

# HR ANALYTICS IN BUSINESS PROCESS MANAGEMENT

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**Abstract.** The article reveals the importance of HR analytics in the business process management system of modern enterprises and defines the stages of its implementation in management practice. The emphasis is on the transformation of human resource management from a support function to a strategic element of business administration capable of ensuring the adaptability, sustainability and competitiveness of enterprises. It is argued that traditional intuitive and fragmented approaches to personnel management are insufficient to respond to modern challenges, which makes it expedient to implement HR analytics as a business process management tool. The subject of the study is HR analytics as a tool for integrating human capital into the enterprise business process management system. HR analytics is considered not only as a set of HR metrics, but as a comprehensive, systematic and continuous process of collecting, integrating, processing and analysing formalised and informalised data on personnel, HR processes and the external HR environment in order to support management decisions. The aim of the study is to determine the role of HR analytics in business process management and to develop a step-by-step model for its implementation in modern business management. To achieve this goal, theoretical approaches to HR analytics are summarised, the management possibilities for its application are analysed, key HR metrics are systematised, and areas for their use in business process management are identified. The methodological basis of the research is a comprehensive approach that combines systemic, process and comparative analysis. The work uses methods of analysis and synthesis to generalise scientific approaches to the essence of HR analytics; comparative and content analysis to systematise the results of research by international companies; a structural-logical method to develop a model for implementing HR analytics in business processes; and a method of generalisation to form conclusions and practical recommendations. The information base consists of scientific works by Ukrainian and foreign researchers, analytical reports by international consulting companies, and professional HR platforms. The main findings of the study prove that HR analytics has evolved from an operational tool to a strategic element of business process management. Key HR metrics have been identified and their connection with financial, operational, and innovative business processes has been demonstrated. A phased model for implementing HR analytics is proposed, covering the definition of business objectives, data auditing and standardisation, tool selection, the development of analytical competencies, and the gradual scaling of analytics. The conclusions are that HR analytics is an effective tool for reducing the subjectivity of management decisions, forecasting HR risks, increasing labour productivity, and aligning HR policy with business strategy. Its implementation should be viewed as a strategic initiative aimed at ensuring long-term organisational stability and competitiveness of enterprises in today's environment.

**Keywords:** HR analytics, HR metrics, personnel, personnel management, business, business processes, business process management.

**JEL Classification:** M10, M12, M15

## 1. Introduction

The current business environment in Ukraine is characterised by a high level of uncertainty and instability caused by full-scale war, demographic losses,

labour migration, market transformation and a general deterioration of the economic environment. In such circumstances, enterprises are forced to operate in conditions of resource scarcity, increased risks and limited

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opportunities for long-term planning. The challenges associated with staffing, retaining professional potential and maintaining staff productivity are particularly acute. In these conditions, human resource management ceases to be a support function and takes on strategic importance in the business administration system. It is the staff that becomes the key factor in adapting the business to changes, ensuring the sustainability of operational activities and implementing management decisions. At the same time, traditional approaches to human resource management are increasingly proving insufficient to respond to the complex and multidimensional challenges of the modern business environment. This necessitates the implementation of new management approaches focused on the systematic use of data, analytical tools, and evidence-based decision-making methods. In this context, HR analytics as a modern human resource management tool becomes particularly relevant. At the same time, the application of HR analytics in Ukrainian practice remains fragmented and insufficiently systematised. It is therefore essential to scientifically understand the role of HR analytics in business process management and to identify areas for its effective implementation in modern business.

## 2. Literature Review

In scientific publications by Ukrainian and foreign researchers, HR analytics is considered one of the key tools for modernising both personnel management and business processes. Thus, in the works of Kotsur A., Ostroverkhov V., and Prokhorovska S., HR analytics is interpreted as a component of the enterprise management system that ensures the more efficient use of human capital and supports the competitive advantages of organisations (Kotsur et al., 2021).

Kobets D.'s research focuses on the relationship between HR analytics and big data technologies, emphasising their role in the digital transformation of human resource management and the formation of predictive approaches to management decision-making (Kobets, 2024). A similar approach can be seen in the work of Puchkova S., where HR analytics is viewed as a modern concept of personnel decision-making focused on the use of quantitative indicators, data, and analytical models (Puchkova, 2022).

In his research, Hridin O. emphasises the systemic nature of HR analytics, defining it as a key element of the modern personnel management system that ensures the alignment of personnel policy with all business processes (Hridin, 2024). In turn, Baksalova O., Glushko T., Horbatiuk O., & Koshonko O. focus on the applied aspects of HR analytics implementation, proving its positive impact on the optimisation of personnel costs, labour productivity, and transparency of management decisions (Baksalova et al., 2023).

The position of scientists Varis I., Kravchuk O., Konovalova V. deserves attention, who consider HR analytics from a process approach as a process of systematic collection and analysis of information aimed at making management decisions and solving strategic tasks (Varis et al., 2023).

Foreign studies, in particular the work of Cho W., Choi S. and Choi H., reveal the peculiarities of implementing HR analytics in personnel management, emphasising the need to adhere to ethical principles and develop analytical competencies (Cho et al., 2023).

At the same time, Ojakorotu R. argues in his study that HR analytics plays an important role in supporting strategic business decisions, particularly in talent management and increasing the competitiveness of companies (Ojakorotu, 2023).

A summary of the results of previous studies indicates the growing role of HR analytics in business process management and the need for its further adaptation to the specific conditions of the modern business environment.

## 3. Formulation of the Objectives of the Article (Statement of the Task)

**The purpose of the article** is to study the role of HR analytics in business process management and to identify the stages of its implementation in modern business management. To achieve this goal, the following tasks are set: to summarise theoretical approaches to HR analytics and explore its management capabilities in the context of business process management; to systematise key HR metrics; to develop stages for implementing HR analytics in the business processes of an enterprise.

## 4. Materials and Methods

The study uses a comprehensive approach that combines systematic, process-based and comparative methods of analysis. The theoretical and informational basis of the study was provided by scientific works of Ukrainian and foreign authors in the field of HR analytics, personnel and business process management, analytical reports of international consulting companies, in particular the results of research by Deloitte, Gartner, as well as materials from professional analytical platforms in the field of personnel and business process management. The following methods were used in the research: analysis and synthesis (to generalise scientific approaches to defining the essence of HR analytics and substantiating its role in business process management); comparative analysis (to compare conceptual approaches to HR analytics and determine the evolution of its management functions in process-oriented management systems); content analysis (to systematise the results of international

empirical studies, in particular regarding the impact of HR analytics, digitalisation and artificial intelligence on business process management); structural-logical (to develop a step-by-step model for implementing HR analytics in business processes); generalisation (to draw conclusions and make practical recommendations on the use of HR analytics as a tool to support management decisions).

## 5. Results

For a long time, human resource management in business was based primarily on managerial intuition, the subjective experience of managers, and fragmentary personnel reporting indicators. However, the increasing complexity of business processes, the growing role of human capital, and the digitalisation of management have led to a shift towards analytically oriented approaches to management. In this context, HR analytics has emerged as a response to the need for sound, systematic, and predictive human resource management in modern organisations.

In scientific and applied research, HR analytics is interpreted from different perspectives, reflecting its interdisciplinary nature. The first approach considers HR analytics as a tool for supporting management decisions, focused on collecting and analysing quantitative indicators of personnel performance in order to improve the effectiveness of the HR function (Puchkova, 2022).

The second approach focuses on HR analytics as a process of transforming data into knowledge, which involves the use of statistical methods, models and forecasting to identify hidden patterns in employee behaviour and the effectiveness of HR processes (Kobets, 2024).

The third approach treats HR analytics as a strategic component of business administration that ensures the integration of HR data with the overall business strategy, external environment, and long-term development goals of the organisation (Cho et al., 2023). These three approaches do not contradict each other but reflect the evolution of HR analytics from an operational tool to an analytical system and a strategic element of business process management.

It is the opinion of the present authors that HR analytics is a comprehensive, systematic and continuous process of collecting, integrating, processing and analysing formalised and informalised data about personnel, HR processes and the external HR environment. This process is based on the use of analytical methods, models and digital tools, and aims to identify hidden patterns, assess the state and potential of human capital, forecast personnel risks and opportunities, and ensure sound management decisions in the modern business administration system.

The objectives of HR analytics vary depending on strategic priorities and organisational specifics of the business. Concurrently, within the domain of HR management practice, HR analytics is predominantly employed to enhance the efficiency of HR and management processes. This is achieved through optimisation and streamlining of said processes, fostering enhanced employee engagement and loyalty, mitigating staff turnover through an analysis of resignation motivations and the identification of key specialists at risk of departure, pinpointing areas of concern in team management and organisational interaction, and ensuring strategic planning for the development of HR functions within the overarching framework of business process management systems.

A summary of the results of Deloitte's international study "Global Human Capital Trends 2025", conducted among nearly 10,000 company executives and HR leaders in 93 countries, highlights the main trends in the transformation of business process management through the prism of HR analytics development (Deloitte, 2025). Empirical data indicate profound structural changes in human capital management systems driven by digitalisation, the spread of artificial intelligence, and growing organisational uncertainty. Modern business processes are increasingly faced with a shortage of practically trained personnel: 66% of executives and top managers note the insufficient level of professional readiness of new employees and a lack of practical experience. At the same time, 73% of managers and 72% of employees believe that this gap can be bridged by expanding opportunities for practical experience, which makes it relevant to use HR analytics for a comprehensive analysis of staff skills, potential and learning ability (Deloitte, 2025).

An important finding of the study is the identification of signs of crisis in the functioning of middle managers as key participants in business process management. The survey showed that managers spend about 40% of their working time solving current problems and administrative tasks, while only 13% of their time is devoted to staff development. At the same time, 73% of respondents worldwide and 79% in Ukraine recognise the need to rethink the role of managers in talent development and team support, but only 7% of organisations worldwide have made significant progress, and there are no such results in Ukraine (HURMA, 2025).

A dedicated section of the study focuses on the impact of artificial intelligence on the organisation of labour and the structure of business processes. Research has revealed that 52% of managers worldwide and 27% in Ukraine are concerned about the blurred distinction between tasks performed by humans and automated business processes. Concurrently, 52% of global executives rate the potential for enhanced human-AI interaction as very or critically important.

The study results also confirm the transformation of the value proposition for employees in the context of business process digitalisation. A substantial proportion of employees and managers have indicated a heightened propensity to remain in organisations that foster conditions conducive to professional advancement through the strategic implementation of AI (Deloitte, 2025).

Based on the results of a survey of 426 HR directors from 23 industries and 4 regions of the world, Gartner has identified four key priorities for HR management in 2026, namely: using artificial intelligence to transform HR; shaping tasks in the era of human-machine interaction; mobilising leaders for business growth in uncertain times; overcoming organisational culture degradation to improve staff productivity (Gartner, 2025).

The identified priorities emphasise the key role of HR analytics in management decision-making, particularly in the areas of effective data management, forecasting results, and assessing the impact of organisational changes on business processes. The use of HR analytics as a management support tool contributes to increasing the sustainability and competitiveness of organisations in today's dynamic environment.

HR metrics play a key role in the HR analytics system as formalised quantitative indicators that reflect the state, dynamics and results of personnel management. They serve as a quantitative tool that links personnel management with key business processes within the company. It is the metrics system that transforms disparate HR data into structured information suitable for analysis and management decisions. HR metrics provide a basis for identifying trends, comparative analysis, and assessing the impact of HR processes on key business indicators. Therefore, developing a relevant set of HR metrics is a necessary prerequisite for the further implementation of HR analytics in the business processes of an enterprise.

It is evident that human resources specialists utilise a plethora of diverse human resources metrics, which can be implemented in specific business processes. For instance, metrics pertaining to the number and structure of personnel form the information basis for strategic and operational planning of business processes. Indicators of headcount, qualifications, functional distribution of personnel, and length of service allow human resources to be aligned with the needs of production, service, and management processes, ensuring their continuity and balance. The calculation and analysis of these metrics is facilitated by the utilisation of HRIS systems, administrative databases, descriptive statistics methods, and business intelligence (BI) tools. These methodologies are employed to visualise the structure of the workforce and dynamic changes.

Staff turnover metrics are directly relevant to business processes of risk management and ensuring operational stability. The analysis of voluntary and involuntary turnover by department and position facilitates the assessment of human capital losses, the prediction of HR risks, and the formulation of management decisions aimed at the retention of key competencies in critical business processes. In order to achieve this objective, statistical methods of analysis of dynamics and variation, HR dashboards, cohort analysis tools, as well as elements of predictive analytics and data mining are utilised to identify hidden factors of turnover.

Personnel cost metrics are integrated into the financial business processes of the enterprise, in particular into budgeting, financial planning and cost control processes. Indicators of labour costs, recruitment, adaptation and development of personnel allow for an assessment of the economic efficiency of personnel decisions and for the correlation of investments in personnel with business results. The analysis of these metrics is facilitated by the utilisation of HRIS financial and analytical modules, economic and mathematical methods, management accounting tools, and BI platforms for the integration of HR and financial data.

The correlation between labour productivity metrics and operational business processes that create added value is well-documented. The utilisation of performance indicators on a per-employee or per-department basis facilitates the assessment of the effectiveness of human capital utilisation, the identification of reserves for productivity growth, and the justification of management decisions on business process optimisation. The analysis employs a range of methods, including comparative analysis, key performance indicator (KPI) systems, benchmarking, business intelligence (BI) analytics tools and statistical performance assessment models.

Metrics for training, development and employee engagement are focused on business processes for innovative development, knowledge management and the formation of competitive advantages for the enterprise. These tools enable the assessment of staff readiness for change, the adaptive capacity of the organisation, and the impact of human capital on long-term business performance. These metrics are formed using staff surveys, e-learning and LMS systems, correlation analysis methods, HR dashboards, and analytical tools for assessing engagement and development potential.

Thus, HR metrics are not isolated indicators of HR function, but elements of information support for business process management. At the same time, their practical use requires a systematic approach, clear logic of application and coordination with the management goals of the enterprise.

### Stages of implementing HR analytics in managing a company's business processes

The implementation of HR analytics into business processes is a gradual and complex process that requires strategic vision, adequate information infrastructure, and relevant organisational competencies. Research findings demonstrate that the effectiveness of HR analytics is not predominantly determined by the volume of data collected, but rather by the logic of its utilisation to address specific management tasks. This necessitates the development of a phased model for implementing HR analytics into business processes, which ensures the transformation of individual HR metrics into an effective tool for supporting management decisions in modern business (Fig. 1).

Stage 1. Defining business goals and management requests. The initial and fundamentally important stage is to clearly formulate business goals, for the achievement of which HR analytics is planned to be used. This is not about general 'improvement of the HR function,' but about specific management challenges, such as high staff turnover, a shortage of key competencies, declining productivity, rising personnel costs, or problems with retaining talent. The main difficulties at this stage are vague or declarative goals, a lack of connection between HR metrics and financial results, and a focus on indicators that do not influence the decision-making process. To minimise these risks, it is advisable to formulate HR analytical queries in close co-operation with top management, apply the principles of business question first, and align HR goals with the overall strategy of the enterprise.

Stage 2. Audit of existing HR data and information sources. At this stage, an inventory of existing data on

personnel and HR processes is carried out, including data from HRIS, payroll systems, time tracking systems, performance evaluation results, training, and engagement surveys. It is important not only to determine the availability of information, but also to assess its quality, completeness, relevance, and consistency. Potential threats include fragmented data, storage in different systems, low quality of information, duplication of indicators, or lack of historical series. Ways to overcome these problems include conducting a formalised data audit, identifying key HR metrics, and integrating information from different sources into a single analytical environment.

Stage 3. Standardisation of data collection and processing processes. HR analytics is impossible without unified approaches to data formation. Standardisation can be defined as the process of clearly defining indicators, uniformly interpreting terms, agreeing on formats, and collecting information regularly. It is at this stage that the methodological basis for comparative and dynamic analysis is formed. The primary risks identified pertain to the divergent interpretations of HR indicators across departments, the absence of comprehensive data collection regulations, and staff resistance to change. In order to circumvent these risks, it is recommended that internal HR data standards be developed, information collection processes be automated, and effective communication be ensured.

Stage 4. Selection and implementation of analytical tools. The choice of HR analytics tools should correspond to the scale of the business, the complexity of the tasks, and the level of maturity of the organisation's analytical culture. Basic tools can be used in the early

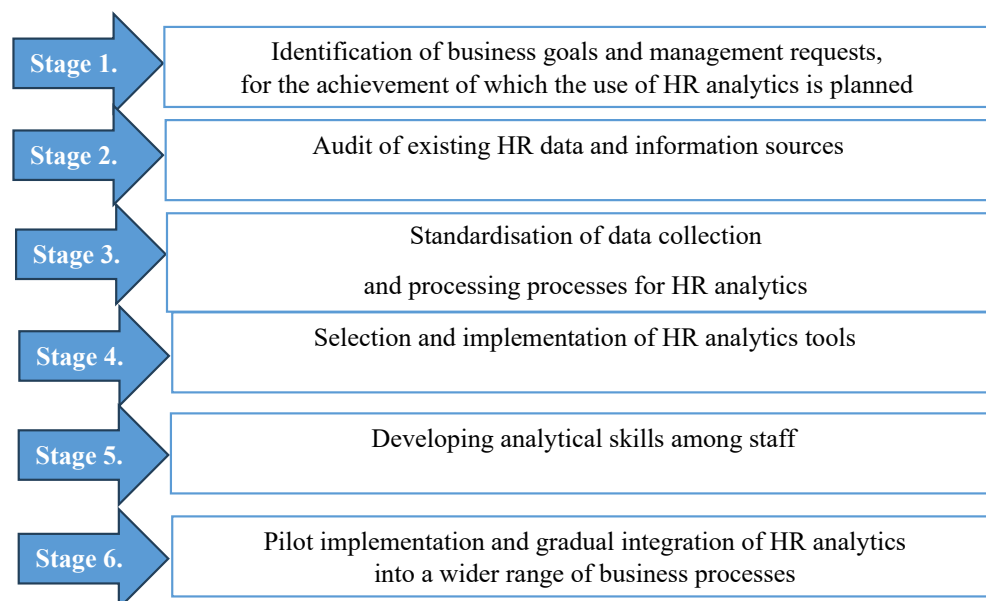


Figure 1. Model of HR analytics implementation in enterprise business processes

Source: developed by the authors

stages, but as the volume of data grows, it is advisable to implement BI systems or specialised HR analytics platforms. The main difficulties are the excessive complexity of the tools, the mismatch between their functionality and the real needs of the business, and the high cost of implementation. To minimise these risks, it is recommended to implement solutions in stages, focus on practical usefulness, and use modular and scalable systems.

Stage 5. Developing analytical skills among staff. Effective HR analytics requires the development of relevant competencies among HR professionals and managers. This does not mean training specialists in big data analysis, but rather developing basic skills in analytical thinking, working with data, and interpreting results. The main threats are a lack of analytical skills in the HR function and mistrust of data. To overcome these threats, it is advisable to provide training in the basics of statistics and data literacy, involve cross-functional teams (HR, finance, IT) and develop a culture of data-driven decision making.

Stage 6. Pilot implementation and gradual scaling. The final stage is the launch of HR analytics to solve one specific problem or based on a limited set of indicators. Following rigorous testing, evaluation of effectiveness, and refinement of approaches, analytics is progressively incorporated into a broader spectrum of business processes. The primary risks encompass the anticipation of immediate outcomes, the utilisation of analytics without the requisite managerial application, and the inundation of indicators. In order to circumvent these issues, it is recommended to concentrate on providing support for specific management decisions and to ensure that there is a constant flow of feedback between analytics and management.

Therefore, the implementation of HR analytics into business processes should be viewed as a multi-level process that combines strategic vision, quality data,

appropriate tools, and an analytical culture. Following a sequence of steps, understanding the risks, and applying scientifically sound approaches allows HR analytics to be transformed from a supporting function into a full-fledged business management tool.

## 6. Conclusions

The utilisation of HR analytics within a business context facilitates the documentation of the prevailing state of personnel, whilst concomitantly enabling the identification of causal relationships, the prediction of personnel risks, and the evaluation of the efficacy of managerial decisions. Human resource analytics constitutes a pivotal instrument in the integration of human capital into the business process management system. This integration is pivotal in ensuring the soundness of management decisions in three key areas: personnel development, transformation of management roles, and implementation of artificial intelligence. The utilisation of quantitative HR indicators has been demonstrated to enhance the adaptability of business processes and contribute to the establishment of long-term organisational stability.

The integration of HR analytics into the business process management system has been demonstrated to facilitate more informed management decisions, reduce subjectivity, and enhance the alignment between HR policy and strategic business goals. In this regard, it is logical to propose a model for integrating HR analytics into the business processes of a contemporary enterprise.

Implementing HR analytics should not be viewed as merely a technological project, but as a strategic initiative that enables companies to manage their most valuable asset – their people – more effectively. It paves the way for informed decision-making, increased competitiveness and sustainable development.

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