік	Инновацияларды енгізуді ынталандыратын құқықтық базаны жетілдіру
Ақпараттық	Құс шаруашылығындағы заманауи ақпараттық технологияларды енгізу
Дерек көз: [7] әдебиет көздері негізінде автордың топтауы	

Қазіргі таңда World of NAN рейтингіне сәйкес Қазақстандағы ең ірі он құс өнімін өндіруші кәсіпорындар толық интеграцияланған өндіріс жүйесі арқылы ішкі нарықтың сұранысын қанағаттандырып қана қоймай, өз өнімдерін шетелдің көршілес мемлекеттеріне де экспорттап отыр.

2-кесте. 2024 жылға топ-10 ірі құс еті мен жұмыртқасын өндірушілер

№	Атауы	Аймақ	Экономикалық қызмет түрі
1	«Макинская құс фабрикасы» ЖШС	Ақмола	құс етін өңдеу және консервілеу
2	«Өскемен құс фабрикасы» АҚ	Шығыс Қазақстан	асыл тұқымды құс өсіру
3	«Алель Агро» АҚ	Алматы	құс етін және жұмыртқа өндіру
4	«Алатау-құс» АҚ	Алматы	құс етін және жұмыртқа өндіру
5	«Қазгеркүс» ЖШС	Алматы	асыл тұқымды құс өсіру
6	«Capital Projects LTD» ЖШС	Ақмола	құс шаруашылығы
7	«Прима құс» ЖШС	Алматы	құс етін және жұмыртқа өндіру
8	«Nauryz Agro LTD» ЖШС	Ақмола	жұмыртқа өндіру
9	«Когер ЛТД» ЖШС	Алматы	жұмыртқа өндіру
10	«Ижевский» ӨК	Ақмола	асыл тұқымды құс өсіру
Дерек көзі: [8] World of NAN. https://world-nan.kz/			

2024 жылғы World of NAN деректеріне сәйкес Қазақстанда құс етін және жұмыртқа өндіру бойынша жетекші он кәсіпорын анықталған. Кестеде көрсетілгендей, өндірістің негізгі бөлігі Ақмола және Алматы облыстарында шоғырланған. Бұл аймақтарда инфрақұрылымның жеткілікті дамуы, жем-шөп базасының қалыптасуы және нарыққа жақындығы өндірістің тиімділігін қамтамасыз етіп отыр.

Атап айтқанда, «Макинская құс фабрикасы» ЖШС Ақмола облысында құс етін өңдеу және консервілеумен айналысып, ішкі нарықтың маңызды үлесін қамтып отыр. Алматы облысында орналасқан «Алель Агро» АҚ және «Алатау-құс» АҚ құс етін және жұмыртқа өндіру бағытында жетекші орын алады. Бұдан бөлек, «Қазгеркүс» ЖШС мен «Өскемен құс фабрикасы» АҚ асыл тұқымды құс өсіру ісімен айналысып, генетикалық іріктеу мен сапалы өнімді қамтамасыз етуде. Инновациялық дамуға бет бұрған кәсіпорындар ішінде «Capital Projects LTD» ЖШС мен «Nauryz Agro LTD» ЖШС құс шаруашылығын заманауи технологиялар негізінде ұйымдастыруға ұмтылып отыр. Жұмыртқа өндірісінде «Когер ЛТД» ЖШС айтарлықтай орынға ие болса, Ақмола облысындағы «Ижевский» ӨК селекциялық базаны жетілдіруге үлес қосуда.

Жалпы алғанда, ірі кәсіпорындардың тікелей интеграцияланған өндірістік жүйелерді енгізуі ішкі тұтынуды қамтамасыз етіп қана қоймай, экспорт көлемін де арттыруға мүмкіндік беруде. Бұл отандық құс шаруашылығының бәсекеге қабілеттілігін нығайтып, азық-түлік қауіпсіздігін қамтамасыз етудегі стратегиялық рөлін күшейтеді

3-кесте. Құс шаруашылығын дамытудың инновациялық және инерциялық нұсқаларын салыстыру

Инерциялық нұсқа	Инновациялық нұсқа
1. Инвестициялық қаражатты тарту 2. Дәстүрлі технологияларды пайдалану 3. Шығындарды төмендету және тиімділікті арттыруға резервтер іздеу 4. Әсіресе премиум және нишалық сегменттегі өнімдерге халық сұранысының өсуі 5. Шикізаттық базаны дамыту, оның ішінде отандық ресурстарды кеңейту 6. Құс өнімдері нарығында бренд қалыптастырудың рөлін арттыру 7. Кедендік-тарифтік реттеу шараларын іске асыру	1. Жаңа технологияларды енгізу және ғылыми зерттеулерді бірлесіп қаржыландыруға бизнестің қатысуын кеңейту 2. Құс шаруашылығы кәсіпорындары мен инфрақұрылымдық секторларды жаңарту және техникалық тұрғыдан жетілдіру 3. Тұтынушылар тарапынан құс етіне, жоғары қайта өңделген өнімдер мен жұмыртқаға деген сұранысты қалыптастыру 4. Өнім түрлерін әртараптандыру және ассортиментті кеңейту 5. Өткізу нарықтарын ұлғайту және жаңа бағыттарға шығу 6. Құс етінің сапасын арттыру 7. Қаптау технологияларын жетілдіру арқылы сақтау мерзімін ұзарту 8. Құс қалдықтарын тиімді кәдеге жарату мәселесін шешу 9. Экспорт көлемін арттыруға қолайлы халықаралық жағдайлар жасау
Ескерту: [9,10] әдебиет көздері негізінде авторлармен құрылған	

Құс шаруашылығын әлеуметтік-экономикалық жаңғыртудың стратегияларын әзірлеу кезінде әртүрлі сценарийлік тәсілдер қолданылуы мүмкін (3-кесте). Құс шаруашылығын дамытудың инерциялық нұсқасы құс өнімдеріне тұтынушылық сұраныстың өзгеруін, құс өнімдерінің қолданыстағы бәсекеге қабілеттілік деңгейін, инвестициялық белсенділіктің орташа деңгейін және импортқа тәуелділік дәрежесін ескереді.

Құс шаруашылығын жаңғыртудың инновациялық сценарийі экономиканың инновациялық секторына ресурстарды тиімді шоғырландыруды көздейді. Бұл тәсіл саланың прогрессивті дамуына жағдай жасап қана қоймай, құс өнімдерінің ішкі және сыртқы нарықтағы бәсекеге қабілеттілігін күшейтуге, жалпы экономикалық өсімге және әлеуметтік тиімділікті арттыруға ықпал етеді.

Қорытынды. Жалпы алғанда, құс шаруашылығын инновациялық дамыту – өнімділікті арттырудың, саланың тұрақты дамуын қамтамасыз етудің, азық-түлік қауіпсіздігін нығайтудың және экологиялық проблемаларды шешудің негізгі шарты болып табылады. Селекция, генетикалық іріктеу, заманауи азықтандыру әдістері және технологиялық процестердегі ғылыми жетістіктер құс шаруашылығының тиімділігін одан әрі жоғарылатуға мүмкіндік береді.

Осыған байланысты, мемлекет пен бизнес арасындағы өзара іс-қимылды күшейтіп, инновациялық жобаларды қолдауға, жаңа технологияларды енгізуге және цифрлық трансформацияны жеделдетуге ерекше назар аудару қажет. Сонымен қатар, кадрлық әлеуетті дамыту, ауыл шаруашылығы ғылымын қолдау және халықаралық тәжірибені бейімдеу саланың ұзақ мерзімді бәсекеге қабілеттілігін қамтамасыз етеді.

Инновациялық даму құс шаруашылығының өнімділігін арттырудың, азық-түлік қауіпсіздігін қамтамасыз етудің және саланың бәсекеге қабілеттілігін нығайтудың басты тетігі болып табылады.

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Innovative Development of Poultry Farming: Economic and Technological Issues

Abstract. The article analyzes the innovative development processes of poultry farming in Kazakhstan. The research is based on official data from the Bureau of National Statistics of the Republic of Kazakhstan, reports of the Poultry Farmers' Union, and scientific literature. The methodological framework includes comparative and economic analysis. The results reveal key innovative factors that contribute to the development of poultry farming: breeding, automation of production processes, compliance with environmental standards, and digitalization. It is established that the introduction of innovative technologies increases production efficiency, improves product quality, and strengthens the competitiveness of the sector. The conclusion emphasizes that the innovative development of poultry farming is an important prerequisite for ensuring national food security and achieving the strategic priorities of the agro-industrial complex. The scientific novelty of the study lies in the systematic assessment of the impact of innovations on the development of the industry, which distinguishes it from previous works. The practical significance is determined by the possibility of applying the results in public policy, at the enterprise level, or in investment projects. The main constraints include insufficient funding, limited infrastructure, difficulties in implementing modern

technologies, and a shortage of qualified personnel. Strategic directions include the development of biotechnology, enhancement of export potential, and the implementation of artificial intelligence and digital platforms.

Keywords: Poultry Farming, Innovative Development, Agro-Industrial Complex, Automation, Digitalization, Food Security, Competitiveness.

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Инновационное развитие птицеводства: экономические и технологические аспекты

Аннотация. В статье анализируются инновационные процессы развития птицеводства в Казахстане. Исследование основано на официальных данных Бюро национальной статистики РК, отчетах Союза птицеводов и научной литературе. Методологическую основу составили сравнительный и экономический анализ. В результате выявлены ключевые инновационные факторы, способствующие развитию птицеводства: селекция, автоматизация производственных процессов, соблюдение экологических стандартов и цифровизация. Установлено, что внедрение инновационных технологий повышает эффективность производства, улучшает качество продукции и усиливает конкурентоспособность отрасли. В заключении подчеркивается, что инновационное развитие птицеводства является важной предпосылкой обеспечения национальной продовольственной безопасности и реализации стратегических приоритетов агропромышленного комплекса. Научная новизна исследования заключается в системной оценке влияния инноваций на развитие отрасли, что отличает его от предыдущих работ. Практическая значимость заключается в возможности использования полученных результатов в государственной политике, на уровне хозяйств или в инвестиционных проектах. К факторам, сдерживающим развитие, относятся недостаток финансирования, ограниченность инфраструктуры, сложности внедрения современных технологий и дефицит квалифицированных кадров. В качестве стратегических направлений определены развитие биотехнологий, наращивание экспортного потенциала, внедрение искусственного интеллекта и цифровых платформ.

Ключевые слова: птицеводство, инновационное развитие, агропромышленный комплекс, автоматизация, цифровизация, продовольственная безопасность, конкурентоспособность.

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RESEARCH ON INNOVATION-DRIVEN DEVELOPMENT MECHANISM OF CHINA'S NEW ENERGY INDUSTRY

Abstract. Energy, as the core of the national development strategy, is directly related to national security. Especially in the current context of growing energy scarcity and severe environmental pollution, the advantages of new energy – such as being clean, environmentally friendly, and sustainable – have become increasingly prominent. Innovation plays a crucial role in the development and competition of the new energy industry. Therefore, by analyzing the development status of China's new energy industry, this paper finds that in recent years China's new energy sector has developed rapidly and achieved notable results; however, technological development is relatively lagging and the overall level of industrialization remains to be improved. Compared with world-leading countries, China's new energy industry started later, and there are still considerable shortcomings in the field of new energy technology: weak independent R&D capability, with some key technologies still dependent on import of core technologies, which in turn leads to an insufficient systematization of the autonomous innovation capability for high technologies, engineering applications, and industrialization. These problems require concrete countermeasures to advance them. Accordingly, this paper proposes the establishment of a "trial-in-one" innovation-driven mechanism (from the perspectives of government, enterprises, and society) to support the development of the industry, in which the government acts as leader and facilitator, enterprises as innovators and implementers, and society as supporters and supervisors; the synergy among the three will promote the efficient development of China's new energy industry and provide a foundation for subsequent policy recommendations.

Keywords: Energy, new Energy Industry, Innovation, Mechanism, Development.

Introduction. Energy, as the fundamental driving force for sustainable social and economic development, supports the development of the national economy. However, with the rapid economic development, energy consumption continues to rise – mankind is now confronting increasingly severe energy shortages and environmental damage, and the contradiction between natural resources, the ecological environment, and economic development has become ever more prominent.Against this backdrop, new energy – as a green and low-carbon sector – has become the key battlefield of the new round of industrial revolution. Countries around the world have focused on the new energy industry, the Japanese government introduced a "low-carbon society action plan" and other related policies to speed up the promotion of the development of new energy indus-

try. The U.S. government provides tax incentives, loan guarantees and other ways to help the development of wind and solar energy industry.

The European Commission has established the European Union Energy Research Alliance, invested 10 billion euros for the development and utilization of new energy, and aspire to build the world's leading green industry. Russia as the world's traditional energy exporting countries, also gradually realized the importance of the development of new energy in recent years, and has actively developed the photovoltaic power generation industry. The Dutch government promotes the development of the new energy industry by giving tax breaks for clean energy infrastructure construction and by providing free charging piles in the streets.

Experimental part. With the increasingly serious problems of global energy shortages, climate change, and environmental degration, governments have been focusing on the development of the new energy industry, vigorously developing the innovation of new energy technology, with a view to leading a new generation of energy revolution. Therefore, many experts and scholars from all over the world have carried out extensive research on the development of new energy industry, mainly focusing on the following aspects:

As early as 1983, William & Brian proved the importance of the development of new energy industry for New Zealand by analyzing the current development of New Zealand's energy industry, and suggested that the New Zealand government should formulate laws to deal with the environmental problems caused by energy consumption [1].

Pablo del Rio and others concluded that the solar photovoltaic power generation industry in Spain suffers from the problems of high development costs and financial barriers. Del Rio further argues that the Spanish solar PV industry has high development costs and financial barriers, and the PV industry is therefore at a relative disadvantage compared to other new energy industries in Spain [2].

SUWA A et al. argued that Japan's new energy industry lacks technological innovation, and that it should be expanded to include solar, wind, and geothermal energy through the implementation of a strong innovation policy [3]. Mastepanov AM, through a study of alternative options for power development in Russia, suggested that the government of New Zealand should adopt a law to protect the environment caused by energy consumption. Mastepanov AM, by studying the alternatives for power development in Russia, believed that nuclear power would become a very important part of Russia's fuel and power industry [4].

As for the development of new energy industry in China, Zhang Hongxia and Zhang Yanjie studied the development of new energy in China and found that the development of new energy industry in China has the problems of outstanding industrial unification, insufficient level of technological research and development as well as low efficiency of planning and management of new energy industry [5].

Jin Leqin argued that China's new energy industry development is faced with the lack of core technology, lagging market cultivation, industry blind expansion and other contradictions. Therefore, it is recommended to assist the development of new energy industry from the aspects of technological innovation,

market cultivation and industrial regulation, so as to promote the healthy and sustainable development of new energy industry [6].

In order to realize the sustainable and healthy development of new energy, it is indispensable to have the support of technological innovation. Néstor et al. selected patent data as the main measurement index and evaluated the technological innovation of the new energy industry, at the same time, they also focused on analyzing the spillover benefits of technological innovation of the new energy industry by adopting the method of positive patent citation [7].

Wang Qunwei et al. selected the four dimensions of technological innovation investment, management, demonstration and promotion as the entry point, pointing out that R&D investment has the most significant and direct impact on technological innovation in the new energy industry [8].

Jiang Nan and Li Jiyu verified that there is a positive correlation between the continuous innovation of new energy enterprises and the technological influence of the industry through the patent citation network by using the data in Derwent Global Database [9]; while Xie Cong and Wang Qiang selected the data of solar and wind energy patent applications of 367 urban units in China from 2001 to 2018 by adopting the methods of the Gini coefficient, spatial autocorrelation, and spatial econometric modeling, and by using the data of the patent application data of solar and wind energy from 2001 to 2018. By using the Gini coefficient and spatial autocorrelation and spatial measurement model, Xie Cong and Wang Qiang selected 367 cities in China from 2001 to 2018 to measure the technological innovation capacity of the new energy industry, and then explored and thought about the stage of innovation development of China's new energy industry, the overall differences, spatial distribution, spatial correlation, and influencing factors [10].

In addition, many experts and scholars at home and abroad have also conducted research on innovation-driven new energy industry development, new energy industry innovation performance and other aspects, and the research has been fruitful. Based on the existing research, this paper, in light of the current development status of China’s new energy industry, focuses on the connotation and extension of innovation-driven development. It aims to lead the development of the new energy industry through innovation-driven approaches, thereby promoting the establishment of an innovation mechanism for China’s new energy industry.

Through the method of literature analysis, we can better understand and explore the knowledge related to the innovation-driven mechanisms of the new energy industry, thereby providing a basis for our research and decision-making. From the existing relevant literature and materials both domestically and internationally, it is undeniable that the new energy industry plays a crucial role in ensuring the energy supply security and stability of countries and regions, protecting ecological balance, and promoting the development of society and the economy toward green, low-carbon, and sustainable directions.

Therefore, by reviewing books and journals provided by libraries, searching for data and materials from new energy-related research institutions, and organizing and analyzing internet data information, this study conducted a systematic analysis from historical development and logical reasoning perspectives, thereby providing theoretical support for the research theme of this paper. Additionally, this paper employs case study methodology, selecting typical en-

terprises within the new energy industry as case study subjects. It conducts an in-depth analysis of their successful experiences and practical models in technological innovation, management innovation, and market expansion, summarizing their effective measures and strategies for enhancing innovation efficiency. Through case studies, this paper gains a micro-level understanding of the innovative development paths of new energy enterprises, providing references and insights for other enterprises, while also offering practical support for macro-level industrial development strategies.

Results and discussions. Since China's reform and opening up, its economy has achieved rapid development, but energy consumption has also surged. Through the data of energy consumption structure in recent years, it is not difficult to see that the proportion of hydropower, nuclear energy, geothermal energy and other power energy as clean energy occupies the proportion of China's energy consumption is gradually increasing, from 14.5% in 2018 to 17.5% in 2022, at the same time, the proportion of coal consumption continues to decline, from 59.0% in 2018 to 56.2% in 2022, and the proportion of coal consumption continues to decline.

The data shows that the new energy industry is developing well and is gradually replacing some non-renewable resources, but in China's current energy consumption structure, coal still dominates. Therefore, from Figure 1, we can see that in recent years, although along with the transformation of China's energy consumption structure, new energy such as hydropower, wind power, nuclear energy, geothermal energy and other clean energy consumption ratio continues to rise, the proportion of coal consumption has declined, but coal in the short term is still China's energy structure of the basic resources.

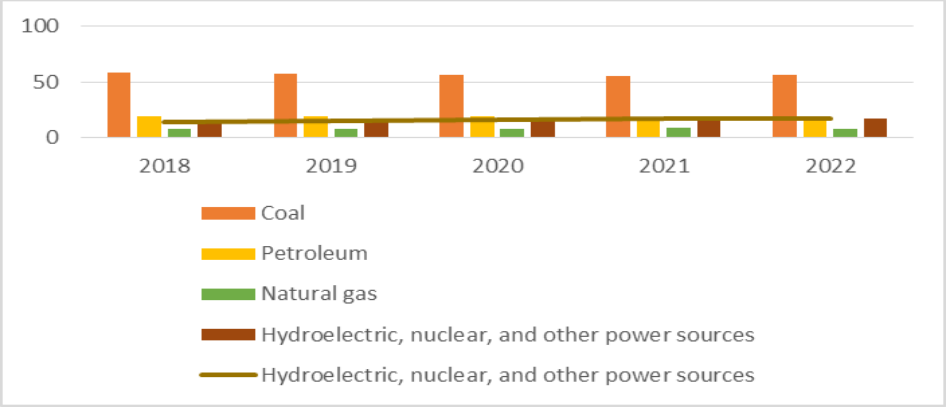

Figure 1 – China's Energy Consumption Structure and the Proportion of Clean Energy Consumption

Data source: China Statistical Yearbook

The energy structure of coal, oil, natural gas and clean energy will not change significantly. In order to continue to promote the development of China's new energy, in 2019, the Chinese government positioned the new energy

industry as a strategic emerging industry, and the report of the 19 th National Congress put forward the need to focus on promoting the revolution in energy production and consumption, and to build a clean, low-carbon, safe, and efficient energy system. On March 15, 2021, General Secretary Xi Jinping presided over the ninth meeting of the Central Finance and Economics Commission (CFEC) and emphasized that China should improve the energy "dual-control" system, strive to achieve carbon peak by 2030 and carbon neutral by 2060, and gradually build a new power system with new energy as the main body.

The development of new energy industry has become the center of gravity of the development of each country and region, nowadays, in order to take the upper hand in the energy revolution marked by green and low-carbon technology, we must attach great importance to the development of new energy industry, and scientific and technological innovation to lead the high-quality development of new energy.

China focuses on cultivating the new energy industry as a strategic emerging industry, and has achieved good results, but still faces a series of problems that need to be solved in the process of development.

China's new energy technology is relatively backward, and the overall industrialization is not high. China's new energy industrialization development started late, so compared with the world's advanced countries, China's new energy technology is backward, independent research and development ability is weak, some major technologies still rely on the introduction of the core and key technologies are subject to others, resulting in the systematization of independent innovation of high and new technology, engineering, and low level of industrialization.

China's new energy industry has not invested enough in research and development, and lacks a sound science and technology innovation system. In recent years, although the government departments of the new energy industry to provide certain financial support, but obviously these investments are unable to meet the new energy industry research and development needs, in addition, due to China's regional economic development is not balanced, which leads to the development of new energy industry between the region is also not balanced, which results in the distribution of new energy research and development resources in various fields, regions and enterprises between the distribution is not even. In addition, China has not established a sound innovation system for new energy.On the one hand,standards and legal norms in China’s new energy field suffer from a certain lag, making it impossible to timely solve the new energy field of technology and innovation problems. On the other hand, the cooperation between scientific research institutions and enterprises is insufficient, which results in difficulties in transforming scientific research outcomes into practical productivity.

The new energy industry has been recognized as a strategic emerging industry for key cultivation in China, thanks to its environmentally friendly, clean and sustainable characteristics. However, at the same time, the new energy industry needs to be supported by comprehensive high technology with high scientific and technological content, which requires high capital investment. Therefore, despite the broad prospects for the development of new energy, it still faces technical and economic challenges in the process of realizing the scale, industrialization and market market-oriented growth. To address these

challenges, it is necessary to integrate the efforts of enterprises, the government, and society to establish a multi-dimensional and diversified innovation mechanism, thereby fostering a virtuous cycle between the development of new energy and the sustainable development of society and economy.

In the process of promoting the high-quality development of new energy industry, the government should play a leading and facilitating role. On the one hand, the government departments, through the development and implementation of relevant policies and systems, should reduce the market access standards of new energy industry, so as to provide better conditions and environment for the development of new energy industry. For instance, the government should establish a differentiated incentive mechanism and provide focused rewards for innovation and breakthroughs in key technological areas. On the other hand, government departments can also optimize the top-level design of the new energy industry and promotion mechanism, while implementing a number of initiatives in parallel to promote the development of new energy industry in all aspects.

In the process of promoting the high-quality development of the new energy industry, enterprises should play their role in innovation and implementation. On the one hand, enterprises should take innovation as the core driving force of enterprise development, increase scientific and technological research and development and technological innovation, and strive to promote the progress and application of new energy technology; on the other hand, enterprises should optimize the energy production layout and consumption structure, increase the proportion of clean energy consumption, and reduce the emission of pollutants and carbon dioxide. In addition, enterprises should play the decisive role of the market in the allocation of resources, support the green financial system of energy transformation, promote healthy competition in the energy industry, and provide vitality and support for the development of new energy industry.

In the process of promoting the high-quality development of the new energy industry, society should play its role of support and supervision. On the one hand, the key driving force for the development of the new energy industry comes from the public's recognition of and demand for new energy. Therefore, society can reasonably guide the innovative behavior of new energy enterprises from the perspective of industrial health and sustainable development, thus enhancing the competitiveness of the new energy industry; on the other hand, all sectors of society can establish a public opinion monitoring mechanism, with the help of the power of the new media, to promote the standardization of the work of the relevant government departments and enterprises, so as to promote the healthy development of the new energy industry.

Conclusion. Compared with other developed countries in the world, China's new energy industry development started late, technology is relatively backward, with relatively backward technologies and a low level of industrialization. Therefore, in the process of promoting the realization of the development of new energy industry, we must take innovation as the core driving force and establish an innovation mechanism featuring a trinity of the government, enterprises, and society. Specifically, the government should guide the development direction of the new energy industry by formulating policies and systems; enterprises should drive the industry’s development through R&D innova-

tion and market applications; and society should ensure its healthy development through effective support and supervision. Through synergistic innovation among these three parties, we can jointly promote the high-quality development of the new energy industry.

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Қытайдың жаңа энергетикалық индустриясының инновацияға негізделген даму механизмін зерттеу

Түйіндеме. Энергия ұлттық даму стратегиясының өзегі ретінде ұлттық қауіпсіздікке тікелей байланысты. Әсіресе, өсіп келе жатқан энергия тапшылығы мен қоршаған ортаның қатты ластануының қазіргі контекстінде, жаңа энергияның артықшылығы, мысалы, таза, экологиялық таза және тұрақты болып табылады. Инновация жаңа энергетикалық саланың дамуында және бәсекелесіндегі шешуші рөл атқарады. Осылайша, Қытайдың жаңа энергетикалық саласының даму мәртебесін талдап,

бұл құжат соңғы жылдары Қытайдың жаңа энергетикалық секторы қарқынды дамып, айтарлықтай нәтижелерге қол жеткізгенін анықтайды. Алайда, технологиялық даму салыстырмалы түрде артта қалып, индустрияландырудың жалпы деңгейі жетілдіріліп отыр. Әлемдік жетекші елдермен салыстырғанда, Қытайдың жаңа энергетикалық индустриясы кейінірек жаңа энергетикалық технологиялар саласында айтарлықтай күрделі кемшіліктер бар, ал кейбір негізгі технологиялар, олар әлі де негізгі технологиялармен, өз кезегінде жоғары технологиялар, инженерлік қосымшалар және индустрияландыру үшін автономды инновацияны жүйелеуге әкеледі.Бұл проблемалар нақты қарсы шараларды қажет етеді. Тиісінше, бұл құжат индустрияның «сынақ перспективаларын» (үкімет перспективаларынан) құруды, оның ішінде үкіметтің көшбасшы және фасилитатор, кәсіпорындар, кәсіпорындар, инноваторлар және ұйымдар ретінде, қоғам ретінде, жанкүйерлер мен супервайзер ретінде қызмет етеді; Үшеуінің ішіндегі синергия Қытайдың жаңа энергетикалық индустриясының тиімді дамуына ықпал етеді және келесі саясат ұсыныстарын ұсынады.

Түйінді сөздер: энергетика, жаңа энергетика, инновация, механизм, даму.

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Исследование механизма инновационного развития новой энергетической отрасли Китая

Аннотация. Энергия, как ядро национальной стратегии развития, напрямую связана с национальной безопасностью. Особенно в текущем контексте растущего недостатка энергии и тяжелого загрязнения окружающей среды, преимущества новой энергии, такие как чистая, экологически чистая и устойчивая, становятся все более заметными. Инновации играют решающую роль в развитии и конкуренции новой энергетической промышленности. Поэтому, анализируя статус развития новой энергетической промышленности Китая, в этой статье показано, что в последние годы новый энергетический сектор Китая быстро развивался и достиг заметных результатов; Тем не менее, технологическое развитие относительно отстает, а общий уровень индустриализации еще предстоит улучшить. По сравнению со ведущими странами в мире, новая энергетическая промышленность Китая началась позже, и в области новых энергетических технологий по-прежнему существует значительные недостатки: слабые независимые возможности НИОКР, причем некоторые ключевые технологии попрежнему зависят от импорта основных технологий, что, в свою очередь, приводит к недостаточной систематизации автономных инновационных способностей для высоких технологий, инженерных применений и промышленности. Эти проблемы требуют конкретных контрмеров для их продвижения. Соответственно, в этом документе предлагается создание механизма, основанного на инновациях, основанном на инновациях (с точки зрения правительства, предприятий и общества) для поддержки развития отрасли, в которой правительство выступает в качестве лидера и фасилитатора, предприятий в качестве новаторов и исполнителей, а также общество в качестве сторонников и руководителей; Синергия между этими тремя будет способствовать эффективному развитию новой энергетической промышленности Китая и предоставит основу для последующих политических рекомендаций.

Ключевые слова: энергия, новая энергетическая промышленность, инновации, механизм, разработка.

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RESEARCH ON THE INNOVATION AND DEVELOPMENT OF CHINA'S NEW ENERGY VEHICLE INDUSTRY

Abstract. In order to alleviate the serious environmental pollution and resource crisis, new energy vehicles have received wide attention from countries all over the world because of their energy-saving, environmentally friendly, green and low-carbon advantages, and various countries and regions have been vigorously developing the new energy vehicle industry. Although compared with developed countries, China's new energy automobile industry started late, but under the strong support of the government, it has achieved remarkable development, showing a booming trend, but at the same time, there are also many problems that need to be solved, so China's new energy automobile industry in order to achieve sustainable development, need to rely on innovation, improve the construction of infrastructure, strengthen the research and development of key core technologies, and improve the mechanism of professional training of personnel, so as to ensure the healthy development of China's new energy automobile industry, to ensure that the new energy automobile industry will be able to meet the challenges of the future. Thus, to achieve sustainable development of China's new energy automobile industry, we need to rely on innovation, improve infrastructure construction, strengthen the research and development of key core technologies, and improve the training mechanism of professional talents, so as to guarantee the healthy and sustainable development of China's new energy automobile industry.

Keywords: Innovation, Core Technology, Challenge, Development, New Energy Vehicle Industry.

Introduction. In recent years, as the contradiction between energy development and environmental protection becomes more and more intense, the development of new energy automobile industry has become the need of sustainable development of national economy, and every country in the world has begun to focus on the development of new energy automobile industry. China as a large country of automobile manufacturing and consumption, for industrial upgrading, energy security and environmental protection point of view, the development of new energy automobile industry can not be delayed. The Party Central Committee and the State Council attaches great importance to the development of new energy automobile industry, China's new energy automobile industry has also achieved remarkable development under the strong support of the government, however, China wants to promote the sustainable development of new energy enterprise industry, still need to rely on innovation, because innovation is the first power to lead the development of the new energy automobile

industry, China's new energy automobile is able to realise the corner overtaking, the key lies in the innovation.

Experimental part. China's new energy vehicle industry started relatively late, in 2007, by the People's Republic of China Ministry of Industry and Information Technology to develop the 'new energy vehicle production access management rules' to be formally implemented, in the same year, the National Development and Reform Commission of the People's Republic of China issued the 'Industrial Structure Challenges Guidance Catalogue', marking the new energy vehicles formally entered into the state to encourage the development of the industry catalogue, China's new energy vehicles began to formally embark on the road of development. China's new energy vehicles began to formally embark on the road of development. Subsequently, from 2009 to 2012, China launched the 'ten cities, one thousand vehicles' plan, marking the beginning of China's new energy vehicles and ups and downs of the development process. Over the past ten years, China's new energy vehicle industry has developed significantly under the strong support of government departments.

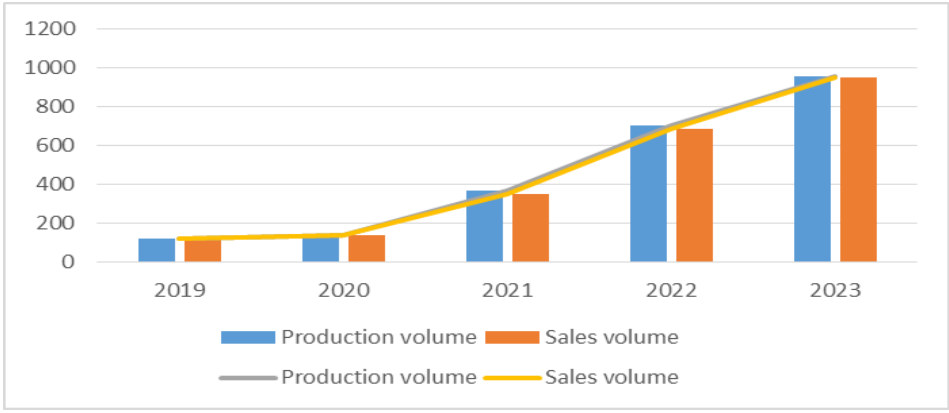

Figure 1 – Production and sales of new energy vehicles in China from 2019 to 2023, Unit: 10000 vehicles

Data source: Survey data from China Association of Automobile Manufacturers

According to the data survey of China Association of Automobile Manufacturers (CAAM), as shown in Figure 1, from 2019 to 2020, the growth of China's new energy vehicle production and sales situation is not large and tends to stabilise, and neither the production nor the sales volume has been able to break through the two million units. But after entering 2021, China's new energy vehicle production and sales reached 3.545 million vehicles and 3.521 million vehicles, respectively, year-on-year both got a 1.6-fold growth, the market share reached 13.4%, 8 percentage points higher than in 2020, and in 2022, China's new energy vehicle production and sales reached 7.058 million vehicles and 6.887 million vehicles, respectively, presenting explosive growth. In 2023, the production and sales volume of China's new energy vehicles reached 9.587 million and 9.495 million respectively, with the production and sales volume hitting a record high, and this data further reflects that China's new energy vehi-

cle industry has maintained a strong growth trend in recent years, highlighting the scale and influence of China's new energy vehicle industry.

In addition, while the production and sales volume of Chinese new energy vehicles have achieved significant growth, the quality of products, technological innovation, brand building and other aspects hav e been significantly improved, and the number of products exported has also increased rapidly. As shown in Figure 2, except in 2020, China's exports of new energy vehicles decreased, mainly due to the impact of the outbreak of the new coronary pneumonia epidemic and the slowdown of economic operations. With technological innovation and the growth of market demand, China's exports of new energy vehicles increased significantly in the following years. In 2021, China's exports of new energy vehicles reached 426,000 units, an increase of 291.4 per cent year-on-year, of which China's exports of pure electric vehicles increased to three times that of the previous year in 2021, reaching about 500,000 units and leaping to the top of the world. In 2022, China's exports of new energy vehicles were 67.9 million units, a year-on-year increase of 291.4 per cent. New energy vehicle export volume is 679,000 units, a strong increase, especially in the context of global carbon reduction, China's new energy vehicle breakthroughs in key technology areas, such as intelligent driving and triple-electric technology, have further opened up the visibility of China's new energy vehicle brands internationally. By 2023, China's new energy vehicle exports even reached 1.203 million units, a year-on-year increase of 77.6%. The rapid growth of China's new energy vehicle exports marks the rapid development of China's new energy vehicle industry and the improvement of its international competitiveness, and at the same time highlights China's vigorous development of its new energy vehicle market and its technological innovation capabilities.

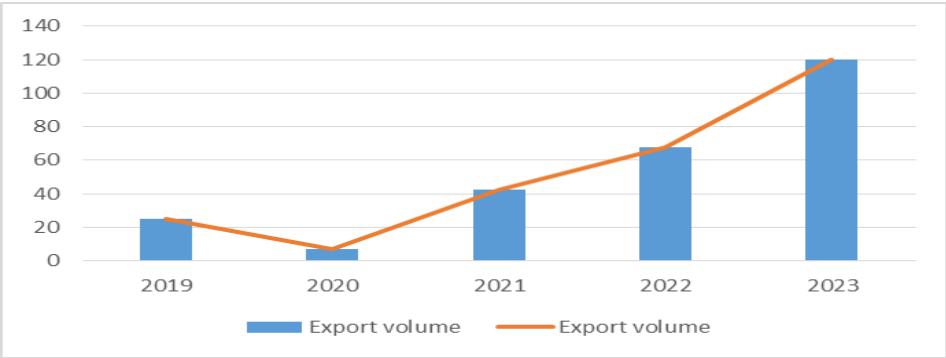

Figure 2 – Export volume of new energy vehicles in China from 2019 to 2023, Unit: 10000 vehicles

Data source: Survey data from China Association of Automobile Manufacturers

Results and discussions. China's new energy automobile industry over the years of continuous development and accumulation of advantages, to achieve the transformation from quantitative to qualitative change, the overall strength has been improved, but the development process there are also some urgent problems to be solved, mainly including the following aspects:

Charging facilities for the development of new energy vehicles is crucial, to accelerate the promotion and application of new energy vehicles, supporting charging infrastructure must be perfect. However, at present, China's new energy vehicle supporting infrastructure is insufficient, resulting in poor user experience and seriously restricting the development of the new energy vehicle market. According to the survey data of China Electric Vehicle Charging Infrastructure Promotion Alliance, by the end of 2023, China has built 3.386 million charging equipment, up 30.6% year-on-year, but the pile-vehicle incremental ratio is only 1:2.8, the pile incremental ratio is far less than the vehicle incremental ratio, and there is still a certain distance from the goal of achieving the pile-vehicle ratio of 1:1 in 2030, in particular, the new energy vehicles in the city supporting infrastructure is basically universal, but in the countryside, the new energy vehicles supporting infrastructure must be perfected. In particular, the infrastructure of new energy vehicles in cities is basically popular, but in rural areas, the charging infrastructure is lagging behind, which makes new energy vehicle users face the problem of not being able to charge conveniently and quickly. Therefore, the charging difficulty directly affects consumers' experience and is not conducive to the promotion and application of new energy vehicles.

Due to the late start of China's new energy vehicle industry, belonging to the emerging industry, although now in the strong support of government departments has achieved significant development, but the key core technology is still difficult to break through the main obstacles limiting the high-quality development of new energy vehicle industry. On the one hand, the core materials related to high-quality power batteries are seriously dependent on imports, and part of the machinery and equipment for manufacturing power batteries are also dependent on imports, in addition, some key components, such as automotive chips, millimetre-wave radar, etc., need to be imported, and the excessive reliance on imports not only restricts the space for innovation of China's new energy vehicles, but also affects the sustainable development of the industry as a whole. On the other hand, due to insufficient investment in research and development, China's new energy vehicles in the motor system technology, intelligent network chain vehicle technology and other key technology areas with the international advanced level there is a certain gap between the ‘neck’ problem for a long time, so that the new energy vehicle technology development is slow.

Due to the continuous development and expansion of China's new energy automobile industry, the demand for talents with relevant technical background and professional knowledge is increasing. In particular, new energy vehicles involve a number of professional and technical fields, such as power battery technology, in-vehicle network technology, electric vehicle simulation, control system technology, etc. These technical fields require professionals with profound professional knowledge and strong practical ability, however, the current cultivation of talents in these related fields is insufficient to meet the growing demand for talents in new energy vehicle market. According to the forecast of the ‘Manufacturing Talent Development Planning Guide’ issued by the Ministry of Industry and Information Technology of the People's Republic of China, it is pointed out that by 2025, the total number of talents for energy-saving and new energy vehicles will reach 1.2 million, but the talent gap is expected to reach

1.03 million. This gap covers a wide range of non-R&D professions from marketing, automotive services, small languages, law, etc., showing that the new energy automotive industry not only has a huge demand for technical talents, but also has a huge demand for management, marketing and other aspects. There is also a wide range of demand in other areas such as management and marketing.

According to the current situation of the development of China's new energy automobile industry and the existing problems, the development of China's new energy automobile industry should rely on innovation, focusing on the following priorities.

The normal operation of new energy vehicles can not be separated from the perfect supporting infrastructure, therefore, the government should formulate relevant policies and systems, appropriate relaxation of market access rules, improve the charging infrastructure construction and implementation of relevant standards and other means, on the one hand, to encourage enterprises to build more charging stations, on the other hand, to promote the private sector investment in the construction of charging infrastructure, to guide the participation of social capital in public charging facilities, so as to vigorously promote the construction of new energy vehicles, thus vigorously promoting the development of new energy vehicles industry in China. On the one hand, encourage enterprises to build more charging stations, on the other hand, encourage private enterprises to invest in the construction of charging infrastructure, guide social capital to participate in the construction of public charging facilities, so as to vigorously promote the construction of new energy vehicle supporting infrastructure. Secondly, in order to solve the problem of insufficient infrastructure construction, efforts should be made to accelerate the construction of charging infrastructure in villages and optimise the structure of charging supporting infrastructure. In addition, encourage scientific and technological innovation, vigorously through the construction of intelligent charging infrastructure, the construction of new intelligent charging infrastructure at the same time, to strengthen the existing charging infrastructure equipment intelligent transformation and upgrading, so as to improve charging efficiency and charging safety.

The ability to achieve breakthroughs in key core technologies directly affects the sustainable development of China's new energy vehicle industry. Therefore, at present, we should strengthen the research and development and innovation of key core technologies. On the one hand, the government should take the lead in organising new energy automobile technology innovation projects and provide impetus for the development of new energy automobile industry by setting up special funds for research and development, building cross-industry collaborative innovation platforms, and constructing industry-university-research collaborative innovation systems. On the other hand, continue to increase R&D investment in new materials, processing technology, intelligent systems and other key core technology areas, strengthen the independent innovation capability, so as to get rid of the technological dependence on other developed countries, in addition, it should also integrate all kinds of innovative elements, optimise resource allocation, give full play to the domestic scientific research institutes, colleges and universities, as well as the industry's leading enterprises' resource advantages, and accelerate the new system of batteries, Automotive chip, automotive operating system and other technology re-

search and industrial application at the same time, the establishment of a sound new energy vehicle technology standard system, so as to break the monopoly of the developed countries in the field of key core technologies.

New energy automobile industry needs the government, enterprises and colleges and universities to work together to improve and perfect the training mechanism of professional talents. On the one hand, the government should play a leading role, introduce relevant policies to encourage colleges and vocational colleges to open new energy-related professional courses, expand the enrollment scale, and increase the cultivation of talents and incentives through the improvement of talent incentive mechanism, electrification, intelligent professional level recognition and other related policies and systems. On the other hand, enterprises should actively participate in the development of training programmes in colleges and vocational schools, and vigorously strengthen practical teaching, so as to cultivate professionals who meet the needs of the new energy automobile field. In addition, colleges and universities, as the main position of new energy automobile talent training and an important source of scientific and technological innovation, should create a professional cluster teaching platform to consolidate the cornerstone of talent cultivation, and at the same time, colleges and universities to strengthen cooperation with enterprises, and strive to build a first-class science and technology creation platform for talent cultivation, scientific research and innovation, and successful transformation.

Conclusion. At present, China's new energy automobile industry has entered a stage of rapid development, with steady growth in production and sales, and gradually increasing international market share, but in the long run, there are many problems in the development of China's new energy automobile industry, such as the imperfect construction of supporting infrastructure, the difficulty of breakthroughs in key core technologies, and the shortage of professionals, which have hindered the sustainable development of China's new energy automobile industry. These problems hinder the sustainable development of China's new energy automobile industry. The development of new energy automobile industry is an inevitable choice to achieve the healthy and sustainable development of society, economy and society, and it is also a necessary path for the transformation and upgrading of the automobile industry, therefore, it is necessary to lead the high-quality development of China's new energy automobile industry with the innovation drive by focusing on the three focuses of perfecting the construction of infrastructure, strengthening the research and development of the key core technology, and perfecting the mechanism of training professional talents.

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Қытайдың жаңа энергетикалық индустриясының инновациялары мен дамуы бойынша зерттеулер

Түйіндеме. Қоршаған ортаның ластануы мен ресурстық дағдарысын жеңілдету үшін жаңа энергетикалық көліктер энергияны үнемдейтін, экологиялық таза, жасыл және көміртекті төмен артықшылықтарға, және түрлі елдер мен аймақтардың жаңа энергетикалық индустриясын белсенді түрде дамыта алды.Дамыған елдермен салыстырғанда, Қытайдың жаңа энергетикалық индустриясы кешіккенімен, сонымен қатар, ол бір уақытта айтарлықтай дамуға, сонымен бірге көптеген проблемаларға қол жеткізді, бірақ Қытайдың жаңа энергетикалық индустриясы, инфрақұрылым құрылысын жетілдіру, негізгі негізгі технологияларды күшейту және кадрлардың кәсіби дайындық механизмін жетілдіру қажет, сондықтан Жаңа энергетикалық автомобиль өнеркәсібінің жаңа энергетикалық индустриясының салауатты дамуын қамтамасыз ету, жаңа энергетикалық автомобиль өнеркәсібі болашаққа қарсы тұра алады. Осылайша, Қытайдың жаңа энергетикалық автомобиль өнеркәсібінің тұрақты дамуына қол жеткізу үшін біз инфрақұрылымды дамытуға, инфрақұрылымды құруға, зерттеуді жетілдіруге, негізгі технологияларды зерттеуді күшейту және негізгі технологиялардың дамуын күшейтуіміз керек, сонымен қатар Қытайдың жаңа

энергетикалық индустриясының салауатты және тұрақты дамуына кепілдік беру үшін, кәсіби дарындылықтарды жетілдіру қажет.

Түйінді сөздер: инновация, негізгі технология, сынақ, даму, жаңа энергетикалық индустрия.

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Исследование инноваций и развития новой индустрии энергетических транспортных средств Китая

Аннотация. Чтобы смягчить серьезное загрязнение окружающей среды и кризис ресурсов, автомобили на новых источниках энергии с их преимуществами энергосбережения, охраны окружающей среды, зеленого и низкоуглеродного широко привлекают внимание всех стран мира, и все страны и регионы энергично развивают автомобильную промышленность на новых источниках энергии. Несмотря на то, что по сравнению с развитыми странами, автомобильная промышленность Китая на новых источниках энергии началась поздно, Тем не менее, при сильной поддержке правительства, достигнут значительный прогресс, показывает тенденцию к бурному развитию, но в то же время существует много проблем, которые необходимо решить, поэтому автомобильная промышленность Китая на новых источниках энергии должна достичь устойчивого развития, опираясь на инновации, совершенствовать строительство инфраструктуры, укреплять исследования и разработки ключевых основных технологий, совершенствовать механизм профессиональной подготовки кадров, чтобы обеспечить здоровое развитие автомобильной промышленности на новых источниках энергии в Китае и обеспечить, чтобы автомобильная промышленность на новых источниках энергии могла решать будущие проблемы. Поэтому для достижения устойчивого развития автомобильной промышленности Китая на новых источниках энергии необходимо опираться на инновации, совершенствовать строительство инфраструктуры, укреплять исследования и разработки ключевых основных технологий, совершенствовать механизмы подготовки специалистов и обеспечивать здоровое и устойчивое развитие автомобильной промышленности Китая на новых источниках энергии.

Ключевые слова: инновации, основные технологии, вызов, разработка, индустрия новых энергетических автомобилей.

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PARADIGM CHANGE OF HIGHER EDUCATION MANAGEMENT DRIVEN BY DIGITAL ECONOMY: FROM THE PERSPECTIVE OF DIGITAL GOVERNANCE

Abstract. The digital economy has profoundly reshaped the logic of social operation, and higher education, as the core field of knowledge production and dissemination, is facing systematic changes in its management paradigm. Based on the theory of digital governance, this paper explores how the digital economy drives the transformation of higher education management from the traditional hierarchical system to an agile, collaborative and intelligent paradigm. The study focuses on the core mechanism of digital technology to reconfigure the management process, empower the decision-making mode, and innovate the organizational form, and constructs a four-pronged analytical framework of higher education digital governance (HEM4.0): concept-structure-tool-capability. The analysis shows that data-driven decision-making, service process reengineering, and collaborative governance among multiple actors constitute the core features of the paradigm change. The study reveals the key challenges of path dependence, digital divide, and ethical risks in the change, and proposes countermeasures and suggestions to deepen the transformation of governance concepts, optimize the resilience of governance structures, and enhance digital literacy and governance capabilities, providing theoretical references and practical paths for higher education institutions to modernize their governance in the digital era. This study emphasizes that embracing digital governance is an inevitable choice for higher education to enhance adaptability, innovation and excellence.

Keywords: Digital Economy, Higher Education Management, Paradigm Change, Digital Governance.

Introduction. The wave of global digital economy is surging, and the new generation of information technology represented by big data, artificial intelligence, cloud computing, blockchain, etc. not only reshapes the industrial pattern and economic form, but also penetrates deeper into the social governance and organizational operation. Higher Education Institutions (HEIs), as the source of knowledge innovation and the main position of talent cultivation, are facing unprecedented challenges and opportunities in their traditional management paradigm under the impact of digital economy. For a long time, the management of higher education has been deeply influenced by the Weberian hierarchical system, which is characterized by clear-cut hierarchies, solidified procedures, and efficiency bottlenecks, and is unable to cope with the fast-changing external environment and increasingly complex internal demands [1]. At the same time, Digital Governance, as an emerging governance concept and prac-

tice paradigm, emphasizes the use of digital technology and data resources to reshape the governance structure, optimize the decision-making process, enhance the effectiveness of public services, and promote the participation and synergy of multiple subjects. This provides a powerful theoretical support and practical tool for cracking the traditional drawbacks of higher education management and constructing a new governance model adapted to the era of digital economy [2]. From the perspective of digital governance, this study aims to deeply analyze the systematic change driving force of digital economy on the management paradigm of higher education, reveal its internal mechanism and core features, construct the corresponding theoretical analysis framework, and explore the key challenges and coping strategies in the process of change. This paper focuses on conceptual analysis, theoretical construction, mechanism exploration and practical case analysis, and strives to provide qualitative research with profound insight and practical value.

Core Mechanisms of Paradigm Change in Higher Education Management Driven by the Digital Economy. The drive of the digital economy on higher education management is all-encompassing, and its core mechanism of action is reflected in the following four interrelated dimensions (Table 1: Core Mechanisms and Manifestations of Paradigm Change in Higher Education Management Driven by the Digital Economy):

Table 1 – Core mechanisms and manifestations of paradigm change in higher education management driven by the digital economy

Driving Dimension	Core Mechanism	Pain Points in Traditional Management Paradigm	Transformative Manifestations under Digital Enablement	Embodiment from Digital Governance Perspective
Data Factor	Driving Scientific & Precise Decision-Making	Experience-based decisions, lagging information, localized perspective	Data integration & fusion, intelligent analysis & insights, real-time monitoring & early warning	Data-Driven
Digital Technology	Reshaping Processes & Service Models	Lengthy processes, low efficiency, poor user experience	Process automation & intelligence, service integration & online delivery, cross-departmental collaboration	Process Re-engineering
Digital Connectivity	Restructuring Organizational Relationships & Governance Structure	Single governance body (administration-dominated), insufficient participation, rigid hierarchy	Multi-stakeholder participation, organizational flattening & networking, ecosystem collaborative governance	Multi-stakeholder Co-governance
Digitales Denken (implizit)	Innovating Management Concepts & Culture	Bureaucratic thinking, risk aversion, lack of innovation	User-centricity, openness & sharing, agile iteration, tolerance for error & innovation	Cultural Shift
Data sources: [3], [4], [5], [6], [7], [8], [9], [10]				

·Data elements. Data elements are becoming the core engine that drives higher education management decisions toward scientific and accurate [3]. Traditional management decisions are often limited by empirical judgment, local information and lagging data, resulting in insufficient scientific decision-making and lack of foresight. The empowerment of digital technology has effectively cracked these pain points: through the integration of teaching, scientific research, personnel, finance, student services, facility operation and other domain data, breaking the “data silos” and realizing the convergence of the full amount of data; and then use artificial intelligence (AI), machine learning and other technologies to carry out the prediction of the student population, academic early warning, scientific research performance assessment, optimal allocation of resources and other intelligent analysis. The use of artificial intelligence (AI), machine learning and other technologies for student prediction, academic early warning, research performance assessment, resource optimization and allocation of intelligent analysis and insight for data-driven evidence-based decision making (Evidence-Based Decision Making) to provide a solid support [4]; furthermore, the real-time monitoring of teaching quality, scientific research output, student satisfaction, resource utilization, and other key indicators and dynamic adjustment mechanism, enabling managers to quickly identify problems, issue early warnings and agile optimization strategies, significantly improving the quality of teaching and learning. Early warning and agile optimization strategy, significantly improving the timeliness and accuracy of decision-making. The in-depth application of data elements is fundamentally reshaping the mode and effectiveness of higher education management decision-making [5].

·Digital technology. Digital technology is like an efficient scalpel, accurately reshaping the management process and service model of higher education [6]. Traditional management processes suffer from lengthy processes, cumbersome links, and difficulties in cross-departmental collaboration, resulting in poor faculty and student experiences and administrative inefficiencies. Digital empowerment brings changes from three key levels: process automation and intelligence by using RPA (Robotic Process Automation) to efficiently handle repetitive matters such as reimbursement, class scheduling, grade entry, etc., and by using AI to realize intelligent Q&A and personalized recommendation, which greatly liberates manpower and improves efficiency; service integration and online by creating a "one-stop By creating a “one-stop” online service platform (e.g., “One Net One Office”), the originally dispersed functions of application, approval, query, payment, etc. are deeply integrated, practicing the concept of “letting the data run more, and the teachers and students run fewer errands”, significantly optimizing the user experience. The cross-departmental collaboration platform is based on a shared digital platform, which breaks down information barriers and realizes inter-departmental information sharing, task collaboration and parallel approval, fundamentally improving the efficiency and smoothness of cross-departmental collaboration. Digital technology is not only an upgrade of tools, but also a profound reengineering of management logic and service concepts [7].

·Digital Connectivity. Digital connectivity technology is profoundly restructuring the internal organizational relationship and external governance structure of higher education, cracking the pain points of the traditional single governing body, insufficient participation of students and faculty, as well as the

solidification of hierarchical levels and information attenuation. Through the construction of online platforms (such as university affairs forums, online proposal system, social media), digital empowerment significantly promotes the participation of multiple subjects, so that faculty, students, alumni, and even public opinion can be conveniently gathered, and vigorously promotes the realization of consultative governance [8]. At the same time, the application of digital platforms effectively promotes organizational flattening and networking, which reduces the layers of information transmission, promotes cross-level and cross-departmental direct communication and seamless collaboration, thus giving rise to more dynamic project system, matrix and other flexible organizational forms. Further, digital connectivity is committed to building an extensive collaborative governance network, linking external stakeholders such as government, enterprises, other universities and research institutes, together forming an open, interactive and innovative higher education eco-governance network, which completely changes the traditional closed and linear governance model and transforms it towards openness, synergy and ecology.

·Digital thinking (implied). Digital thinking is quietly becoming an invisible engine and cultural cornerstone driving deep changes in the higher education management paradigm [9]. The traditional management paradigm is deeply confined by the sectional thinking, which is manifested in the over-reliance on administrative orders, serious risk-averse tendency, insufficient innovation vitality, and difficulty in adapting to the fast-changing digital environment. The empowerment of digital governance concepts is systematically reshaping the management culture: the user-centered concept promotes the management perspective from "management convenience" to "service experience", and takes the needs of teachers and students as the core starting point of process design and service optimization; the spirit of openness and sharing breaks the departmental barriers and information monopoly. The spirit of openness and sharing breaks down departmental barriers and information monopoly, encourages data interoperability, resource sharing and cross-discipline cooperation, and builds a collaborative governance ecosystem [10]; the principle of agile response requires organizations to abandon rigid processes, embrace rapid iteration and dynamic adjustment, and flexibly optimize their strategies in accordance with real-time feedback and environmental changes; the culture of fault-tolerance and innovation encourages the bold exploration of new technologies and modes, and establishes a safe trial-and-error mechanism, which regards failure as a learning opportunity rather than a reason for punishment. The fault-tolerant innovation culture encourages bold exploration of new technologies and new models, establishes a safe trial-and-error mechanism, and regards failure as a learning opportunity rather than a reason for punishment, thus continuously stimulating organizational innovation. This profound mindset and cultural transformation, though intangible but crucial, provides an indispensable internal driving force and lasting support for higher education to embrace digital governance and realize paradigm change. A new paradigm of higher education management based on digital governance – HEM 4.0 framework. By synthesizing the analysis of the above mechanisms, we propose a four-pronged digital governance framework for higher education, namely "concept-structure-tool-

capability", which depicts the core components of the new paradigm (Figure 1 Digital governance framework for higher education):

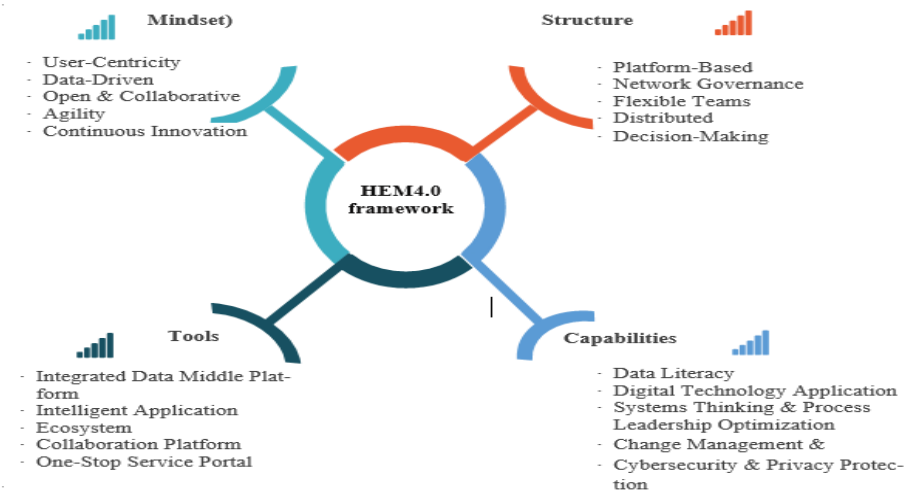

Figure 1 – Digital governance framework for higher education

Note: compiled by the author based on the source [11]

Data-Driven "as the cornerstone of decision-making, deeply recognizing the core strategic value of data and ensuring that all important decisions and actions are based on solid data insights; upholding the spirit of "Open & Collaborative", taking the initiative to break down the solidity of data. The spirit of "Open & Collaborative" is to take the initiative to break the solid organizational boundaries, actively embrace internal and external cooperation and resource sharing, and build a symbiotic and co-prosperous governance ecosystem [11]; and "Agility" is emphasized, which requires that the organization be able to quickly perceive changes in both internal and external environments and flexibly adjust its strategies and paths of action to adapt to the digital era. and action paths to adapt to the fast pace of the digital era; ultimately, all of this serves the ultimate goal of "Continuous Innovation", encouraging bold exploration of new technologies and new models, and establishing a fault-tolerant mechanism to tolerate useful trial and error, so as to inject inexhaustible change and development momentum for higher education. These five concepts are intertwined and interwoven. These five concepts are intertwined and mutually supportive, and together they shape the new thinking of future-oriented higher education management [12].

As the skeleton of the new paradigm of digital governance in higher education, the structural layer realizes the fundamental reconstruction of the organizational form and power configuration through four core features: firstly, the construction of a powerful Platform-Based Organization is the foundation, aiming to build a digital infrastructure platform to support the sharing of data across the entire region, and the integration of business processes, First, building a strong Platform-Based organization is the foundation, aiming to create a digital infrastructure platform that supports data sharing, business process communication,

and cross-departmental business collaboration across the entire region, providing a solid technical and data base for efficient governance; second, promoting the formation of a Network Governance model, which positions the university as the core node and actively connects multiple subjects such as the government, the industry, the community, and students and faculty, weaving an open, interactive, and empowering organization, and creating an open, interactive, and empowering platform. Weaving an open and interactive collaborative governance network with shared rights and responsibilities, it greatly expands the boundaries and resources of governance; again, widely adopting the operation mode of "Flexible Teams", dynamically forming cross-disciplinary and cross-functional project teams in response to the construction of smart campuses, the development of major online courses and other specific strategic tasks, breaking down traditional departmental barriers. Lastly, it implements the "Distributed Decision-Making" mechanism, which scientifically empowers grass-roots units and front-line personnel and gives them the ability to make decisions according to their needs, under the premise of ensuring highly transparent data and clear rules. On the premise of ensuring highly transparent data and clear rules, the company scientifically empowers grassroots units and frontline personnel by giving them the corresponding decision-making authority, thus improving response speed and decision-making quality. These four structural changes complement each other and together shape a new higher education organizational governance structure that is more adaptable, agile and resilient [13].

The tool layer provides the key technical support and realization carrier for the new paradigm of digital governance in higher education, the core of which consists of four interrelated digital tools: the basic Integrated Data Middle Platform is dedicated to unifying data standards and specifications, realizing the whole life cycle management of teaching, research, management, service and other domain data, including efficient collection, centralized storage, intelligent governance, in-depth analysis and service-oriented output, and providing high-quality reusable data for the whole governance system. The core is composed of four interrelated digital tools: the basic Integrated Data Middle Platform is dedicated to the unification of data standards and specifications, and the realization of the whole life cycle management of data in the domains of teaching, scientific research, management, and services, including efficient collection, centralized storage, intelligent governance, in-depth analysis, and service output, providing high-quality and reusable data blood for the whole governance system; on top of the solid data base, the Intelligent Application Ecosystem is the realization carrier of the Integrated Data Middle Platform. On the basis of this solid data foundation, "Intelligent Application Ecosystem" flourishes, covering intelligent and specialized application systems in key business areas such as intelligent teaching, scientific research collaboration, personnel management, financial analysis, student services, asset operation and maintenance, driving the intelligent transformation of core business processes and efficiency enhancement; in order to ensure efficient collaboration among multiple subjects, "Collaborative Work Platform (CWP)" has been established to provide the entire governance system with high-quality reusable data. In order to ensure efficient collaboration among multiple subjects, "Collaboration Platform" plays a pivotal role, strongly supporting cross-departmental, cross-level and even cross-

organizational (e.g., intercollegiate, university-enterprise) instant online communication, seamless task management, and efficient collaborative office, significantly reducing collaboration costs and improving overall operational efficiency; Ultimately, the end-user-oriented “One-Stop Service Portal” serves as a unified service interface, deeply integrating various dispersed service entrances, and providing teachers and students with “anytime, anywhere, anywhere, touch and feel” services through personalized recommendations, convenient operation processes and unified user experience. Through personalized recommendation and convenient operation process and unified user experience, it provides teachers and students with online services “anytime, anywhere, at their fingertips”, truly practicing the concept of “user-centered”. These four tools work together to build a digital infrastructure that empowers agile governance, intelligent services and efficient collaboration in higher education.

The competency layer is the fundamental guarantee for the efficient operation and sustainable development of the new paradigm of digital governance in higher education, the core of which lies in the cultivation and enhancement of the five key competencies of organizational members (especially administrators): “Data Literacy” requires that administrators, faculty members and students not only understand and apply data, but also critically evaluate it, so that the data can be used in a variety of ways to improve the quality of higher education. Data Literacy“ requires managers, faculty and students to not only understand and apply data, but also to critically assess it, so that they can accurately grasp the value and gain insights into the truth in the data flood, which is a prerequisite for realizing data-driven decision-making; ”Digital Technology Application" emphasizes the ability to effectively select and skillfully use various digital tools to solve the problems in practical management, teaching and research. Digital Technology Application“ emphasizes the ability to effectively select and skillfully use various digital tools to solve complex problems in practical management, teaching and scientific research, and to transform the potential of technology into real effectiveness; ”Systems Thinking & Process Optimization" focuses on the understanding of business logic and its interconnections from a global and holistic perspective and the ability to scientifically design, analyze and optimize business processes accordingly. System Thinking & Process Optimization“ focuses on understanding business logic and its interconnections from a global and holistic perspective, and scientifically designing, analyzing, and optimizing end-to-end business processes accordingly to eliminate redundancy and improve overall operational efficiency; ”Change Management & Leadership" is crucial to empowering managers to lead the organization to adapt to the wave of digital transformation, overcome resistance to change, energize team innovation, and shape positive change. Finally, Cybersecurity & Privacy Protection constitutes the bottom line of digital governance, requiring organizations to have sufficient capabilities to identify risks, deploy protection measures, and ensure compliance to effectively manage the risks. It requires organizations to have sufficient capabilities to identify risks, deploy protective measures, and ensure compliance, so as to effectively safeguard the security of core data assets and the privacy rights of students, faculty, and users. These five capabilities are interdependent and synergistic, and together they form a solid capability cornerstone and organizational resilience to support higher education institutions to navigate change and achieve excellence in governance in the digital era [14].

Results and discussions

Key features and value implications of paradigm change. Based on the analysis of HEM4.0 framework, the paradigm change of higher education management driven by digital economy presents three significant features and their value and significance: firstly, data-driven decision-making promotes systematic transformation, replacing the traditional empirical model with evidence-based decision-making, which not only improves the scientificity and accuracy of decision-making, but also generates the ability of predictive management and prospective management, and significantly enhances management effectiveness through real-time monitoring and intelligent analysis of indicators of teaching, learning behaviors and scientific research. Through real-time monitoring and intelligent analysis of teaching, learning behavior, scientific research and other indicators, the institution has shifted from passive response to active prevention, significantly improving management effectiveness; secondly, the service process has undergone in-depth re-engineering, digital technology not only realizes process automation and intelligence, but also promotes the concept of service from "management convenience" to "user experience", and "user experience" is fundamentally changed. "Fundamental change," one-stop "platform and cross-departmental coordination mechanism to effectively solve the teachers and students "run more than one department, do one thing" pain points, highlighting the core value of digital governance people-oriented; Finally, the rise of multiple subjects of collaborative governance Finally, the rise of multiple subjects and collaborative governance, digital connectivity technology to break the closed governance model, to promote the government, enterprises, faculty, students, alumni and other in-depth participation, the formation of open, interactive, collaborative governance ecology, this change not only expands the democratic basis of governance, but also for the innovative development of higher education to inject external vitality.

Key challenges in the change process. Although digital governance brings great opportunities for higher education, its change process still faces key challenges: first, path dependence and cultural resistance constitute deep-seated obstacles; the long-established hierarchical management culture has strong inertia, and some administrators and employees are resistant to digital change, worried about power redistribution and changes in work styles; thus, the transformation of the organizational culture requires a longer cycle and a refined change Secondly, the digital divide needs to be solved urgently. The significant differences in digital literacy and application capabilities among faculty and staff of different ages and technical backgrounds may lead to an uneven distribution of governance effects, and how to ensure that all stakeholders benefit equally from the transformation has become a practical challenge; lastly, the risks of data security and privacy ethics should not be ignored. Higher education institutions hold a large amount of sensitive personal information and academic data, and the risk of data leakage and misuse is high. Institutions of higher education hold a large amount of sensitive personal information and academic data, and the risk of data leakage and misuse requires the establishment of a more comprehensive system of institutional safeguards and technological protection to ensure security and privacy while promoting digital governance. Countermeasure suggestions.

In response to the above challenges, it is recommended that higher education institutions promote digital governance in the following ways:

– Deepen the transformation of governance concepts. Through training, seminars, pilot demonstrations and other means, help managers and employees deeply understand the value and significance of digital governance, and gradually cultivate new concepts such as user-centered, data-driven, open and collaborative, so as to lay the ideological foundation for paradigm change.

– Optimize the resilience of the governance structure. While promoting organizational flattening and networking, focus on maintaining moderate hierarchical management and institutional norms to ensure the stability and controllability of the change process. Establish a flexible governance mechanism capable of timely adjusting strategies in response to changes in the internal and external environment.

– Enhance digital literacy and governance capabilities. Formulate a systematic digital competence development plan, and comprehensively enhance the data literacy, technical application ability and systematic thinking of organizational members through stratified and classified training, practical exercises and experience exchange.

Conclusion. The wave of digital economy is profoundly reshaping the governance logic and management paradigm of higher education. Based on the perspective of digital governance, this study has constructed a four-pronged HEM4.0 analytical framework of "concept-structure-tool-capability", which reveals the core change mechanism of reconstructing the management process by digital technology, driving scientific decision-making by data elements, and facilitating collaborative governance by digital connection.

The study shows that this paradigm change is systematic, deep-seated and irreversible, with data-driven decision-making, service process reengineering and collaborative governance of multiple actors as the core identifiers, which significantly improves governance effectiveness, innovates the service model, and enhances development vitality. However, the process of change needs to properly address key challenges such as path dependence, digital divide, and ethical risks, which require institutions to promote conceptual transformation, structural optimization, tool application, and capacity building in a coordinated manner with a systematic mindset, so as to ensure that it serves the quality of education as well as the development of teachers and students.

Looking ahead, embracing digital governance is an inevitable choice for higher education to maintain competitiveness and sustainable development in the digital era, and it needs to be deeply integrated into its concepts and practices in order to enhance its adaptability, innovation, and excellence, and to contribute to the building of a strong education nation. This study provides a theoretical framework and practical guidance, and in the future, it is necessary to deepen the effectiveness evaluation, best practices and cross-country comparative research.

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Цифрлық экономикаға негізделген жоғары білімді басқару парадигмасының өзгеруі: цифрлық басқару тұрғысынан

Түйіндеме. Цифрлық экономика әлеуметтік жұмыс логикасын түбегейлі өзгертті, ал білім өндіру мен таратудың негізгі саласы ретінде жоғары білім басқару парадигмасындағы жүйелі өзгерістерге тап болуда. Цифрлық басқару теориясына сүйене отырып, бұл жұмыс цифрлық экономиканың жоғары білім менеджментін дәстүрлі иерархиялық жүйеден икемді, бірлескен және интеллектуалды парадигмаға түрлендіруді қалай жүргізетінін зерттейді. Зерттеу басқару үдерісін қайта конфигурациялау, шешім қабылдау режимін кеңейту және ұйымдық нысанды жаңарту үшін цифрлық технологияның негізгі механизміне назар аударады және жоғары білім беру цифрлық басқаруының (HEM4.0) төрт жақты аналитикалық негізін құрады: тұжырымдама-құрылым-құрал-мүмкіндік. Талдау деректерге негізделген шешім қабылдау, қызмет көрсету үдерісін реинжиниринг және көптеген субъектілер арасындағы бірлескен басқару парадигма өзгерісінің негізгі ерекшеліктерін құрайтынын көрсетеді. Зерттеу жолға тәуелділіктің, цифрлық алшақтықтың және өзгерістегі этикалық тәуекелдердің негізгі мәселелерін ашып көрсетеді және басқару тұжырымдамала-

рының трансформациясын тереңдету, басқару құрылымдарының тұрақтылығын оңтайландыру және цифрлық сауаттылық пен басқару мүмкіндіктерін арттыру, олардың жоғары оқу орындарын цифрлық ортада модернизациялау үшін теориялық анықтамалар мен практикалық жолдарды қамтамасыз ету бойынша қарсы шаралар мен ұсыныстарды ұсынады. Бұл зерттеу цифрлық басқаруды қабылдау бейімделуді, инновацияны және тамашалықты арттыру үшін жоғары білім беру үшін сөзсіз таңдау екенін атап көрсетеді.

Түйінді сөздер: цифрлық экономика, жоғары білімді басқару, парадигманы өзгерту, цифрлық басқару.

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Изменение парадигмы менеджмента высшего образования под влиянием цифровой экономики: с точки зрения цифрового управления

Аннотация. Цифровая экономика глубоко изменила логику социальных операций, и высшее образование, как основная область производства и распространения знаний, сталкивается с систематическими изменениями в своей парадигме управления. Основываясь на теории цифрового управления, эта статья исследует, как цифровая экономика стимулирует трансформацию управления высшим образованием из традиционной иерархической системы в гибкую, совместную и интеллектуальную парадигму. Исследование фокусируется на основном механизме цифровой технологии для реконфигурации процесса управления, расширения возможностей режима принятия решений и внедрения инноваций в организационную форму, а также создает четырехкомпонентную аналитическую структуру цифрового управления высшим образованием (HEM4.0): концепция-структура-инструмент-возможности. Анализ показывает, что принятие решений на основе данных, реинжиниринг процесса обслуживания и совместное управление между несколькими субъектами составляют основные черты изменения парадигмы. Исследование раскрывает ключевые проблемы зависимости от пути, цифрового разрыва и этических рисков в изменениях, а также предлагает контрмеры и предложения по углублению трансформации концепций управления, оптимизации устойчивости структур управления и повышению цифровой грамотности и возможностей управления, предоставляя теоретические ссылки и практические пути для высших учебных заведений по модернизации своего управления в цифровую эпоху. В этом исследовании подчеркивается, что принятие цифрового управления является неизбежным выбором для высшего образования для повышения адаптивности, инноваций и совершенства.

Ключевые слова: цифровая экономика, управление высшим образованием, изменение парадигмы, цифровое управление.

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PRACTICAL RESEARCH ON DIGITAL TRANSFORMATION IN PROJECT MANAGEMENT

Abstract. This study takes Company D, a telecommunications engineering enterprise, as its research subject to explore the implementation path and optimisation strategies for digital transformation in project management. Through literature analysis, questionnaire surveys (206 valid samples, 98.1% response rate), and on-site interviews, this study identified the core obstacles to transformation as follows: insufficient employee awareness (65.53% are unfamiliar with digital concepts), misaligned organisational structure (54.86% believe the current structure hinders transformation), lack of platform integration (48.79% report data silos), insufficient funding (50.97% point to inadequate investment), and talent shortages (54.85% believe training is insufficient). To address these issues, a five-phase implementation plan is proposed: 1) Mobilisation and launch phase; 2) Organisational structure and approval process adjustment phase; 3) Digital management platform construction phase; 4) Digital management platform usage training and trial operation phase; 5) Formal operation phase. This framework integrates Kotter's Model with the PDCA cycle theory and is supported by a four-dimensional assurance system encompassing leadership, institutional culture, funding, and technology. Post-implementation metrics indicate: the project cost variance rate (CPI) decreased by 32%, the schedule variance rate (SPI) improved by 28%, and report preparation time decreased by 45%. Research indicates that the synergistic optimisation of strategy, culture, and technology is the key to successful transformation for SMEs.

Keywords: Project Management Digitalisation, Digital Transformation, Communication Engineering, Organisational Change, Process Optimisation, SME Strategy.

Introduction. The explosive growth of technologies such as cloud computing, the Internet of Things, and artificial intelligence is profoundly reshaping project management paradigms. According to a report by the International Project Management Association, 87% of companies have integrated digital tools into their core processes, with AI risk assessment accuracy reaching 79% (IPMA, 2023) [1]. As a typical capital-intensive industry, the communications en-

gineering sector faces highly complex challenges in project management, including multi-location collaboration and dynamic resource allocation, which make digital transformation an inevitable choice.

D Company, a Chinese communications technology service provider (established in 2003 an1d listed on the New Third Board), introduced digital platforms such as DingTalk and ISDP in 2021, but the transformation results have not met expectations: a survey showed that only 17.97% of employees clearly understand the company's digital strategy, and 37.86% believe that the data connectivity of the platform is poor. This study focuses on three core issues:

1. Core obstacles to digital transformation in project management for telecommunications engineering companies
2. Framework design for transformation suitable for small and medium-sized enterprises
3. Quantitative assessment methods for digital transformation effectiveness

Methodology and research data. The theoretical framework consists of the following three elements:

Kotter's Eight-Step Change Model: Kotter's model is a systematic roadmap for overcoming resistance to organisational change, emphasising that change must go through the entire cycle from emotional acceptance to structural consolidation [2]. In this research design, it is used for organisational acceptance and phased implementation.

PDCA Cycle Theory: The PDCA cycle divides quality management into four stages: Plan (planning), Do (execution), Check (inspection), and Action (processing). In quality management activities, it is required to plan, implement, check the implementation results, and then incorporate successful elements into standards, while addressing unsuccessful elements in the next cycle [3]. In this research design, it is used for iterative process optimisation.

Process Reengineering Theory: Process reengineering is a corporate activity that involves fundamentally and thoroughly analysing and redesigning corporate procedures, managing related corporate changes, pursuing performance, and achieving significant corporate growth. The focus of business process reengineering is on selecting a few critical business procedures that are highly important to business operations for re-planning, aiming to enhance operational effectiveness. The objective is to achieve significant improvements in cost, quality, external service, and timeliness [4]. In this research design, it is used for the reconstruction of the overall workflow.

Data collection used a mixed method approach:

1. Questionnaire survey: 210 questionnaires were distributed, and 206 valid responses were received (response rate: 98.1%). Respondents were employees of Company D (management, project managers, engineers).
   - Measurement items: Likert scale assessment of digital literacy, platform usability, cultural adaptability, and resource adequacy
2. Field interviews: In-depth investigation of data with 12 project managers and department heads
3. Document analysis: Company reports, platform logs, and project records (2021-2024)

Data validation: Conduct reliability and validity tests. Reliability testing generally refers to assessing the reliability of a questionnaire, and Cronbach's

Alpha coefficient is a commonly used tool to measure reliability. SPSS is a frequently used tool for testing Cronbach's Alpha coefficient. The Cronbach's Alpha coefficient should fall between 0.00 and 1.00, with a higher coefficient indicating greater reliability of the survey results. Generally, a coefficient value greater than 0.7 indicates good reliability, and the results can be directly applied to empirical research.

Table 1 – Questionnaire reliability test results

Cronbach Reliability analysis	
Number of items	Cronbach α coefficient
20	0.965
Note: Written by the author, source: statistical data analysed using SPSS software	

As shown in Table 1, the survey questionnaire consists of 20 items, with a Cronbach's alpha coefficient of 0.965, which is significantly higher than 0.7, indicating that the questionnaire has high reliability and passes the reliability test.

Validity typically refers to the effectiveness of the questionnaire structure and its overall adaptability. By using KMO and Bartlett's test to assess the validity of the questionnaire and then conducting a detailed analysis of its validity using SPSS, we can derive the results presented in Table 2.

Table 2 – Questionnaire validity testing results

KMO and Bartlett's tests		
KMO value		0.923
Bartlett's sphericity test	approximate chi-square	2520.244
	df	190
	p-value	0.000
Note: Written by the author, source: statistical data analysed using SPSS software		

As shown in Table 2, the KMO value of the questionnaire is 0.923, which exceeds 0.9, indicating that the questionnaire has good validity. At the same time, the corresponding value of the Bartlett's sphericity test is 0.000, which shows that this questionnaire has good validity [5].

The experimental design used a case comparison method:

Experimental group: Three pilot projects implemented the new transformation framework.

Control group: Three projects operated under the traditional model.

Evaluation indicators: CPI (cost performance index), SPI (schedule performance index), report preparation timeliness, and problem response speed.

Experimental part.

1. Diagnosing transformation barriers: Survey results reveal six key gaps

Table 3 – Key obstacles to digital transformation

Factors	Negative feedback rate	Main manifestations
Employee awareness	64.08%	Unfamiliar with digital concepts, objectives, and company roadmaps
Organisational structure	54.86%	Rigid hierarchy inhibits cross-departmental collaboration
Digital platform	48.79%	Poor interoperability; low availability; duplicate data entry
Funding	50.97%	Unstable investment in tools/training
Talent and training	54.85%	Lack of dedicated digital team; ineffective skills enhancement
Cultural integration	53.40%	Corporate values lack digital goals
Note: Written by the author, source: questionnaire survey data		

2. Transformation Framework Design: In accordance with the schedule, the implementation of project management digital transformation is divided into five stages, arranged in order of priority: mobilisation and launch stage, organisational structure and approval process adjustment stage, Digital Platform Construction Phase, digital management platform training and trial operation stage, and formal operation stage.

– Mobilisation and Launch Phase: This phase is the initial stage, aimed at unifying ideas and providing ideological support for the implementation of the transformation. It is also a crucial step. A mobilisation meeting can be organised, and depending on the company's actual situation, a combination of online and offline methods can be flexibly adopted to organise the meeting, formally launching the digital transformation of project management, and clearly communicating the transformation plan, path, and specific measures to the staff to ensure that the ideas for transformation are unified from top to bottom.

– Organisational Structure and Approval Process Adjustment Phase: With a unified vision in place, the second phase involves adjusting the company’s current organisational structure and business approval processes to align with the implementation strategy for the digital transformation of project management. The company should establish a Digital Transformation Leadership Group led by the General Manager or Deputy General Manager to provide strong organisational leadership for the transformation. Talent for the group should be sourced through a combination of internal recruitment and external hiring, with a focus on external hiring. This group is directly led and commanded by the general manager and deputy general manager, and it has five subgroups: the strategic planning subgroup, the business transformation subgroup, the technical support subgroup, the talent training subgroup, and the evaluation and supervision subgroup.

The strategic planning subgroup is primarily responsible for formulating the overall plan and strategy for digital transformation, as well as implementing specific implementation plans; the business transformation subgroup is primarily responsible for business-level transformation work; the technical support

subgroup is primarily responsible for implementing tools and technologies based on the plans formulated by the strategic planning subgroup and the business processes and models of the business transformation subgroup; The Talent Training Group is responsible for providing relevant training to all subordinate business departments; the Evaluation and Supervision Group is responsible for evaluating and supervising the implementation of digital transformation across all subordinate departments. Departments and individuals that perform well will be regularly recognised and rewarded to motivate staff, while those that underperform will face appropriate disciplinary measures to ensure the effective implementation of the company's digital transformation initiatives.

– Digital Management Platform Construction Phase: After adjusting the corporate organisational structure and establishing a dedicated digital transformation implementation department, this phase involves constructing a digital management platform based on that foundation. Based on an assessment of the company's digital platforms, the Strategic Planning Group, Business Transformation Group, and Technical Support Group must conduct a comprehensive analysis and assessment of the company's actual situation to determine which platforms should be retained and which should be replaced. They will then develop a digital management platform tailored to the company's project management needs, implementing it in phases while gathering feedback for further refinement and improvement.

– Digital management platform usage training and trial operation phase: After completing the third phase of digital platform construction, the company will enter the fourth phase, during which it will conduct training and trial operations for the use of the constructed platform in conjunction with the adjusted organisational structure and business approval processes. The talent training team will pre-develop operational tutorials and establish a standardized operational methodology. Considering the dispersed nature of projects, various methods such as recording and distributing training videos, video conferences, and on-site training will be employed to instruct each project on the platform’s operational procedures, ensuring that every project team masters this operational methodology. Additionally, issues identified during the trial operation, areas deemed unreasonable, and constructive suggestions will be regularly collected. This data will be compiled and fed back to the Strategic Planning Group, Business Transformation Group, and Technical Support Group. The four groups will collaborate to make adjustments and improvements until a truly company-owned digital management platform is established.

– Formal operation phase: After identifying and resolving issues with the platform during the trial operation phase, the platform enters the formal operation phase. The Evaluation and Supervision Group should establish an evaluation and supervision mechanism based on the platform's operational processes and the company's actual circumstances, and apply it to the advancement of digital transformation initiatives. For example, the implementation of the digital platform should be incorporated into performance evaluations and linked to departmental and individual compensation and promotions; Establish a reward and punishment system to regularly evaluate the implementation status of each project and employee. The company should commend and reward projects and individuals that have implemented the

platform effectively, while criticising and penalising projects and individuals that have implemented it inadequately, made compromises, or taken shortcuts.

Results and discussions. Quantitative comparison of results:

Table 4 – Comparison of experimental results

Indicator	Experimental group	Control group	Change rate
Cost variance rate (CPI)	0.92	0.68	↑32%
Schedule variance rate (SPI)	0.89	0.65	↑28%
Report preparation time	2.1 hours	3.8 hours	↓45%
Problem response time	<4 hours	>24 hours	↑83%
Note: Written by the author, source: Experimental data results			

Key Success Factors:

– Leadership-driven: The general manager and other senior executives took the lead in establishing a digital transformation department, improving cross-departmental collaboration efficiency by 36%.

– Gradual approach: Feasibility was verified through pilot projects, which were then gradually rolled out.

– Process re-engineering: Seventeen redundant approvals were eliminated, shortening the contract circulation cycle by 58%.

Industry Insights:

– Cognitive breakthrough: Digital literacy training increased employee acceptance from 18% to 74%;

– Technology Adaptation: Adopting a ‘platform foundation + modular applications’ approach to lower the barriers to transformation for small and medium-sized enterprises;

– Cultural Integration: Incorporating digitalisation into corporate values (adding the core concept of ‘data-driven’).

The rapid advancement of science and technology has imposed increasingly stringent requirements on enterprise digital transformation. At present, digital transformation has become a critical national strategy, requiring continuous progress across all industries. While telecommunications engineering enterprises have initiated digital transformation efforts, significant shortcomings remain in terms of practical implementation, and the potential of digital technologies has yet to be fully leveraged. To advance project management toward greater refinement, such enterprises must recognize the pivotal role of digital technologies as a key driver of industrial transformation, align closely with contemporary trends, and accelerate their own transformation. In this process, it is essential first to clarify strategic objectives, then to develop a comprehensive implementation framework with supporting mechanisms, and finally to embed them effectively into practice.

This study investigates the digital transformation of project management in Company D, a small-to-medium-sized telecommunications engineering enterprise, and reaches the following conclusions:

First, based on literature analysis and questionnaire surveys, the study provides an in-depth examination of Company D's digital transformation, identifying key obstacles such as insufficient digital awareness, organizational structures that hinder transformation, and a shortage of digital talent. These factors significantly constrain the company's progress and must be addressed through targeted measures. Second, the study proposes an optimized transformation path from two dimensions: strategic initiatives and safeguard mechanisms. Strategically, Company D should strengthen top-level design, enhance strategic leadership, increase investment, establish integrated data flow systems, and develop new organizational structures to accelerate digital adoption and promote comprehensive transformation. In terms of safeguards, enterprises should reinforce implementation by improving organizational frameworks, institutional mechanisms, financial input, and technological capacity.

As digital technologies continue to evolve, only enterprises that proactively adapt to market demands can maintain long-term competitiveness. This study systematically reviews relevant literature and analyzes current research outcomes; however, limitations remain due to the author's familiarity with the industry and the evolving nature of emerging technologies, which may introduce certain deviations in the proposed framework. While the paper provides optimization strategies, these remain idealized models. For enterprises to achieve successful transformation, they must tailor such strategies to their specific developmental conditions and market dynamics, continuously refining measures to ensure sustained digital advancement.

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Жобаларды басқаруда цифрлық трансформациялық практикалық зерттеу

Түйіндеме. Бұл зерттеу D компаниясын, телекоммуникациялық инженерлік кәсіпорынды зерттеу нысаны ретінде алып, жобаларды басқарудағы цифрлық трансформацияны жүзеге асыру жолдары мен оңтайландыру стратегияларын қарастырады. Әдебиеттерге шолу, сауалнама (206 жарамды жауап, жауап беру деңгейі – 98.1%) және орындарда жүргізілген сұхбаттар арқылы трансформацияға кедергі келтіретін негізгі мәселелер анықталды: қызметкерлердің цифрлық ұғымдардан хабарсыздығы (65.53%), ұйымдық құрылымның сәйкессіздігі (54.86%

қазіргі құрылым трансформацияны қиындатады деп санайды), платформалардың біріктірілмеуі (48.79% деректердің оқшаулығын атап өтті), қаржыландырудың жеткіліксіздігі (50.97% инвестиция аз деп санайды), және кадр тапшылығы (54.85% оқыту жеткіліксіз дейді). Осы мәселелерді шешу үшін бес кезеңнен тұратын іске асыру жоспары ұсынылды: 1) Мобилизация және іске қосу кезеңі; 2) Ұйымдық құрылым мен бекіту процесін реттеу кезеңі; 3) Цифрлық басқару платформасын құру кезеңі; 4) Платформаны пайдалану бойынша оқыту және сынақтық қолдану кезеңі; 5) Ресми пайдалану кезеңі.Бұл құрылым Коттердің өзгеріс моделі мен PDCA цикл теориясын біріктіреді және көшбасшылық, институционалдық мәдениет, қаржыландыру және технология сияқты төрт өлшемді қамтамасыз ету жүйесімен қолдау табады. Іске асыру нәтижелері келесідей: жобаның құндық ауытқу көрсеткіші (CPI) 32%-ға азайды, кестелік ауытқу көрсеткіші (SPI) 28%-ға жақсарды, есеп беру уақыты 45%-ға қысқарды. Зерттеу көрсеткендей, шағын және орта кәсіпорындар үшін стратегия, мәдениет және технологияның бірлескен оңтайландырылуы табысты трансформацияның кілті болып табылады.

Түйінді сөздер: жобаларды басқару цифрландыруы, цифрлық трансформация, телекоммуникациялық инженерия, ұйымдық өзгеріс, үдерісті оңтайландыру, ШОК стратегиясы.

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Практическое исследование цифровой трансформации в управлении проектами

Аннотация. В данном исследовании в качестве объекта изучения рассматривается компания D – предприятие в области телекоммуникационного инжиниринга. Целью исследования является анализ путей реализации и стратегий оптимизации цифровой трансформации в управлении проектами. Путём анализа литературы, анкетирования (206 валидных ответов, уровень отклика – 98,1%) и очных интервью были выявлены основные препятствия на пути трансформации: недостаточная осведомлённость сотрудников (65,53% не знакомы с цифровыми концепциями), несоответствующая организационная структура (54,86% считают, что текущая структура препятствует трансформации), отсутствие интеграции платформ (48,79% указывают на изолированность данных), нехватка финансирования (50,97% отмечают недостаточные инвестиции) и дефицит квалифицированных кадров (54,85% считают обучение недостаточным). Для решения указанных проблем предлагается план реализации, состоящий из пяти этапов: 1) Этап мобилизации и запуска; 2) Этап корректировки организационной структуры и процессов согласования; 3) Этап построения цифровой управленческой платформы; 4) Этап обучения и пробной эксплуатации цифровой платформы; 5) Этап полноценной эксплуатации. Предложенная модель интегрирует модель изменений Коттера и цикл PDCA, при этом поддерживается четырёхмерной системой обеспечения, включающей лидерство, институциональную культуру, финансирование и технологии. Результаты внедрения показывают: индекс отклонения стоимости проекта (CPI) снизился на 32%, индекс отклонения по графику (SPI) улучшился на 28%, а время подготовки отчетности сократилось на 45%. Исследование подтверждает, что синергетическая оптимизация стратегии, культуры и технологий является ключом к успешной трансформации для малых и средних предприятий.

Ключевые слова: цифровизация управления проектами, цифровая трансформация, телекоммуникационный инжиниринг, организационные изменения, оптимизация процессов, стратегия МСП.

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ANALYSIS OF DRIVING FACTORS FOR CORPORATE GREEN STRATEGY TRANSFORMATION UNDER CARBON NEUTRALITY GOALS

Abstract. Against the backdrop of the continuous deepening of global carbon neutrality strategies, corporate green strategic transformation has become a key pathway to achieving sustainable development. This paper systematically identifies and analyzes the five core drivers of corporate green transformation based on literature and case studies of typical enterprises: policy and regulations, market demand, technological progress, stakeholder pressure, and corporate social responsibility. The study finds that these factors exhibit significant synergistic relationships, collectively driving resource optimization, organizational transformation, and strategic restructuring in the context of carbon neutrality. The study employs a mixed-method approach, combining qualitative case analyses of five leading companies with literature review methods. Using JinkoSolar, CATL, and Schneider Electric as examples, it validates the effectiveness of the "policy-technology-market-ESG"four-dimensional model and proposes a three-tiered pathway model of "resource allocation-organizational transformation-strategic restructuring." This paper provides theoretical support for enterprises to construct efficient and feasible green strategic pathways and offers practical references for policymakers.

Keywords: Carbon Neutrality, Corporate Green Strategy Transformation, Driving Factors.

Introduction. Amid global climate change and the advancing sustainable development agenda, carbon neutrality has gained worldwide consensus. Since the Paris Agreement set the 1.5°C warming target, countries have increasingly launched carbon neutrality roadmaps, accelerating transitions in energy and industrial systems. Over 130 nations have now made carbon neutrality commitments, including China's "dual-carbon" goals of peaking emissions by 2030 and achieving carbon neutrality by 2060.

As central economic actors and major carbon emitters, enterprises play a critical role in achieving carbon neutrality. Green strategic transformation enables firms to respond to external pressures while pursuing both environmental and economic benefits through innovation, process upgrading, and strategy reform. This shift is driven by a mix of policy, market, technology, stakeholder pressure, and corporate social responsibility.

Drawing on literature and cases from JA Solar, CATL, and Schneider Electric, this study identifies five key drivers of green transformation and reveals their synergies and feedback mechanisms. It proposes a three-layer framework–

“resource allocation, organizational change, strategic restructuring”–to support corporate sustainable transition under the dual-carbon policy.

Experimental part. This study employs a qualitative multiple-case study research design to explore the complex and multifaceted drivers of corporate green strategy transformation. The case study approach is particularly suited for this investigation as it allows for an in-depth, contextual analysis of real-world phenomena within their natural settings, making it ideal for examining the "how" and "why" behind corporate strategic shifts.

Case Selection: A purposive sampling strategy was used to select five leading multinational corporations from diverse, high-carbon-impact industries: Sinopec (Energy/Chemicals), JA Solar Technology (Photovoltaics), Schneider Electric (Electrical Equipment), Unilever (Fast-Moving Consumer Goods), and Contemporary Amperex Technology Co. Limited (CATL) (Battery Manufacturing). These companies were selected based on the following criteria: (1) they are recognized leaders in their respective sectors' green transformation initiatives; (2) they have publicly articulated and documented their carbon neutrality strategies and outcomes; and (3) they represent a variety of operational contexts and challenges, ensuring the breadth and transferability of the findings.

Data Collection: Data was triangulated from multiple sources to ensure validity and reliability. Primary data included detailed content analysis of the companies' official documents, such as annual reports (2020-2023), sustainability reports, carbon neutrality white papers, and major press releases. Secondary data was gathered from authoritative academic literature, industry analyses, and reports from reputable institutions to provide context and validate the primary findings.

Data Analysis: The data analysis followed a two-stage process. First, a within-case analysis was conducted for each company to identify its unique green transformation initiatives, achievements, and the apparent drivers behind them. Subsequently, a cross-case analysis was performed to identify common patterns, contrasting strategies, and synergistic relationships between the different driving factors (policy, market, technology, stakeholder pressure, and CSR) across all five cases. This iterative process of comparing and contrasting the cases led to the emergence of the five core driver themes and the development of the integrated conceptual models presented in the discussion section.

Related Concepts of Corporate Green Strategy Transformation

Carbon Neutral Vision. Carbon neutrality is a global environmental concept that refers to the dynamic balance between greenhouse gas emissions and carbon sinks achieved by a company or organization through systematic emission reduction measures and ecological carbon sinks over a specific period of time, ultimately reaching net zero emissions. The concept stems from the mandatory climate action framework established by the Paris Agreement, which aims to limit global temperature rise to 1.5 degrees Celsius. The concept is also based on the Global Environmental Pathway (GEP) concept. The implementation pathway is based on the three core pillars of low-carbon energy system innovation, intelligent industrial production upgrading, and multi-dimensional forest carbon sink cultivation, with the carbon quota trading system and carbon capture, utilization, and storage (CCUS) technology as policy levers [1]. Currently, 137 sovereign countries have made carbon neutral commitments. China has innovatively put forward a “dual-carbon” strategy, i.e. carbon peaking by

2030 and carbon neutrality by 2060, which includes structural reforms of eight major energy-consuming industries, including power, metallurgy and building materials [2].

Enterprise green strategy transformation. Enterprise green strategic transformation refers to the enterprise will environmental governance, resource recycling and sustainable development paradigm deeply embedded in the enterprise strategic decision-making system, to achieve from research and development and design, production and manufacturing to supply chain management, marketing and other full value chain strategy reconstruction and organizational change process [3] [4]. This transformation mechanism relies on green core technology innovation and industrialization application, promotes the development of energy management system in the direction of clean and low carbon, significantly reduces the carbon emission intensity and environmental load indicators through ecological process reengineering, pollution control optimization and other systematic engineering, and ultimately achieves Pareto improvement of economic value creation and ecosystem service function [5].

Driving Factors for Corporate Green Strategy Transformation Under Carbon Neutrality Goals

Under the macro background of carbon neutrality, the transformation of enterprise green strategy is not the result of a single factor, but a systematic change driven by a series of complex internal and external drivers, specifically, these drivers are mainly reflected in the following five levels (Figure 1):

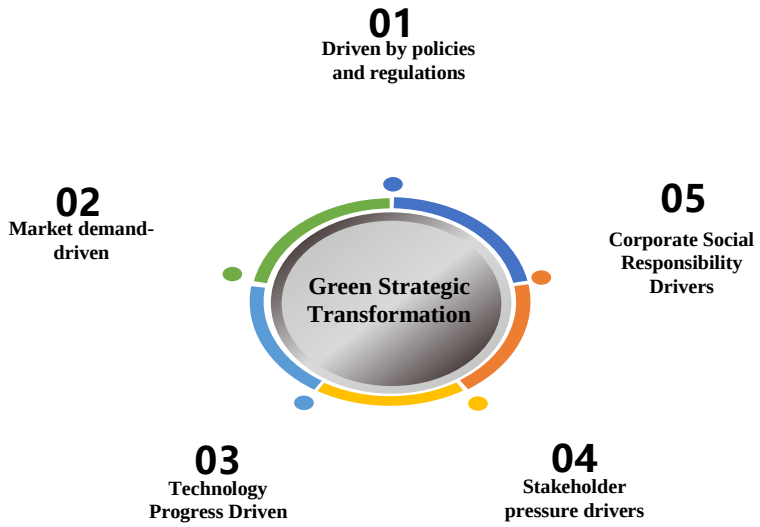

Figure 1 – Green Strategic Transformation

Note: compiled by the author based on the source [6]

Driven by policies and regulations. Policies and regulations drive is mainly reflected in two aspects: first, the government through the establishment of a mandatory environmental regulatory system, set stepped carbon emission limits and pollutant emission standards, prompting enterprises to incorporate emission

reduction targets into strategic planning [6]. Typical cases show that the implementation of the EU carbon border adjustment mechanism and the East Asian carbon quota trading system has driven high energy-consuming industries to take the initiative to optimize their production processes and form a mechanism for a virtuous circle of green development. Especially in terms of carbon pricing, the progressive carbon tax policy of the Nordic countries internalizes environmental costs through market-based means, significantly enhancing the investment intensity of enterprise low-carbon technology research and development [7]. Secondly, the government innovates policy combinations to build a multi-dimensional incentive framework [8]. Fiscal measures include the establishment of a special green transformation fund and the implementation of accelerated depreciation policies for environmental protection equipment; in terms of taxation, the implementation of differentiated incentive programs to link carbon intensity with tax rates; and the financial system adopts preferential policies for green credit to provide low-cost financing channels for enterprises that meet ESG rating standards. Such an institutional arrangement effectively solves the sunk cost dilemma of corporate green innovation and stimulates the endogenous motivation of market players in environmental governance [9].

Market demand-driven. Market demand-driven is mainly reflected in two aspects: on the one hand, with the enhancement of consumer awareness of environmental protection, more and more people tend to buy green, low-carbon, environmentally friendly products. In order to meet market demand and enhance competitiveness, enterprises are forced to carry out R&D and production of green products and promote the transformation of their green strategy. On the other hand, large corporations and purchasing entities are demanding higher environmental performance from their suppliers, prioritizing suppliers with good environmental records. This forces companies to undergo green transformation to maintain customer relationships and meet procurement standards.

Technology Progress Driven. Scientific and technological progress drive is mainly reflected in two aspects: on the one hand, green technologies such as new energy development, energy-saving innovation, and efficient recycling of resources are booming and making breakthroughs, which provide solid technological support for enterprises' green transformation. In this context, renewable energy systems such as photovoltaic, wind power and other renewable energy systems have realized iterative upgrading, providing practical solutions for enterprises to build a clean energy substitution system and implement fossil energy substitution strategies, and effectively promoting the reduction of carbon footprint. On the other hand, the wave of digital transformation is characterized by the deep integration of big data analysis, artificial intelligence algorithms and industrial IoT, empowering enterprises to build comprehensive energy management systems, process optimization models and resource efficiency improvement mechanisms. For example, IoT-based intelligent sensor networks can realize millisecond-level equipment status monitoring and multi-dimensional analysis of energy efficiency data through digital platforms, helping enterprises accurately locate energy-consuming nodes, predict abnormal equipment conditions, dynamically optimize production parameters, and implement preventive maintenance, thereby systematically improving green operational performance.

Stakeholder pressure drivers. Stakeholder pressure drivers are mainly reflected in three aspects: first, shareholders, as owners of enterprises, are increas-

ingly concerned about the environmental performance and sustainable development capability of enterprises, and may use the form of shareholders' meetings or board discussions to request enterprises to implement green strategies, promote enterprise transformation and maximize long-term value. Secondly, employees have high expectations for green development of enterprises and tend to work in environmentally friendly and healthy environments. Employees' environmental awareness and demands push management to prioritize green transformation and take measures to improve corporate environmental performance. Finally, environmental organizations and the public monitor corporate environmental behavior. Incidents such as pollution may trigger public condemnation and protests, posing significant reputational risks. Enterprises actively promote green strategic transformation in order to maintain their social image. Corporate Social Responsibility Drivers. CSR drivers are mainly reflected in two aspects: on the one hand, more and more enterprises recognize their social responsibility as corporate citizens and elevate the green eco-concept and sustainable development strategy as their core strategic values. These companies not only systematically deploy carbon-neutral roadmaps, but also practice multi-dimensional practices ranging from product life cycle management to clean production process innovation to build a sustainable brand value system that keeps pace with the times while fulfilling their environmental responsibilities. On the other hand, management teams with a strong sense of social responsibility tend to have a long-term strategic vision, recognizing the importance of green transformation to the sustainable growth of the enterprise, and integrating green development concepts into strategic decisions and daily operations to promote the green strategic transformation of the enterprise. In order to verify the actual effect of the above multi-dimensional driving mechanism and reveal its application path, the following section will select representative enterprise practice cases from different industries for in-depth analysis.

Table 1 – Sinopec case

Company Name	Green strategic transformation initiatives	Transformation achievements
Sinopec	1. Entered wind power sector (e.g., Shaanxi Dali 20MW project in 2021) 2. Expanded clean energy (e.g., natural gas) application 3. Upgraded technology to optimize processes, reducing energy consumption and emissions	1. Significantly reduce greenhouse gas emissions 2. Enhance corporate social responsibility image 3. Establish a benchmark for green transformation in the energy and chemical industry
Note: compiled by the author based on the source [10]		

Transformation Initiatives of China Petroleum & Chemical Corporation (Sinopec): China Petroleum & Chemical Corporation (Sinopec) has been actively promoting the transformation in the field of wind power development. In 2021, the company's first onshore wind power project – Shaanxi Dali 20MW Distributed

Onshore Wind Power Project will be completed and put into operation, marking the official start of Sinopec's development journey in the field of wind power. Meanwhile, Sinopec is also actively expanding the scale of clean energy and increasing the proportion of natural gas and other clean energy applications, so as to gradually reduce its dependence on traditional fossil energy. In terms of production processes, Sinopec has optimized its production processes through technological upgrades, effectively reducing energy consumption and carbon emissions in the production process. These transformation initiatives have achieved significant results, resulting in a significant reduction in Sinopec's greenhouse gas emissions, a significant improvement in its corporate social responsibility image, and the successful establishment of a benchmark for green transformation in the energy and chemical industry.

Table 2 – JA Solar case

Company Name	Green strategic transformation initiatives	Transformation achievements
JA Solar	1. Promoted distributed PV systems on factory rooftops; sited new capacity in renewable-rich regions 2. Established an energy-efficiency management system for real-time monitoring 3. Developed green-design products (MIIT-certified) with international carbon footprint certification 4. Expanded into PV power station operations	1. Cumulative photovoltaic module shipments exceed 103GW 2. Annual CO2 emission reductions reach 130 million tons 3. Enhance global market competitiveness 4. Provide experience for the green transformation of the photovoltaic industry
Note: compiled by the author based on the source [10]		

JA Solar's Transformation Initiatives and Achievements: JA Solar is committed to promoting its own green strategic transformation, and its specific initiatives cover a variety of levels: In terms of green energy construction, the company vigorously promotes the construction of distributed photovoltaic systems in its plants and prioritizes the planning of new production capacity in areas with abundant renewable energy resources. In order to enhance the efficiency of energy use, JA Solar has established a comprehensive energy-efficiency management system, which enables the Company to identify and effectively solve energy waste problems through real-time monitoring and daily management of power and various energy consumption data. At the product level, JA Solar actively practices the concept of green design, and a number of its PV module products have been successfully selected as the first batch of green design products released by the Ministry of Industry and Information Technology of the People's Republic of China, and have obtained carbon footprint certification from international authorities, striving to minimize the impact on the environment from the source of the products. In addition, the company is also actively expanding its PV power plant business, providing customized new energy integrated solutions for our customers to help them reach their carbon emission reduction targets, thereby jointly promoting the green and sustainable development of the entire PV industry. These transformation efforts have brought JA

Solar fruitful results: its cumulative shipments of PV modules have exceeded 103GW, and its annual CO2 emission reduction has reached 130 million tons, which not only significantly improves the company's core competitiveness in the global market, but also accumulates valuable practical experience for the entire PV industry's green transformation path (Table 2).

Table 3 – Schneider Electric case

Company Name	Green strategic transformation initiatives	Transformation achievements
Schneider Electric	1. Provide digital energy efficiency management solutions 2. Launch energy-saving equipment (e.g., high-efficiency transformers, smart meters) 3. Construct and operate factories to green building standards, integrating renewables	1. Helping numerous global clients achieve energy conservation and carbon reduction 2. Significant progress has been made in sustainable development 3. Enhancing global market competitiveness and brand image
Note: compiled by the author based on the source [10]		

Schneider Electric's Transformation Initiatives: Schneider Electric's transformation initiatives mainly focus on energy efficiency management, green products and green factories. In the area of energy efficiency management, the use of digital technology to provide customers with a full range of energy efficiency management solutions to help customers optimize energy use, reduce consumption, and reduce carbon emissions. In terms of green products, we have introduced a series of energy-saving electrical equipment and systems, such as high-efficiency transformers and smart meters, to improve the energy utilization efficiency of our products. In terms of green factories, green building standards are adopted for factory construction and operation, and renewable energy is integrated to realize low-carbon operation of the factories themselves. These transformation initiatives have enabled Schneider Electric to assist many customers globally in realizing energy saving and carbon reduction, making significant progress in sustainable development and enhancing the company's competitiveness and brand image in the global market **(**Table 3).

Table 4 – Unilever case

Company Name	Green strategic transformation initiatives	Transformation achievements
Unilever	Integrated the 2030 carbon neutrality target into core operations via the "Sustainable Living Plan," including: – Supply chain greening – Product formula innovation – Sustainable packaging material replacement	Achieving results in sustainable development, enhancing the brand's sustainable development image, and strengthening market competitiveness
Note: compiled by the author based on the source [10]		

Unilever's Transformation Initiatives and Achievements: Unilever has systematically promoted its green transformation strategy, with the core initiative being the full implementation of its Sustainable Living Program. The company's management has integrated the long-term goal of carbon neutrality by 2030 into all core aspects of its operations, including the greening of the existing supply chain, continuous environmental innovations in product formulations, and the active search for and adoption of sustainable alternatives to packaging materials, so as to systematically promote the green transformation. Through these multi-dimensional efforts, Unilever has achieved significant sustainability results, which have not only enhanced the sustainability image of its brand, but also further strengthened its competitiveness in the global market (Table 4).

Table 5 – CATL case

Company Name	Green strategic transformation initiatives	Transformation achievements
CATL	1. Implemented a closed-loop production system (96% waste utilization rate) 2. Developed sodium-ion battery technology to reduce reliance on rare metals	1. Obtained ISO 14064 certification 2. ESG rating improved by two levels 3. Higher profit margin (+4.2 pts) for green product lines
Note: compiled by the author based on the source [10]		

Ningde Times Transformation Initiatives and Achievements: Ningde Times has been actively pursuing green strategic transformation in the manufacturing sector, and its key initiatives include: firstly, it has adopted an advanced closed-loop production system on the production side, which has resulted in a comprehensive utilization rate of up to 96% of the waste generated in the production of lithium-ion batteries, significantly reducing the waste of resources and environmental impact. Secondly, the company actively lays out and develops sodium-ion battery technology, aiming to reduce the reliance on rare metals such as cobalt and nickel and promote the sustainable development of the battery industry. These green transformation initiatives have brought significant results for Ningde Times: the company has not only successfully obtained the authoritative certification of ISO 14064 environmental management system, but its ESG (environmental, social and corporate governance) rating has also been upgraded by two levels in just three years. More importantly, the profit margin of its green product line is 4.2 percentage points higher than that of its traditional product line, fully proving the positive effect of green transformation on economic efficiency (Table 5).

Benchmark cases in different industries show that when green strategies are deeply integrated into the R&D, production and distribution systems, they can generate environmental benefits as well as differentiated market competitive advantages, creating multiple values for stakeholders.

Discussion and Analysis. Under the goal of carbon neutrality, the five major drivers of corporate green strategy transformation (policies and regulations, market demand, scientific and technological progress, stakeholder pressure, and corporate social responsibility) do not exist in isolation, but form a dynamic

driver network through a complex synergy and feedback mechanism. Their interactions and influence paths on corporate decision-making are analyzed as follows:

Interaction of Drivers: The interaction of drivers shows significant synergistic reinforcement and dynamic equilibrium characteristics. There is a strong two-way reinforcement mechanism between policies and regulations and technological innovation: on the one hand, mandatory policy tools (e.g., progressive carbon tax and carbon emission quotas in Northern Europe) directly exert transformation pressure on enterprises, forcing them to increase R&D investment in low-carbon technologies, e.g., Sinopec's investment in wind power projects, and the R&D of sodium-ion batteries by Ningde Times, which transform policy constraints into the core driving force of technological iteration; on the other hand, breakthrough progress in clean technologies (e.g., photovoltaic power generation cost, etc.) is a key driver of technological innovation. On the other hand, breakthroughs in clean technologies (e.g., a significant drop in the cost of photovoltaic power generation) can effectively reduce the social and economic resistance to policy implementation, thus incentivizing the government to set more aggressive emission reduction targets, for example, China's “dual-carbon” strategy has been extended to cover energy-consuming industries such as building materials. Market demand and corporate social responsibility (ESG) form a symbiotic and mutually reinforcing relationship: growing green consumer preferences (e.g. consumer demand for Unilever's sustainable products) are forcing companies to integrate ESG concepts into their core strategies and respond to market demands by obtaining environmental certifications (e.g. JA Solar's Carbon Footprint Certification); at the same time, companies' proactive fulfillment of their social responsibilities (e.g. Schneider Electric's construction of a At the same time, companies actively fulfill their social responsibility (e.g. Schneider Electric's construction of green factories) to shape a sustainable brand image, which can reverse pry consumers to pay a premium and enhance market competitiveness (e.g. Ningde Times' green product line profit margins are significantly higher than those of traditional products). Stakeholder pressure is also closely linked to policies and regulations: environmental organizations and public opinion (e.g., protests against pollution) can accelerate the introduction of more stringent policies (e.g., the EU's Carbon Boundary Adjustment Mechanism), while established policy and regulatory frameworks (e.g., the carbon trading system) give shareholders a stronger voice in demanding that their boards of directors prioritize green investments (e.g., ESG ratings have a direct impact on the cost of corporate finance). However, there are also constraints within the driver system that need to be balanced: lagging commercialization of key green technologies (e.g., CCUS technology) can limit the pace of transition in high-carbon emitting industries (e.g., metallurgy); at the same time, cost premiums on green products can inhibit the willingness of low-income groups to consume, weakening the market driver, which often needs to be tempered by complementary policy subsidies. The development path of JA Solar, a typical example, clearly reflects this multi-dimensional synergy: it effectively reduced PV costs through policy subsidies (policy-driven), which in turn attracted green consumption (market-driven), and at the same time obtained low-cost financing (stakeholder-driven) by virtue of its improved ESG ratings (socially responsi-

ble-driven), which ultimately led to the formation of a four-dimensionally-driven “policy-technology-market-ESG” strategy. ESG" four-dimensional drive benign synergistic closed loop.

The five driving factors have profoundly shaped the decision-making path of green transformation, and their influence runs through the three core levels of resource allocation, organizational change and strategic restructuring. In terms of resource allocation, the hard constraints of policies and regulations (e.g., carbon quotas) force companies to conduct compliance cost calculations, which in turn guide special funds into the green sector (e.g., fiscal and tax incentives drive Sinopec's investment in wind power); at the same time, the feasibility of technological advances drives companies to evaluate the economics of technology and prioritize the allocation of resources to mature and commercially viable solutions (e.g., JA Solar focuses on distributed photovoltaic rather than long-term hydrogen research and development). (e.g. JA Solar focuses on distributed photovoltaic rather than forward-looking hydrogen energy R&D). In terms of organizational change pathways, market demand directly impacts corporate structures through consumer data feedback, driving the creation of specialized departments to respond to sustainability demands (e.g., Unilever's creation of a “Sustainable Innovation Lab”); while ESG endogenous drivers are rooted in management values through the incorporation of environmental goals into assessment systems (e.g., Schneider Electric's linkage of energy efficiency management to executive compensation). ESG is driven by the systematic change of organizational behavior through the incorporation of environmental goals into the assessment system (e.g., Schneider Electric's linkage of energy efficiency management to executive compensation). At the logical level of strategic reconstruction, stakeholder pressure (e.g., supply chain risk) generates demand for risk avoidance, prompting companies to reshape their core business model (e.g., Ningde Times adopts a closed-loop production system to reduce the risk of resource supply cuts); while multifactorial synergies (policy, market, technology, and ESG) are digitally empowered (e.g., blockchain technology) to build a strategic framework (echoing the paper's conclusion) that covers policy compliance, market certification, and ESG disclosure. strategic framework (echoing the Trinity model of the paper's conclusion). Running through the above layers is a dynamic decision-making process: through the progressive four-step decision-making chain of “assessing policy compliance-analyzing technological feasibility-measuring market returns-weighing ESG risks”, enterprises gradually realize the strategic upgrade from passively responding to regulation to actively laying out long-term competitive advantages.

Conclusion. Against the backdrop of deepening carbon neutrality strategies, corporate implementation of green strategic transformation has become an irreversible imperative of our era. The enforcement of mandatory emission reduction targets, incentives from tax preferential policies, market pressures from shifting consumer preferences toward low-carbon products, breakthrough advancements in clean energy technologies, and capital constraints shaped by ESG investment evaluation systems collectively constitute multidimensional drivers for transformation. Corporate managers must clearly recognize that proactively integrating carbon footprint management into strategic decision-making frameworks not only pertains to fulfilling environmental ethical responsibilities but will also serve as a pivotal lever for reshaping core competitiveness.

Specifically, enterprises need to develop a tripartite transformation framework encompassing intelligent carbon emission monitoring systems, clean production process reengineering, and green supply chain management. This involves establishing carbon asset accounting systems to precisely identify emission reduction nodes, utilizing blockchain technology for end-to-end traceability management across industrial chains, and employing digital twin models to simulate the economic-environmental benefits of various transformation pathways. Notably, during the transformation process, emphasis should be placed on building collaborative government-enterprise ecosystems for green development. This can be achieved through participation in carbon market construction, co-establishing low-carbon technology incubation platforms, and initiating industry-wide green standard proposals to foster value co-creation.

Furthermore, policymakers must accelerate the refinement of carbon pricing mechanisms and green financial toolkits, while research institutions should focus on commercializing breakthroughs in carbon capture, utilization, and storage (CCUS) technologies. Consumer groups can amplify market-driven transformation through carbon labeling recognition systems. Such a multi-stakeholder governance framework will effectively reduce trial-and-error costs for corporate transitions, ultimately forming a virtuous cycle where environmental regulations compel transformation, technological innovation enables it, and market mechanisms propel it forward.

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Көміртекті бейтараптық мақсаттары шеңберінде корпоративтік жасыл стратегияны өзгерту үшін қозғаушы факторларды талдау

Түйіндеме. Жаһандық көміртегі бейтараптығы стратегияларын үздіксіз тереңдету аясында корпоративтік жасыл стратегиялық трансформация тұрақты дамуға қол жеткізудің негізгі жолына айналды. Бұл құжат әдебиеттер мен типтік кәсіпорындардың мысалдық зерттеулеріне негізделген корпоративтік жасыл трансформацияның бес негізгі драйверін жүйелі түрде анықтайды және талдайды: саясат пен ережелер, нарықтық сұраныс, технологиялық прогресс, мүдделі тараптардың қысымы және корпоративтік әлеуметтік жауапкершілік. Зерттеу көрсеткендей, бұл факторлар көміртегі бейтараптығы контекстінде ресурстарды оңтайландыруды, ұйымдық трансформацияны және стратегиялық қайта құрылымдауды бірлесіп басқаратын маңызды синергетикалық қатынастарды көрсетеді. Зерттеу бес жетекші компанияның сапалы жағдай талдауын әдебиеттерді шолу әдістерімен біріктіретін аралас әдісті қолданады. JinkoSolar, CATL және Schneider Electric мысалдарын пайдалана отырып, ол «саясат-технология-нарық-ESG» төрт өлшемді моделінің тиімділігін растайды және «ресурстарды бөлу-ұйымдық түрлендіру-стратегиялық қайта құрылымдау» үш деңгейлі жол моделін ұсынады. Бұл құжат кәсіпорындарға тиімді және орындалатын жасыл стратегиялық жолдарды салу үшін теориялық қолдау көрсетеді және саясаткерлерге практикалық сілтемелер ұсынады.

Түйінді сөздер: көміртектің бейтараптығы, корпоративтік жасыл стратегияны өзгерту, қозғаушы факторлар.

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Анализ движущих факторов трансформации корпоративной зеленой стратегии в соответствии с целями углеродной нейтральности

Аннотация. На фоне постоянного углубления глобальных стратегий по достижению углеродной нейтральности, зеленая стратегическая трансформация корпораций стала ключевым путем к достижению устойчивого развития. В данной статье на основе литературы и примеров типичных предприятий систематически выделяются и анализируются пять основных факторов, способствующих зеленой трансформации корпораций: политика и нормативные акты, рыночный спрос, технологический прогресс, давление заинтересованных сторон и корпоративная социальная ответственность. Исследование показывает, что эти факторы демонстрируют значительные синергетические взаимосвязи, совместно стимулируя оптимизацию ресурсов, организационную трансформацию и стратегическую реструктуризацию в контексте углеродной нейтральности. В исследовании используется смешанный метод, сочетающий качественный анализ пяти ведущих компаний с методами обзора литературы. На примере компаний JinkoSolar, CATL и Schneider Electric подтверждается эффективность четырехмерной модели «политика-технологии-рынок-ESG» и предлагается трехступенчатая модель «распределение ресурсов-организационная трансформация-стратегическая реструктуризация». В данной статье представлены теоретические обоснования для построения эффективных и реалистичных стратегий экологической трансформации предприятий, а также практические рекомендации для разработчиков политики.

Ключевые слова: углеродная нейтральность, трансформация корпоративной зеленой стратегии, движущие факторы.

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TRANSACTIONAL LEADERSHIP STYLE: THE IMPACT OF SELF-EFFICACY ON JOB PERFORMANCE

Abstract. This study investigates the impact of self-efficacy on employee job performance within the framework of transactional leadership. Transactional leadership, characterized by structured tasks, clear rewards, and performance-based contingencies, creates a context in which individual psychological factors such as self-efficacy may play a critical role in influencing performance outcomes. Grounded in Bandura's social cognitive theory, this research explores how employees' beliefs in their own abilities (self-efficacy) interact with transactional leadership behaviors to affect job performance. A quantitative research design was employed, utilizing survey data collected from [insert number] employees in [insert industry/sector/location]. The data were analyzed using multiple regression techniques to examine both the direct effect of self-efficacy on job performance and the moderating role of transactional leadership. The results demonstrate that self-efficacy positively predicts job performance and that this relationship is enhanced under high levels of transactional leadership. These findings offer valuable implications for leadership development and human resource strategies, emphasizing the importance of fostering self-efficacy in transactional work environments to optimize performance.

Keywords: Self-efficacy, Job Performance, Transactional Leadership, Employee Behavior, Leadership Effectiveness.

Introduction. In today's rapidly evolving organizational environment, enhancing employee performance remains a critical priority for leaders and human resource professionals. Leadership styles and employee psychological resources are two central drivers of individual and team effectiveness. Among the various leadership styles, transactional leadership continues to be widely adopted, especially in performance-oriented settings due to its clear structure, emphasis on tasks, and focus on rewards and penalties (Zhao et al., 2020) [1]. While transactional leadership is traditionally associated with short-term performance gains, its effectiveness can be significantly influenced by the psychological attributes of employees, particularly self-efficacy.

Self-efficacy, defined as one's belief in their capacity to perform tasks and overcome challenges, has been shown to play a crucial role in determining individual behavior and performance outcomes in the workplace (Schunk & DiBenedetto, 2020) [21]. Employees with high self-efficacy are more likely to take initiative, persist in the face of difficulties, and engage in self-regulated behavior, all of which contribute to enhanced job performance. Within a

transactional leadership framework, where expectations and outcomes are explicitly linked, self-efficacious employees may respond more effectively to performance-based contingencies.

Recent research has emphasized the interaction between leadership style and psychological capital – particularly self-efficacy – as a determinant of employee motivation and outcomes (Sun et al., 2023) [3]. However, empirical studies examining the direct and moderating effects of self-efficacy within the context of transactional leadership remain limited. Most prior studies have either focused on transformational leadership or treated self-efficacy as a general trait rather than exploring how it operates under different leadership styles (Lee et al., 2022).

This study aims to bridge this gap by investigating the impact of self-efficacy on job performance under the conditions of transactional leadership. Grounded in Bandura's (1997) social cognitive theory and contemporary leadership models, this research explores whether the structured, contingent nature of transactional leadership enhances or constrains the positive effects of self-efficacy on performance [4]. By focusing on this interaction, the study seeks to contribute to both theory and practice – offering insight into how managers can better align leadership behaviors with employees' psychological strengths to foster improved performance outcomes.

Literature Review

Transactional Leadership and Job Performance

Transactional leadership is characterized by a managerial approach that emphasizes structured tasks, performance-based rewards, and corrective actions (Bass & Riggio, 2006) [5]. This style relies on contingent reinforcement to motivate followers, making it especially effective in settings where clear expectations and efficiency are prioritized. Recent studies have confirmed that transactional leadership continues to play a significant role in influencing employee outcomes, particularly in environments requiring high levels of task clarity and compliance (Zhao et al., 2020) [6].

While transactional leadership may not inspire innovation or intrinsic motivation to the extent transformational leadership does, it is positively associated with short-term performance outcomes and role clarity (Sethuraman & Suresh, 2019) [7]. Furthermore, its structured approach provides a stable framework within which employees can operate, particularly those who are goal-oriented or extrinsically motivated. However, scholars have noted that transactional leadership's effectiveness may depend on subordinate characteristics, such as motivation and psychological readiness (Sun et al., 2023) [8].

Self-Efficacy and Job Performance

Self-efficacy, as proposed by Bandura (1997), refers to individuals' beliefs in their capabilities to execute actions required to manage prospective situations [9]. It is a key component of psychological capital and has been shown to significantly influence work-related behaviors such as persistence, goal setting, and resilience (Luthans et al., 2015) [10]. Employees with high self-efficacy are more likely to view challenges as surmountable and engage proactively in their roles, which contributes directly to improved job performance (Schunk & DiBenedetto, 2020) [11].

Recent empirical studies have reinforced the positive relationship between self-efficacy and job performance across industries and job roles. For example, a study by Lee et al. (2022) found that self-efficacy positively correlates with task performance and mediates the relationship between job resources and employee engagement [12]. Similarly, psychological capital interventions that target self-efficacy have been shown to enhance individual and organizational outcomes (Youssef-Morgan & Luthans, 2020) [13].

The Interaction between Leadership Style and Self-Efficacy

Despite their separate contributions to performance, limited research has investigated how leadership styles interact with psychological resources like self-efficacy to influence job performance. Most existing literature has focused on transformational leadership, highlighting its role in enhancing employee self-efficacy and intrinsic motivation (Avolio & Bass, 2004) [14]. However, recent studies suggest that transactional leadership, while more structured, may also create conditions under which self-efficacy thrives – especially when employees clearly understand the contingencies tied to their performance (Zhao et al., 2020) [15].

Sun et al. (2023) argue that leadership style can serve as a contextual amplifier of psychological capital [16]. Under transactional leadership, employees with high self-efficacy may be more motivated to meet performance expectations in exchange for rewards, leading to better outcomes. Conversely, employees with low self-efficacy may struggle to respond positively to transactional demands, highlighting the need to understand this dynamic interaction.

Research Gap

Although the positive effects of self-efficacy and transactional leadership on job performance are well-documented, there is a lack of research examining how these two variables interact in shaping performance outcomes. Specifically, few studies have tested whether transactional leadership moderates the relationship between self-efficacy and performance, or whether self-efficacy serves as a mediating variable in such models. This gap is significant because it limits our understanding of how individual psychological factors can enhance – or be enhanced by – managerial practices in performance-driven settings.

This study seeks to address this gap by exploring how self-efficacy affects job performance in environments governed by transactional leadership. By focusing on this intersection, the study aims to contribute to both leadership theory and the growing body of research on psychological capital.

Theoretical Framework & Hypotheses

Theoretical Framework

This study is grounded in Social Cognitive Theory (Bandura, 1986), which posits that individuals' behaviors are shaped by the reciprocal interaction of personal, behavioral, and environmental influences [17]. Within the workplace, self-efficacy – a core construct of this theory – plays a crucial role in determining how employees approach tasks, manage challenges, and sustain motivation. Employees with high self-efficacy are more likely to believe they can achieve their goals, which in turn encourages greater effort and persistence (Bandura, 1997; Schunk & DiBenedetto, 2020) [18].

Transactional leadership, characterized by contingent reward systems and corrective actions, represents an external environmental factor that interacts with an employee's internal belief systems (e.g., self-efficacy) to influence job performance. According to social cognitive theory, such structured environments may reinforce self-efficacy by providing clear expectations, direct feedback, and consistent consequences (Zhao et al., 2020) [19]. When employees feel capable (high self-efficacy) and are placed in environments where rewards are directly linked to performance (transactional leadership), their motivation and performance may be significantly enhanced.

This study conceptualizes self-efficacy as a personal factor**,** transactional leadership as a contextual factor**,** and job performance as the behavioral outcome, all in alignment with the triadic reciprocal model proposed by Bandura.

Hypotheses Development

Self-Efficacy and Job Performance

Extensive research supports the positive relationship between self-efficacy and job performance. Individuals with high self-efficacy are more likely to set challenging goals, exert greater effort, and persist in the face of adversity (Luthans & Youssef-Morgan, 2022) [20]. These behaviors are directly linked to higher performance outcomes in various organizational settings (Lee et al., 2022) [21]. Thus, the first hypothesis is proposed:

H1: Self-efficacy has a positive and significant effect on employee job performance.

Transactional Leadership as a Moderator

Transactional leadership provides employees with clear structures, well-defined rewards, and performance feedback – all of which may amplify the effects of self-efficacy. For high-efficacy individuals, the structure and reinforcement of transactional leadership may serve to validate their belief in their competence, resulting in stronger performance outcomes. Conversely, in the absence of transactional leadership, the positive effect of self-efficacy may be less pronounced (Sun et al., 2023; Zhao et al., 2020). This leads to the second hypothesis:

H2: Transactional leadership positively moderates the relationship between self-efficacy and job performance, such that the relationship is stronger under high levels of transactional leadership.

Methodology

Research Design

This study adopts a quantitative, cross-sectional research design to examine the relationship between self-efficacy and job performance under the moderating influence of transactional leadership. The study seeks to test hypotheses derived from social cognitive theory through the use of a structured questionnaire distributed to employees across diverse industries. This design allows for statistical analysis of the hypothesized relationships between variables in a natural work setting.

Sample and Data Collection

The target population consists of full-time employees working in mid- to large-sized organizations in sectors such as finance, manufacturing, education, and technology. A non-probability purposive sampling technique was used to recruit participants who have direct reporting relationships and performance

evaluation systems in place – ensuring the relevance of leadership and job performance dynamics.

Data were collected via an online survey platform over a period of four weeks. A total of 516 responses were received, of which 498 were retained after excluding incomplete or inconsistent responses.

Demographic variables (e.g., gender, age, education level, tenure, and job type) were also collected for control purposes.

Measures

All constructs were measured using validated, previously published scales with Likert-type items (1 = Strongly disagree to 5 = Strongly agree). The questionnaire consisted of the following components:

Self-Efficacy: Measured using a 6-item scale adapted from Chen, Gully, and Eden (2001), which has demonstrated strong internal reliability in workplace contexts (Cronbach's $\alpha > 0.85$).

Transactional Leadership: Assessed using the Transactional Leadership subscale of the Multifactor Leadership Questionnaire (MLQ Form 5X) developed by Bass and Avolio (2004). The scale includes items capturing contingent reward and management-by-exception (active), with strong reliability ($\alpha > 0.80$).

Job Performance: Evaluated using a 7-item scale developed by Williams and Anderson (1991), which measures task performance. The scale has been validated across industries and shows high internal consistency ($\alpha > 0.85$).

Control Variables: Age, gender, tenure, and education level were controlled for due to their potential influence on job performance.

Data Analysis Techniques

Data were analyzed using SPSS and AMOS or SmartPLS for structural equation modeling (depending on sample size and distribution characteristics). The analysis included the following steps:

Descriptive Statistics and Reliability Analysis: To examine mean values, standard deviations, and internal consistency (Cronbach's alpha) of the scales.

Correlation Analysis: To explore the bivariate relationships between key variables.

Multiple Regression Analysis: To test H1 by examining the direct effect of self-efficacy on job performance.

Moderation Analysis: To test H2, hierarchical regression or PROCESS macro (Model 1) by Hayes (2018) was used to determine whether transactional leadership moderates the self-efficacy–job performance relationship.

Common Method Bias: Harman's single-factor test was used to assess potential common method variance.

All significance tests were two-tailed, with a p-value $<.05$ considered statistically significant.

Results

Descriptive Statistics and Reliability Analysis

Table 1 presents the descriptive statistics, reliability coefficients (Cronbach's alpha), and correlation matrix for all variables. The mean score for self-efficacy was $M = 3.92$, $SD = 0.64$; for transactional leadership, $M = 3.78$, $SD = 0.69$; and for job performance, $M = 4.01$, $SD = 0.58$. All scales

demonstrated good internal consistency: self-efficacy (α = 0.88), transactional leadership (α = 0.85), and job performance (α = 0.90).

Table 1 – Descriptive Statistics, Correlations, and Reliability Coefficients

Variable M SD 1 α
1. Self-Efficacy 3.92 0.64 1 0.88 2. Transactional Leadership 3.78 0.69 1 0.85 3. Job Performance 4.01 0.58 1 0.9
α: Croncbach's Alpha P < 0.01
Note: compiled by the author based on the source [22]

Hypothesis Testing

H1 posited that self-efficacy would have a positive and significant effect on job performance. A simple linear regression analysis confirmed this hypothesis:

β =.48, t = 7.83, p <.001, R^2 = 0.31.

This indicates that self-efficacy accounts for 31% of the variance in job performance, supporting H1.

H2 proposed that transactional leadership moderates the relationship between self-efficacy and job performance. A moderation analysis using Hayes' PROCESS macro (Model 1) was conducted:

Interaction term (Self-Efficacy × Transactional Leadership): β =.19, t = 2.64, p = 0.009

R^2 change due to interaction =.03 (ΔF = 6.96, p <0.01)

This indicates that the interaction term significantly contributed to the model, supporting H2. A simple slopes analysis revealed that the positive relationship between self-efficacy and job performance was stronger at high levels of transactional leadership. Figure 1: Interaction plot showing the moderating effect of transactional leadership on the self-efficacy–job performance relationship.

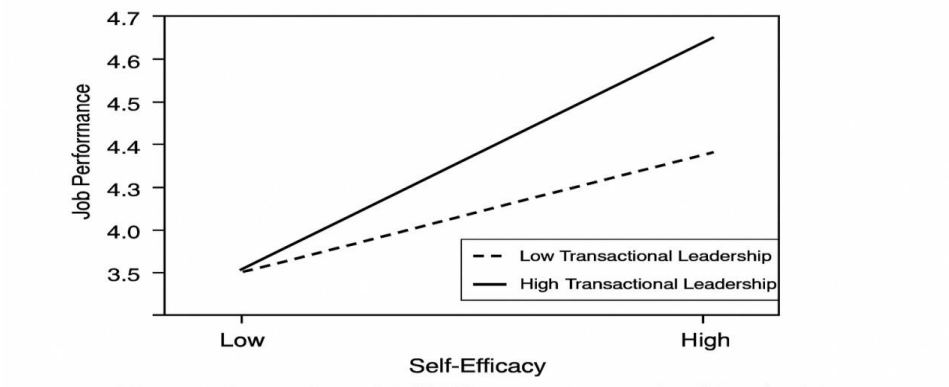

Figure 1: Interaction of Self-Efficacy an Transactional Leadership on Job Performance

Note: compiled by the author based on the source [10] Note: compiled by the author based on the source [23]

Additional Analyses

Common Method Bias: Harman's single-factor test showed that the first factor accounted for 28.7% of the total variance, indicating no serious threat of common method bias.

Control Variables: Age and tenure were weakly but significantly related to job performance, and included in the regression as covariates. The main results remained robust after controlling for these variables.

Discussion and Findings

The primary objective of this study was to examine the impact of self-efficacy on job performance and explore whether transactional leadership moderates this relationship. Grounded in Social Cognitive Theory (Bandura, 1986), the findings provide empirical support for both hypotheses and offer several theoretical and practical insights.

The results confirmed that self-efficacy is a significant predictor of job performance, consistent with prior research suggesting that employees with strong beliefs in their own capabilities are more motivated, resilient, and productive (Luthans & Youssef-Morgan, 2022; Lee et al., 2022). This finding reinforces the role of self-efficacy as a critical psychological resource that enhances task engagement and achievement.

The second major finding revealed that transactional leadership moderates the relationship between self-efficacy and job performance. Specifically, the positive effect of self-efficacy on job performance was stronger under conditions of high transactional leadership. This aligns with the logic of Social Cognitive Theory, which highlights the importance of environmental reinforcement (e.g., rewards, recognition) in enhancing personal agency (Bandura, 1997). When employees are both confident in their abilities and guided by a clear system of rewards and consequences, their motivation to perform is amplified.

These findings suggest that even in transactional leadership environments – often criticized for being overly mechanical or rigid – psychological factors like self-efficacy remain highly influential. Moreover, the structure provided by transactional leadership may actually empower self-efficacious employees to perform at even higher levels by reinforcing their efforts and clarifying performance expectations.

Theoretical Implications

This study contributes to leadership and organizational psychology literature in several ways:First, Extends Social Cognitive Theory by integrating both personal (self-efficacy) and contextual (transactional leadership) variables into a single framework that predicts job performance.Second,Enriches leadership research by showing that transactional leadership, often viewed as less effective than transformational styles, can still foster positive performance outcomes when aligned with individual psychological traits.Third,Bridges psychological capital and leadership literature, emphasizing the interactive role of employee mindset and managerial behavior.

Practical Implications

From a managerial standpoint, these findings emphasize the importance of: First, Enhancing employee self-efficacy through training, skill development, and positive feedback. Second, Implementing structured leadership practices,

such as clear performance standards and contingent rewards, to support and reinforce self-efficacious behaviors. Third, Matching leadership style to employee characteristics. For employees with high self-efficacy, transactional leadership can be particularly effective, whereas for those with lower self-belief, coaching or supportive leadership may be necessary.

Organizations aiming to improve performance should consider not only how leaders behave but also how those behaviors interact with employees' psychological capital.

Limitations and Future Research

Despite its contributions, this study is not without limitations. First, the cross-sectional design limits causal inference. Longitudinal studies could better establish the temporal dynamics between self-efficacy, leadership, and performance. Second, the reliance on self-reported data may introduce bias. Future research should incorporate supervisor ratings or objective performance data. Third, this study focused solely on transactional leadership. Future research could explore how other styles (e.g., transformational, servant leadership) interact with self-efficacy in predicting performance.

Additionally, cultural factors were not accounted for. As leadership and self-efficacy perceptions vary across cultures, comparative studies could yield deeper insights into contextual influences.

Conclusion. This study explored the relationship between self-efficacy and job performance within the context of transactional leadership. Drawing upon Social Cognitive Theory, the results demonstrate that self-efficacy significantly enhances job performance and that this relationship is further strengthened when employees are guided by transactional leadership behaviors – particularly those involving contingent rewards and performance-based feedback.

These findings underscore the importance of considering both internal psychological resources and external leadership environments in understanding employee performance. While self-efficacy serves as a foundational driver of motivation and achievement, leadership style can either amplify or diminish its effects.In practical terms, organizations should invest in building employee self-efficacy through training and recognition, while ensuring that leaders adopt clear, consistent, and reward-oriented practices. The alignment between personal and situational factors is key to unlocking employee potential and optimizing performance.

Future research should expand upon these insights through longitudinal studies, multi-source data, and cross-cultural validation to deepen our understanding of how leadership and psychological capital co-influence work outcomes in complex organizational systems.

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Транзакциялық көшбасшылық стилі: өзіндік тиімділіктің жұмыс өнімділігіне әсері

Түйіндеме. Бұл зерттеу транзакциялық көшбасшылық шеңберінде қызметкерлердің еңбек өнімділігіне өзін-өзі тиімді сезінудің (self-efficacy) әсерін қарастырады. Транзакциялық көшбасшылық – құрылымдалған тапсырмалармен, нақты марапаттармен және нәтижеге негізделген ынталандырумен сипатталатын басқару стилі. Мұндай ортада өзін-өзі тиімді сезіну сияқты жеке психологиялық факторлар еңбек нәтижелеріне әсер етуде маңызды рөл атқаруы мүмкін. Зерттеу Бандураның әлеуметтік когнитивтік теориясына негізделе отырып, қызметкерлердің өз қабілеттеріне деген сенімі (self-efficacy) мен транзакциялық көшбасшылық әрекеттерінің еңбек өнімділігіне әсерін зерттейді. Зерттеу барысында [қызметкерлер саны] қызметкерден [сала/орын] саласында сауалнама деректері жиналып, сандық зерттеу әдісі қолданылды. Деректерге көптік регрессиялық талдау жүргізіліп, өзін-өзі тиімді сезінудің еңбек өнімділігіне тікелей әсері және транзакциялық көшбасшылықтың модератор ретіндегі рөлі зерттелді. Зерттеу нәтижелері өзін-өзі тиімді сезіну еңбек өнімділігін оң болжайтынын және бұл байланыс транзакциялық көшбасшылық деңгейі жоғары болғанда күшейетінін көрсетті. Бұл қорытындылар көшбасшылықты дамыту мен адам ресурстарын басқару стратегиялары үшін маңызды практикалық ұсыныстар береді және транзакциялық жұмыс ортасында өзін-өзі тиімді сезінуді қалыптастырудың маңыздылығын айқындайды.

Түйінді сөздер: өзін-өзі тиімді сезіну, еңбек өнімділігі, транзакциялық көшбасшылық, қызметкер мінез-құлқы, көшбасшылық тиімділігі.

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Транзакционный стиль лидерства: влияние самоэффективности на производительность работы

Аннотация. Данное исследование посвящено изучению влияния самоуверенности (self-efficacy) на трудовую эффективность сотрудников в рамках транзакционного стиля лидерства. Транзакционное лидерство, характеризующееся структурированными задачами, четко определенными вознаграждениями и зависимостью поощрений от результатов, создает контекст, в котором такие психологические факторы, как самоуверенность, могут играть ключевую роль в определении трудовой эффективности. Основываясь на теории социального научения Бандуры, исследование рассматривает, каким образом вера сотрудников в собственные способности взаимодействует с поведением транзакционного лидера и влияет на результаты работы. В исследовании использован количественный метод, данные были собраны с помощью опроса среди [вставьте количество] сотрудников из [укажите отрасль/регион]. Для анализа использовалась множественная регрессия, позволяющая оценить как прямое влияние самоуверенности на трудовую эффективность, так и модераторскую роль транзакционного лидерства. Результаты показали, что самоуверенность положительно влияет на трудовую эффективность, и эта зависимость усиливается при высоком уровне транзакционного лидерства. Полученные данные имеют важное значение для разработки программ развития лидерства и стратегий управления персоналом, подчеркивая необходимость формирования самоуверенности в условиях транзакционного управления для достижения оптимальных результатов.

Ключевые слова: самоуверенность, трудовая эффективность, транзакционное лидерство, поведение сотрудников, эффективность лидерства.

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ЖОЛДАУ 2025: ҚАЗҰУ СТУДЕНТТЕРІНІҢ ЖАСАНДЫ ИНТЕЛЛЕКТ ЖӘНЕ ЦИФРЛАНДЫРУДАҒЫ КӨЗҚАРАСЫ

2025 жылғы 8 қыркүйекте Қазақстан Республикасының Президенті Қасым-Жомарт Тоқаев "Әділетті мемлекет. Біртұтас ұлт. Берекелі қоғам" атты Қазақстан халқына жыл сайынғы дәстүрлі Жолдауын жариялады. Елдің саяси жүйесін жетілдіруге, экономиканы әртараптандыруға, әлеуметтік саясатты дамытуға және цифрлық трансформацияны жеделдетуге бағытталған Жолдауды таныстыру мақсатында әл-Фараби атындағы Қазақ ұлттық университеті Экономика және бизнес жоғары мектебі «Қаржы» мамандағының 2-курс студенттерімен кураторлық сағат өткізілді.

Іс-шараға «Қаржы және есеп» кафедрасының эдвайзерлері және ПОҚ қатысып, Президенттің жаңа бастамаларының маңызын түсіндіріп, жастарға бағытталған нақты қолдауларға тоқталды. Кураторлық сағат барысында студенттер Жолдаудың мазмұнымен танысып қана қоймай, өз ойларын бөлісіп, пікір алмастырды. Әсіресе цифрландыру, жасанды интеллект, жаңа мамандықтардың пайда болуы және еңбек нарығындағы өзгерістерге байланысты сұрақтар көптеп қойылды. Кейбір студенттер ауыл шаруашылығын жаңғырту мен азық-түлік қауіпсіздігі тақырыптарына ерекше қызығушылық танытты.

Кері байланыс барысында студенттер Президент Жолдауының елдің болашағы үшін стратегиялық мәнге ие екенін түсінгенін және өздерін мемлекеттің дамуына үлес қосатын жауапты азамат ретінде сезінетіндіктерін айтты. Көпшілігі жастарға арналған жаңа мүмкіндіктерді оң қабылдап, болашақ маман ретінде ел дамуына атсалысуға дайын екендіктерін білдірді.

Жолдауда ерекше назар аударылған бағыттардың бірі – жасанды интеллект пен цифрлық трансформация. Бұл қадам еліміздің жаһандық технологиялық даму үрдісіне ілесіп қана қоймай, жаңа мүмкіндіктерді тиімді пайдалануға жол ашатыны анық. ҚазҰУ студенттері үшін бұл бағыттар – кәсіби қалыптасудың, ғылыми ізденістің және инновациялық идеяларды жүзеге асырудың басты платформасы.

Жасанды интеллект бүгінде тек IT саласында ғана емес, сондай-ақ білім беру, медицина, аграрлық сектор және мемлекеттік басқаруда кеңінен қолданылып келеді. Студенттерінің пікірінше – жасанды интеллект:

- оқу үдерісін жекелеген студенттің қабілетіне бейімдеуге мүмкіндік береді; ғылыми зерттеулердің сапасын арттырады;
- деректерді талдау үдерісін жеделдетеді;
- жаңа кәсіптер мен мамандықтардың пайда болуына негіз болады.

Студенттер бұл технологияларды меңгеру – олардың еңбек нарығындағы бәсекеге қабілеттілігін арттыратынын айтады.

Жолдаудағы маңызды мақсаттардың бірі – Қазақстанды үш жылдың ішінде «цифрлық елге» айналдыру, студенттер бұл бастаманы толық қолдайды. Олардың пікірінше, цифрландыру:

- мемлекеттік қызметтердің ашықтығы мен қолжетімділігін қамтамасыз етеді;
- экономикалық тиімділікті арттырады;
- кәсіпкерлік пен стартаптарды дамытуға жаңа серпін береді.

Цифрлық мәдениетке ие жастар үшін бұл бағыт өздерінің идеяларын жүзеге асырудың, сондай-ақ халықаралық тәжірибені меңгерудің тиімді алаңы болмақ.

Студенттері жасанды интеллект пен цифрландыруды дамытуда тек тұтынушы ғана емес, жаңа шешімдер ұсынатын және инновациялық жобаларды жүзеге асыратын негізгі күш екендігін ұғынды. Жастардың басты миссиясы – Қазақстанды цифрлық дәуірдің көшбасшы елдерінің қатарына қосу.

Президент Жолдауында белгіленген жасанды интеллект пен цифрлық трансформацияға басымдықтар – Қазақстанның болашағына салынған инвестиция. ҚазҰУ студенттері бұл өзгерістерді зор үмітпен қабылдап, өздерінің білімдері мен бастамаларын осы бағыттағы істерге жұмсауға дайын екендігін білдіруде.

Студенттердің белсенді қатысуы кураторлық сағаттың жоғары деңгейде өткенін көрсетті. Жолдауда көтерілген өзекті мәселелер жастардың ой-пікіріне қозғау салғаны айқын байқалды, сондай-ақ, еліміздің даму келешегіне деген жастардың қызығушылығын арттырып, олардың азаматтық жауапкершілігін қалыптастыруға ықпал етті.

Президент Жолдауы – Қазақстанның стратегиялық даму бағытын айқындайтын маңызды құжат. Білім алушы жастардың бұл құжатпен жанжақты танысуы олардың қоғамдық өмірге белсенді араласуына және мемлекет болашағы үшін жауапкершілікті сезінуіне жол ашады.

Жолдаудағы жасанды интеллект пен цифрландыруға қатысты басымдықтар жастар үшін – жаңа мүмкіндіктер мен кәсіби болашақтың кепілі. ҚазҰУ студенттері бұл бағыттарда ғылыми ізденістер жасап, Қазақстанның цифрлық дамуына өз үлесін қосуға міндетті.

Жасанды интеллект пен цифрландыру – Қазақстанның жаһандық аренадағы бәсекеге қабілеттілігінің кепілі, ал жастар – осы үдерістің басты қозғаушы күші.

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Требования к содержанию и оформлению статей

Научно-практический журнал «Транзитная экономика» является одним из ведущих периодических научных изданий Республики Казахстан по экономическим наукам, издается с июля 1997 года, имеет свою стабильную аудиторию.

Журнал рассчитан на работников ВУЗов и научных учреждений, магистрантов и докторантов, государственных и общественных деятелей, руководителей органов управления, финансовых структур. В редакционный совет входят ведущие ученые-экономисты Казахстана, ближнего и дальнего зарубежья.

Основные разделы журнала «Транзитная экономика»:

- ВОПРОСЫ ТЕОРИИ
- ГЛОБАЛЬНАЯ И РЕГИОНАЛЬНАЯ ИНТЕГРАЦИЯ
- МАКРОЭКОНОМИЧЕСКАЯ ПОЛИТИКА
- ИНСТИТУТЫ И ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ

Журнал осуществляет прием научных статей для публикации от преподавателей ВУЗов, научных работников, экономистов-практиков и докторантов.

Условия размещения публикаций в журнале

Для публикации в журнале «Транзитная экономика» принимаются статьи на казахском, русском и английском языках, содержащие ранее не опубликованные проблемные, обзорные, дискуссионные статьи в области экономических наук.

К оформлению статей предъявляются следующие требования

Предлагаемые к публикации статьи должны отражать научную новизну, практическую ценность исследуемой проблемы, содержать глубокий экономический анализ, заканчиваться аргументированными выводами, предложениями авторов. Необходимо соблюдать единообразие терминов, обозначений, условных сокращений и символов, избегать повторений.

Объем статьи, включая список литературы, таблицы и рисунки с подрисуночными надписями, аннотации, не должен превышать 15 страниц печатного текста. Минимальный объем статьи – 5 страниц.

На первой странице указывается Международный рубрикатор научно-технической информации (МРНТИ) – слева в верхнем углу; далее на языке статьи.

Аннотация дается в начале текста на том языке, на котором цитируется статья (150-200 слов). Аннотация на казахском и английском языках. Перед каждой аннотацией написать фамилию и инициалы, название статьи на соответствующем языке аннотации. Ключевые слова на казахском, русском, английском языках внизу аннотации на соответствующем языке аннотации.

Аннотация является кратким изложением содержания научного произведения, дающая обобщенное представление о его теме и структуре.

Ключевые слова должны обеспечить наиболее полное раскрытие содержания статьи. Для каждого конкретного материала задайте 5-6 ключевых слов в порядке их значимости, т.е. самое важное ключевое слово статьи должно быть первым в списке.

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Статьи публикуются казахском, русском, английском языках

Последовательность представления материала:

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- инициалы и фамилия автора;
- ученая степень, ученое звание, почетное звание;
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- расширенная, структурированная аннотация (на трех языках) 150-200 слов;
- ключевые слова (на трех языках не более 5, строчными буквами, через запятую);
- текст статьи (рисунки и, таблицы и т.д.) (кроме обзорной) должен включать следующие разделы: введение, экспериментальная часть, результаты и обсуждения, заключение, список использованных источников;
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