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BEHAVIORAL ANALYTICS: DATA-DRIVEN MODELS FOR ORGANIZATIONAL EFFECTIVENESS IN DIGITAL TRANSFORMATION

Abstract

This article is devoted to the study of the use of data-based behavioral analytics models to optimize the activities of organizations in the context of digital transformation.

It considers examines how digital tools, behavioral models, and analytical methods can help improve employee productivity, optimize business processes, and make informed management decisions. The aim of the work is to identify the most effective behavioral analytics models and assess their impact on team performance using the example of Bereke Bank sales department. The study used two scientific methods: comparative analysis, which allowed us to compare different models of behavioral analytics, identify their strengths and weaknesses, and determine which tools use data most effectively to manage employee behavior; and systems analysis, which considers an organization as a complex interconnected system in which digital technologies, data, and behavioral The factors interact, creating a synergistic effect to increase overall productivity.

The article presents the results of a study that demonstrate that cluster and regression analysis make it possible to identify groups of employees with different levels of digital activity, predict the effectiveness of implementing digital tools and optimize the allocation of tasks. The system analysis showed that the integration of digital technologies, data and behavioral factors improves the quality of management decisions and contributes to the strategic development of the organization. The relevance of the research is due to the need for organizations to adapt to the digital economy, where data and behavioral analytics are becoming key tools for improving efficiency.

The article is of practical interest to the management of banks and other organizations interested in digital transformation and process optimization, as well as scientific value, providing a methodological basis for further research in the field of behavioral analytics and business digitalization.

Key words: behavioral analytics, data driven models, digital transformation, Bereke Bank, regression analysis, cluster analysis, organizational efficiency, employee performance.

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МІНЕЗ-ҚҰЛЫҚ АНАЛИТИКАСЫ: ЦИФРЛЫҚ ТРАНСФОРМАЦИЯ ЖАҒДАЙЫНДА ҰЙЫМНЫҢ ТИІМДІЛІГІН АРТТЫРУ ҮШІН ДЕРЕКТЕРГЕ НЕГІЗДЕЛГЕН МОДЕЛЬДЕР

Аңдатпа

Бұл мақала цифрлық трансформация жағдайында ұйымдардың қызметін оңтайландыру үшін деректерге негізделген мінез-құлық аналитикасының модельдерін қолдануды зерттеуге арналған.

Ол цифрлық құралдардың, мінез-құлық үлгілерінің және аналитикалық әдістердің қызметкерлердің өнімділігін арттыруға, бизнес-процестерді оңтайландыруға және негізделген басқару шешімдерін қабылдауға қалай көмектесетінін зерттейді. Жұмыстың мақсаты Береке Банкінің сату бөлімінің мысалын қолдана отырып, мінез-құлық аналитикасының ең тиімді модельдерін анықтау және олардың команданың жұмысына әсерін бағалау. Зерттеуде екі ғылыми әдіс қолданылды: мінез-құлық аналитикасының әртүрлі үлгілерін салыстыруға, олардың күшті және әлсіз жақтарын анықтауға және қызметкерлердің мінез-құлықын басқару үшін қандай құралдар деректерді тиімдірек пайдаланатынын анықтауға мүмкіндік беретін салыстырмалы талдау; және ұйымды цифрлық технологиялар, деректер және мінез-құлық факторлары өзара әрекеттесетін, жалпы өнімділікті арттыру үшін синергетикалық әсер ететін күрделі өзара байланысты жүйе ретінде қарастыратын жүйелік талдау.

Мақалада кластерлік және регрессиялық талдау цифрлық белсенділіктің әртүрлі деңгейлері бар қызметкерлер тобын анықтауға, цифрлық құралдарды енгізудің тиімділігін болжауға және тапсырмаларды бөлуді оңтайландыруға мүмкіндік беретінін көрсететін зерттеу нәтижелері берілген. Жүйелік талдау көрсеткендей, цифрлық технологиялардың, мәліметтердің және мінез-құлық факторларының интеграциясы басқару шешімдерінің сапасын жақсартады және ұйымның стратегиялық дамуына ықпал етеді. Зерттеудің өзектілігі ұйымдардың цифрлық экономикаға бейімделу қажеттілігімен байланысты, мұнда деректер мен мінез-құлық аналитикасы тиімділікті арттырудың негізгі құралына айналуға.

Мақала цифрлық трансформацияға және процестерді оңтайландыруға мүдделі банктер мен басқа ұйымдардың басшылығына практикалық қызығушылық тудырады, сонымен қатар мінез-құлық аналитикасы мен бизнесті цифрландыру саласындағы әрі қарайғы зерттеулердің әдіснамалық негізін қамтамасыз ететін ғылыми құндылығы бар.

Түйін сөздер: мінез-құлық аналитикасы, деректерге негізделген модельдер, цифрлық трансформация, Береке Банк, регрессиялық талдау, кластерлік талдау, ұйымдастырушылық тиімділік, қызметкерлердің тиімділігі.

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ПОВЕДЕНЧЕСКАЯ АНАЛИТИКА: МОДЕЛИ, ОСНОВАННЫЕ НА ДАННЫХ, ДЛЯ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ ОРГАНИЗАЦИИ В УСЛОВИЯХ ЦИФРОВОЙ ТРАНСФОРМАЦИИ

Аннотация

Данная статья посвящена исследованию использования моделей поведенческой аналитики, основанных на данных, для оптимизации деятельности организаций в условиях цифровой трансформации.

В нем рассматривается, как цифровые инструменты, поведенческие модели и аналитические методы могут помочь повысить производительность труда сотрудников, оптимизировать бизнес-процессы и принимать обоснованные управленческие решения. Цель работы - выявить наиболее эффективные модели поведенческой аналитики и оценить их влияние на эффективность работы команды на примере отдела продаж банка "Береке". В исследовании использовались два научных метода: сравнительный анализ, который позволил нам сравнить различные модели поведенческой аналитики, выявить их сильные и слабые стороны и определить, какие инструменты наиболее эффективно используют данные для управления поведением сотрудников; и системный анализ, который рассматривает организацию как сложную взаимосвязанную систему, в которой цифровые технологии, данные, и поведенческие факторы взаимодействуют, создавая синергетический эффект для повышения общей производительности.

В статье представлены результаты исследования, которые демонстрируют, что кластерный и регрессионный анализ позволяют выявлять группы сотрудников с разным уровнем цифровой активности, прогнозировать эффективность внедрения цифровых инструментов и оптимизировать распределение задач. Системный анализ показал, что интеграция цифровых технологий, данных и поведенческих факторов повышает качество управленческих решений и способствует стратегическому развитию организации. Актуальность исследования обусловлена необходимостью адаптации организаций к цифровой экономике, где данные и поведенческая аналитика становятся ключевыми инструментами повышения эффективности.

Статья представляет практический интерес для руководства банков и других организаций, заинтересованных в цифровой трансформации и оптимизации процессов, а также научную ценность, обеспечивая методологическую основу для дальнейших исследований в области поведенческой аналитики и цифровизации бизнеса.

Ключевые слова: поведенческая аналитика, модели, основанные на данных, цифровая трансформация, Береке Банк, регрессионный анализ, кластерный анализ, организационная эффективность, эффективность работы сотрудников.

INTRODUCTION. In the modern economy, there is a significant increase in data volumes, as well as the expansion of their analytical processing capabilities. This leads to the formation of a data-driven management concept. In such circumstances, behavioral analytics becomes an important tool for understanding and predicting the behavior of customers, employees, and other participants in organizational processes. The use of analytical models based on data makes it possible to identify patterns of behavior, optimize business processes, and improve the effectiveness of management

decisions. In the context of digital business transformation, it is necessary not only to introduce new technologies, but also to change management approaches, organizational structures and development strategies of companies. Behavioral analytics is becoming one of the key factors for the competitiveness of organizations in the digital economy.

The relevance of the research is due to the fact that in the context of digitalization, enterprises gain access to extensive data on the behavior of users, employees and customers, which can be used to predict their actions and optimize business processes. Big data analysis and the use of artificial intelligence tools enable companies to create personalized offers, increase customer satisfaction, and make more informed management decisions.

Effective use of such data requires the development of modern analytical models and methodological approaches capable of integrating behavioral, economic and informational aspects of enterprise management.

The purpose of this study is to analyze and justify the use of data – based behavioral analytics models to improve the effectiveness of organizations in the context of digital transformation.

To achieve this goal, the following tasks are being solved:

To explore the theoretical foundations of behavioral analytics and its role in the organization's management system in a digital environment.

Identify the possibilities of using data analysis models to predict the behavior of participants in organizational processes and improve the effectiveness of management decisions.

The scientific novelty of the research lies in the systematization of modern approaches to the application of behavioral analytics in the management of organizations and the substantiation of the role of analytical models based on data as a tool to improve the effectiveness of management decisions in the context of digital transformation. The proposed approach allows us to consider behavioral analytics as an integration of big data analysis methods, behavioral economics and digital technologies, which expands the possibilities of analyzing and predicting the behavior of participants in economic processes.

The theoretical significance of the research lies in the development of scientific ideas about the role of behavioral analytics in the digital management system of organizations. The results obtained can contribute to the further development of theoretical approaches to the analysis of the behavior of participants in economic processes and the formation of data – based management models in the digital economy.

MATERIALS AND METHODS. Two scientific methods are used in this study. The first method is comparative analysis, which is used to compare different models of behavioral analytics and their impact on the effectiveness of organizations in the context of digital transformation. This method allows you to identify differences and similarities in the use of analytical tools, as well as determine the most effective approaches to using data to manage employee behavior and optimize business processes.

The second method is system analysis, which allows us to consider an organization as a complex system in which digital technologies, data and behavioral factors are interrelated. The use of this method makes it possible to identify the key elements of behavioral analytics, their interaction and impact on management decision-making processes.

The research used scientific articles and monographs on behavioral analytics, digital transformation, and organizational performance management. Analytical reports from international and national research centers, organization statistics, corporate digital system materials, and employee survey results also studied. These sources allowed for a comprehensive analysis of the use of data-driven models to improve organizational performance.

RESULTS AND DISCUSSIONS. The scientific literature pays considerable attention to the issues of behavioral analytics and digital transformation. In particular, A. A. Remizova and T. R. Samigulin explore the current state of behavioral analytics and note that the use of analytical tools allows organizations to more effectively analyze consumer behavior and form personalized strategies for interacting with them[1]. The works of researchers in the field of digital economy emphasize that the

development of big data and analytical technologies is transforming the management decision-making system, transferring it from intuitive methods to analytical models based on data processing[2].

Samuel Wamba Fosso has made a significant contribution to the development of research in the field of business intelligence and data analysis. He considers big data and analytical technologies as a key factor in improving the management efficiency and competitiveness of organizations in the digital economy [3].

Research in the field of behavioral economics conducted by scientists demonstrates the importance of taking behavioral factors into account when analyzing economic decision-making and developing management strategies. Boris Maciejovsky's research shows that behavioral aspects of decision-making play a key role in the management of organizations and can be effectively studied using behavioral analytics and data analysis methods [4].

The analysis of scientific literature indicates that behavioral analytics is becoming a significant area of research in the field of management and digital transformation of organizations. Many aspects related to the development and application of data analysis models for predicting the behavior of participants in organizational processes and optimizing management remain insufficiently researched, which determines the need for further research in this area.

In the context of digital transformation, modern organizations face the need for effective employee management and optimization of business processes. Behavioral analytics, based on data, allows you to identify patterns in employee behavior, predict their actions, and make management decisions that enhance the effectiveness of the organization. Within the framework of this study, two scientific methods were applied: comparative analysis and system analysis. These methods have made it possible to comprehensively study the impact of behavioral analytics models on organizational effectiveness. To concretize the analysis, the Bereke Bank sales team, located in Kazakhstan, was selected.

Comparative analysis is used to compare different behavioral analytics models in order to assess their impact on the effectiveness of an organization. This method allows to identify similarities and differences in the use of analytical tools, as well as determine the most effective approaches to using data to manage employee behavior and optimize business processes.

In the course of the study, the following behavioral analytics models used in the work of Bereke's sales department were considered:

Cluster models of employee behavior that analyze similar patterns of employee actions in a CRM system and group them by levels of digital activity, productivity, and team interaction.

Regression models of performance factors that quantify the impact of individual factors such as digital skills, CRM usage, teamwork, and process automation on employee productivity.

Behavioral maps are a visualization tool that allows to visually display the actions of employees and the flow of customer requests, identifying problem areas in the processes.

Anomaly analysis allows to detect deviations from standard procedures and possible errors in working with clients.

Table 1 – Comparative characteristics of behavioral analytics models of Bereke Bank, Kazakhstan.

Model	Main focus	Advantages	Limitations
Cluster analysis	Grouping employees based on behavioral patterns	Identifies typical groups for targeted training and task allocation	Does not show cause-and-effect relationships
Regression analysis	Impact of factors (digital skills, CRM usage, team interaction) on performance	Allows quantitative assessment of each factor's influence, enables efficiency forecasting	Requires accurate data, sensitive to outliers
Behavioral mapping	Visualization of employee actions and sales flows	Clear visualization, identifies bottlenecks	Limited for large numbers of factors

Anomaly detection	Identification of non-standard employee behavior and risks	Detects potential errors in client handling	Requires constant data updating
Note: Compiled by authors using [5-8]			

A comparative analysis has shown that cluster and regression models are the most effective for Bereke Bank sales department. The cluster model allows you to identify groups of employees with different levels of digital activity and determine the need for training or task reallocation. The regression model makes it possible to quantify the impact of individual factors on productivity and predict the effect of management decisions.

The second method is a systems analysis of an organization. This approach views an organization as an integrated and interdependent system, where digital technology, data, and human behavior interact with one another. This technique allows for the identification of critical components of behavioral analytics and their influence on management decision-making.

In the context of Bereke Bank sales team, the systems analysis identified several key elements:

- Employees who utilize a Customer Relationship Management system to manage customer inquiries and facilitate sales transactions.
- Digital platforms that collect information on employee activities and automate repetitive processes.
- Business processes supported by digital tools, enabling efficient customer interaction.
- Management decisions based on analytical insights, aimed at enhancing team performance.

Table 2 – Key elements of a behavioral analytics system.

Component	Interaction with other elements	Impact on efficiency
Employees	Use CRM systems, participate in sales processes	Primary data source, determine productivity
CRM and digital platforms	Collect data on employee actions, automate tasks	Reduce labor costs, speed up information processing
Business processes	Supported by systems and employees	Process optimization increases overall efficiency
Management decisions	Based on analytical data	Influence strategic planning of the sales department
Note: Compiled by authors using [9-13]		

The system analysis revealed that the effectiveness of the team's work is determined not only by the level of digital skills of employees, but also by their ability to interact with digital tools and automated processes. The interconnection of all elements of the system creates a synergistic effect, contributing to an increase in the overall productivity of the sales department.

The use of comparative analysis has enabled us to identify the most effective behavioral analytics models for the sales department of Bereke Bank, as well as to determine the advantages and limitations of each approach. System analysis has shown the interdependence between digital technologies, data, and behavioral factors within an organization and their influence on management decisions.

By combining these methods, an organization can:

Identify problem areas in employee behavior

Predict the effectiveness of implementing digital tools

Develop strategies for learning and process optimization

Improve overall team productivity and adaptability in the context of digital transformation.

CONCLUSION. This article is devoted to the study of the use of data – based behavioral analytics models to improve the efficiency of organizations in the context of digital transformation. The sales

department of Bereke Bank is considered as an example. The main purpose of the work is to determine how the use of digital tools, behavioral models, and analytical methods affects employee productivity, business process optimization, and management decision – making.

The article uses two scientific methods: comparative and system analysis.

The comparative analysis allowed us to compare various models of behavioral analytics, such as cluster models, regression models, behavioral maps and anomaly analysis. This allowed us to identify their advantages and limitations, as well as determine which tools use data most effectively to manage employee behavior.

System analysis considers an organization as an interconnected system in which digital technologies, data, and behavioral factors interact, creating a synergistic effect and increasing the overall productivity of the team.

The practical significance of the article lies in the fact that the research results provide management with specific tools to improve employee performance. These tools include:

- Identification of groups of employees with different levels of digital activity and productivity;
- Forecasting the impact of the introduction of digital tools and process automation;
- Optimizing the distribution of tasks and improving the quality of team interaction;
- Strategic planning for the development of the company's digital infrastructure.

The scientific value of the work lies in the systematization of knowledge about behavioral analytics models in the context of Kazakhstan banks. In addition, the article presents a methodological approach that combines comparative and systematic analysis to assess the effectiveness of digital transformation.

The prospects for future research are related to the expansion of the empirical base, which includes large amounts of data on employee and customer behavior. It is also expected to develop predictive models that can automatically recommend management decisions based on analytics.

The article can serve as a methodological basis for research in other sectors of the economy, where digitalization and data analysis are becoming key factors for improving efficiency.

Thus, the article demonstrates the importance of integrating behavioral analytics and digital technologies to improve organizational effectiveness. It confirms the practical and scientific value of this approach and opens up opportunities for further research and implementation of innovative digital solutions in the banking industry and other areas.

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