

HR Analytics: Challenges and Opportunities in Russian Companies

Svetlana G. Akhmetova

Perm National Research Polytechnic University
Perm, Russia
asg@pstu.ru

Larisa V. Nevskaya

Perm National Research Polytechnic University
Perm, Russia
nlv@pstu.ru

Abstract—The paper aims to study the problems and opportunities of using big data analytics in human resources management (HR analytics). The digital transformation of business urges employees to develop new skills and competencies, to change their behavior in interaction with other people. HR analytics enables companies to quickly respond to questions arising in the transition to a new business model. Data collection on the company's employees and their activities has to be organized. Nowadays employees' records can be found in many sources. Companies collect information on payroll, characteristics of personnel, productivity, etc. Additionally, data from the corporate network, external social networks, ERP-systems, surveys, and business communication tools analysis can be obtained. New e-mail systems allow analyzing e-mail metadata.

The article describes the HR analytics process, constraints of using big data in Russian companies. It gives an overview of foreign and Russian companies that successfully implement the technology in making decisions on major business issues. The prerequisites of using HR- big data analytics in Russian companies in the coming years are shown.

Keywords: *human resources management, HR analytics, Big Data technologies, people analytics*

I. INTRODUCTION

In recent decades, HR has been looked at as a separate part of an organization, not as a business partner. It does not have a seat at the table when it comes to business activities. There are two reasons for that. First, the majority of companies are not aware of the advantages of HR analytics. Second, HR managers do not participate in business decision-making. Meanwhile, business-information and information on people correlate and ensure more efficient implementation of a company strategy once both data are used. The active discussion of HR analytics issues started in 2012 and no later than in 2013 business companies that used the analytics achieved revenue growth.

Currently, new technologies are being rapidly incorporated into everyday practices. The number of devices connected to

the Internet is growing continuously. By the end of 2018, the number of devices connected to the Internet (Internet of Things) worldwide has been estimated at 22 bln items by Strategy Analytics. [Mercer David, 2019]. The corporate Internet of Things accounts for nearly half of this amount.

Current information technologies such as business intelligence systems, computer-aided instruction, and big data analytics have contributed to the possibility of increasing the scope and quality of economic analysis and reduced time for decision-making. [Mitrovich S. 2017, p.40-46] quotes the studies aimed at the application of business intelligence and big data systems for improving economic analysis in various fields of economic science both in this country and worldwide.

Data analytics techniques of varying sophistication are being used to understand social phenomena, evaluate policies, tailor consumer marketing, predict voting behavior, enable precision medicine and host other real-world applications [Raguseo E., 2018]. Understanding and optimizing the workforce is the key part of this trend [Edwards M. & Edwards K., 2019; Sullivan J, 2013].

The digital transformation of business urges employees among other things to build up new skills and competencies, to change the ways they cooperate with other people. HR analytics enables companies to quickly respond to questions arising in the transition to a new business model. To these refer, for example, who will promote a new business model, who can become experts to get a new approach incorporated, how teams will be built to achieve the stated goals and the like.

The present study aims to point out the opportunities of HR analytics in increasing business efficiency as well as to reveal some constraints on the introduction of analytics in Russian companies.

II. LITERATURE REVIEW AND RESEARCH METHODS

The authors base their study on both Russian and foreign sources as well as the results of studies in the field of HR

analytics obtained by Russian and foreign scholars and practitioners. In the study of sources, we apply comparative analysis and synthesis methods as a basis for analysis. Currently, the major agenda for both Russian and foreign authors who focus on big data analytics is to identify its advantages along with the problems which impede its application by companies. Based on the present research, the authors specify both the constraints and necessary conditions of introducing HR-analytics in Russian companies.

Experts and practitioners in the field of HRM have specified 5 stages of its development (Table I).

TABLE I. THE FIVE MAIN STAGES OF HRM [MERI. M- M. (2010)]

Time period	Activities
1.Workers Affairs (1900-1970)	Implementation of the worker's affairs: employment, wages, upgrades, medical, pension).
2-Personnel Management (1970-1985)	Implementation of the 1 previous level; (Recruitment and Selection, training and development, reward and compensation, performance evaluation, Career management, and planning).
3-HRM (1985-2005)	Implementation of the 2 previous levels, + : (Strategic management, learned and flexible organization, participative management, leadership, HR Auditing, competencies management). - Considering HR as fortune and renewable resources.
4-HR Metrics (2005-2012)	Implementation of the 3 previous levels,+ : (Recruiting Metrics, Retention Metrics, Training and Development Metrics, Staffing metrics, Leadership Metrics, Talent Management Metrics, and HR Metrics Pro).
5-HR Analytics 2012...	Implementation of the 4 previous levels,+ : (providing future, looking insights on the business, predicting Data's, builds analytic models at the lowest levels of the business—at the individual HR level, looks for predictable behaviors, propensities, Data's business rules, finding quantifying patterns in the data using complex mathematical models, predict future outcomes).

What does HR Analytics mean?

HR-analytics is defined as “systematic identification and qualification of the people drivers of business outcomes” [Heuvel & Bondarouk, 2016].

Another definition of HR analytics is based on the improvement of personnel performance: «HR analytics is an area in the field of analytics that refers to applying analytic processes to the HR department of an organization in the hope of improving HR performance and therefore getting a better return on investment. HR analytics does not just deal with gathering Data on HR efficiency, but it aims to provide insight into each process by gathering data and then using it to make relevant decisions about how to improve these processes» [Janssen C., 2015]

J. Bersin’s definition emphasizes the relationship between what HR does and business outcomes. «HR analytics is correlated business data and people data which can help establish important connections later, the key aspect of HR

analytics is to conclusively show the impact the HR department has on the organization as a whole. Establishing a cause-and-effect relationship between what HR does and business outcomes - and then creating strategies based on that information - is what HR analytics is all about” [Bersin J. , 2012].

Russian experts and practitioners view HR analytics in correlation with metrics calculation, talent management and visualization of personnel data [Dolzhenko R.A., 2019, p. 64, Zaychenko I.M., Yakovleva M.A., 2019, p. 19].

Analytics is based on HR metrics. Employee performance metrics are key to tracking how well employees are performing. Implementing them the right way is tricky. However, when done right, employee performance metrics benefit both the organization and the employee.

The four principal categories of metrics have been specified [Erik van Vulpen, 2019]:

- Work quality metrics;
- Work quantity metrics;
- Work efficiency metrics;
- Organizational performance metrics.

The best metrics combine qualitative and quantitative metrics. Most companies try to do this by asking managers and colleagues to review people’s performance, in a 180 or 360-degree feedback loop. The best metrics are a combination of different qualitative and quantitative employee performance metrics done by multiple people.

Metrics to estimate personnel recruitment and adaptation, employee training and assessment, career advancement and organizational performance, as well as motivation and personnel retention and the like, are currently the most commonly used metrics in Russian companies. The assessment of management processes based on these metrics is a routine decision support tool for the personnel managers. The top managers need another kind of metrics, for example, those to calculate the return on HR investment. Personnel management analytics is reported to be the most commonly applied technique in recruiting, planning the number of employees, personnel retaining and training [Nazaykinskiy S., Sedova O., 2017 p. 11].

A new term «People analytics» is a current substitute for both “HR analytics” and «Talent analytics». Josh Bersin, Principal and Founder of Bersin by Deloitte, Deloitte Consulting LLP, specified «People analytics» as the mainstream in the HR world which provides effective solutions not only for HR but for other spheres of business as well. Within 10 years to come, many companies are expected to restructure their work location subsystems as new intellectual tools, robots, chatbots, freelancers are becoming an everyday routine. This would urge the business leaders to reconsider the concept of the workforce and, as the Deloitte experts note, in analytics the trend is being modified from people analytics to workforce analytics [Volini Erica, 2019]. To monitor this process the company leaders are supposed to review the following issues:

- How can workplaces be redesigned given to automatization and consequently matched with robotics and artificial intelligence?
- How can the scope of capabilities to fulfill a job be broadened once virtual cooperation platforms, remote communication, and other digital technologies have been introduced?
- How to motivate organization leaders to manage the workforce which in new conditions becomes a combination of people and machines?

In Josh Bersin's People Analytics Maturity model four levels are specified. (Fig.1)

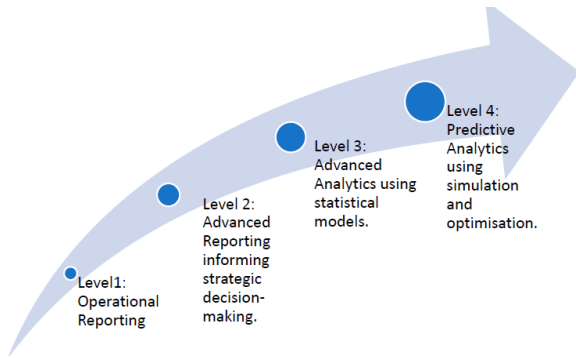


Fig. 1. Maturity Model [Bersin Josh, 2016]

Level 1. Fragmentary reporting as a response to a request. At this level, data are collected on occasion and processed to compile a report to respond to an inquiry of the company management.

Level 2. The consolidation of data sources and the integration of databases. Data are collected and processed on a more regular basis. A company sets up a team of specialists in charge of analytics which makes use of specialized analytic tools. The principal goal of this stage is to meet the demands of the HR-division, not the company in its entirety.

Level 3. Data are collected regularly and are accessible for processing. The advanced analytical tools are applied. The analytics is focused on the company's business objectives. The analytics results are applied to the activities of the entire organization.

Level 4. Integration into the business. The analytics is integrated into the business, talent management, and day-to-day operations. The analytical techniques, artificial intelligence-based tools including, are used in real-time mode. New analytics tools are being tested. The professionals display advanced expertise in analytical tools.

Josh Bersin's company recent study revealed that 69% of companies are consolidating data sources and integrating databases, whereas in prior periods that applied to only 10-15% of the organizations. [Bersin Josh, 2017]. For the most part, Russian companies can be attributed to Level 1 of Bersin's Maturity model. Typically, what they do is traditional data collection, monitoring, and compilation of information on the company's employees.

Google is one of the pioneers in using Big Data technologies in HR management. At the top management level, decision-making is at any instant driven by analytics data, while specific assessment centers and Key Performance Indicators are eliminated from the process. This approach brought about an impressive gain in business efficiency for the company. Laszlo Bock, Vice President of People Operations, Google stressed the necessity of Big Data-based analysis to make evidence-based decisions in HR management. The analysis of CVs, interview results and service records of tens of thousands of employees conducted by the analytical division of Google revealed that the career achievements of a job applicant can be predicted even at the stage of hiring. As a result of the analysis, the amount of job interviews has been reduced. As the Company considers about two million applicants annually the reduced number of interviews results in considerable savings. The job records analysis of the current employees can also reveal the first indications of a valued employee's intention to resign. This would help to take necessary measures for employee retention. Laszlo Bock gives a detailed survey on valuable employees hunting in «Work Rules») [Bock Laszlo, 2015]

Walmart, the largest retailer corporation has set up a specialized Global People Analytics team, a division of human resources, to process and analyze data sets [Walmart. Global People Analytics]. The team members are consistently mining data streams for use not only in predicting the range of products for Supercenters (hypermarkets) and in sales promotion events but also personnel management.

The company staff comprises more than 2 million permanent and fixed-term workers that is why the analysis of how the employees' performance data correlate with economic performances of the company becomes a task of considerable value. The analysis of reasons for resignation conducted by the company enabled us to define performance scenarios typical for employees who have a mind to resign. The data-based analysis can assess the costs to replace the resigned employees. The drivers derived from data processing enable to manage employee turnover and minimize the turnover losses. For Walmart, this may amount to hundreds of millions of US dollars annually.

In Russian companies, the Big Data analytics-based predictions are mostly typical for banking, telecommunication, and big retail companies. Middle- and small-sized companies are currently beginning to acquire habits of processing HR data as a basis for further management decisions and prescriptions.

The leading Russian companies are beginning to successfully introduce HR analytics into their business activities. Speaking at the "HR-Analytics" Conference several Russian HR Directors presented their experience of using analytics in HR management practices. [Rybakova O., 2017]. Tatyana Koneva, HR Director at HOFF (retail trade system of furniture hypermarkets) shared her experience of HR analytics application in personnel rating and for increasing employee performance efficiency and reducing payroll costs. The company adopted the following HR metrics tracked quarterly:

- Changes in wages fund-to-sales ratio per company units;
- Changes in productivity in rubles and items per company units, %;
- Changes in employee turnover rate, %;
- Employee resignations by the reasons to resign.

There is software that processes the collected metrics, analyzes and visualizes it on the dashboards. The analytics is aimed to monitor if an employee has completed training and to estimate their expertise after each training cycle. A manager can see how many job vacancies are available in a company unit and which of them are overdue. The capability to monitor HR data online empowers a line manager to make more substantiated evidence-based personnel decisions.

All the authors of the Conference papers agree that only business problems oriented HR metrics are of considerable significance and the analytics data should be of high quality and sorted out given to the business decisions they are aimed to solve.

III. RESULTS

The introduction of HR analytics is a complicated project which is supposed to integrate expertise and experience of three specific disciplines

- HR;
- Data treatment which comprises IT systems, statistic calculations, and infrastructure;
- Data research and analytics.

Consequently, to get the professionals in these three fields to understand each other's language is a big job when we initiate the adoption of HR analytics in a company. The HR analytics project managers must have definite expertise in all the three languages to have the projects implemented in due time and with an excellent outcome.

There are a few major constraints associated with the introduction of HR analytics in Russian companies:

Data quality and accessibility. More than often HR data is scattered to various company units: personal records are filed in Personnel division while qualification and training reference is stored in the Education database etc. On top of that some information, for example, testing results may be kept in a non-digital mode or be PDF-filed unloadable to Excel.

For this reason, a company that plans to introduce big data analytics has to provide a proper quality of employees' data based on the uniform data storage, interlinks among various databases and duties performed by HR- specialists.

A. Insufficient analytical competence of HR personnel

HR analytics should be performed by a team of professionals in HR-management and data analysis. Unfortunately, HR personnel, as a rule, lack the required IT

competencies for using analytics tools. By the Rabota.ru survey, only 7% of Russian companies employ an HR-analyst in their staff. [Rykusova O., 2018]. An HR-analyst is an expert engaged primarily in data-driven organization development. An HR professional must have consulting competency to identify business constraints for both executives and employees. Having integrated two perspectives, an analyst is able to specify the relevant variables to be incorporated into the analysis. If some data are available, an analyst is supposed to compile questionnaires or use other observation techniques to generate the data.

B. HR-analysts are not supported by company top management

A large amount of resources is required to introduce analytics into companies. Unfortunately, for the most part, Russian companies do not rate HR analytics among their primary operations. As top managers want to see higher ROI at early stages of the project, they have to be convinced of the advantages of it. This seems challenging as the benefits of HR analytics can be accrued in particular departments and only in a long-term period. For example, the positive outcome of employee retention will not become apparent immediately.

C. The human interaction problem

Analytics stimulates an interviewer's creativity to ask right questions. There is no way to force people to think in statistic terms. Michael Mauboussin of Credit Suisse noted that normal people don't think in statistics. In the real world, narrative stories overcome rates and statistics [Dignan L., 2016].

D. Personal data risks

There is another risk associated with legal restraints of employees' data treatment. The personnel data may also be subject to the risk of being used for purposes others than stated. Employees should be aware that the data they submit will be used for the stated purposes and be destroyed at any threat. The main risks of personal data treatment are listed in [Dolzhenko R., 2019, p. 68]. Apart from the traditional risks, some new risks are emerging, e.g. hacking or theft [Royal C. & Windsor G., 2016].

IV. DISCUSSION

Analytics promotion strategies in HR management depend on a company size [Rozdol'skaya L., Vistorobskaya Ye, Grebeniye L. , 2017 p. 132]. A smaller company should concentrate on metrics that assess fundamental HR processes: hiring and adaptation. A larger company should introduce new metrics to assess personnel performance (employee retention, training, assessment, progress, etc). There are specific metrics for top management. It is also recommended to use benchmarking tools for analysis.

V. CONCLUSION

To sum up, HR-analytics increases the operational efficiency of an organization. Success in HR-analytics does not depend on the amount of collected and processed data; it is ensured by the efficacy of data in decision-making. HR

analytics should not be regarded as relevant only for HR division. Analytics improves the overall performance of a company.

Based on the study of a large number of sources of domestic and foreign publications, the authors summarized the experience of using HR analytics, highlighted the problems and showed the prerequisites for the successful use of personnel analytics in Russian companies.

In the current context, the application of analytics has become urgent for HR divisions in Russian companies. However, it requires further investments and new skills and expertise of HR specialists. A personnel manager should be able to collect and interpret a large amount of data to predict their impact on business. It will hardly cause any difficulties as a new generation of Russian HR professionals and managers are active users of modern information technologies.

Moreover, IT training has been conducted for several years. For example, Eduard Babushkin offers an ongoing free workshop on HR analytics on his blog [Babushkin E., 2019]. Russian analysts provide services on data collection and analysis to present the current situation in HR. Take IBS Company as an example. It offers tools for generating effective HR strategies and making management decisions. [IBS. HR analytics].

The Digital Summit in Moscow is an annual event. HR Analytics is presented in the program. In 2018 [Sammit HR-Digital, 2018], Josh Bersin, a founder of Bersin by Deloitte, an independent analyst and David Yang, ABBYY founder and Chairman of the Board were the special guests of the Summit. The contributors at the Summit were HR experts who represented several Russian companies and foreign companies based in Russia, such as “Magnit”, “Beeline”, “Croc” “GetIT”, “IKEA”, “IBS”, “Sberbank”, “KFC Russia” and others. Speaking at the Summit Josh Bersin noted that a great number of companies worldwide only start to introduce analytics tools on a large scale. HR-analytics' successful growth depends greatly on how it relates to the strategic goals of a company. The potential of data analytics for an organization can be fully realized only if data-driven decision-making is integrated into company corporate culture. David Yang believes that analytics process should incorporate both soft data (employee surveys, their thoughts, and ideas) and hard data (digital data). Today, the digital data exists in all occupations: for example, a supermarket assistant works with CRM, an accountant uses 1-C software, etc. The application of artificial intelligence for the processing of data will result in increasing the return on HR investments. [Devyatov N. 2018].

There is a valid ground for the large-scale application of HR-analytics based on big data in Russian companies in the nearest future.

REFERENCES

- [1] David Mercer , "Strategy Analytics", Press Releases, 2019, URL: <https://news.strategyanalytics.com/press-release/iot-ecosystem/strategy-analytics-internet-things-now-numbers-22-billion-devices-where>.
- [2] S. Mitrovich, "Spetsifika integratsii tekhnologii biznes-intellekta i bol'shikh dannykh v protsessy ekonomicheskogo analiza", *Biznes-informatika*, vol. 4(42), 2017, pp. 40-46.
- [3] E. Raguseo, "Big data technologies: An empirical investigation on their adoption, benefits and risks for companies", *International Journal of Information Management*, vol. 38(1), 2018, pp. 187–195, <https://doi.org/10.1016/j.ijinfomgt.2017.07.008>.
- [4] M. Edwards, K. Edwards, 2019, books.google.com [http://refhub.elsevier.com/S0268-4012\(18\)30175-0/sbref0060](http://refhub.elsevier.com/S0268-4012(18)30175-0/sbref0060).
- [5] M.M. Meri, "Le facteur culturel et ses effets sur l'audit social dans les entreprises", 12Eme Université de Printemps de l'Audit Social. Audit Social et Culture. ESSEC et Université de Kaslik. (LIBAN), 2010.
- [6] J. Sullivan, "How google is using people analytics to completely reinvent HR", 2013, <https://www.tnt.com/how-google-is-using-peopleanalytics-to-completely-reinvent-hr/>.
- [7] S. Heuvel, Bondarouk, 2016, https://www.researchgate.net/publication/312173170_The_Rise_of_HR_Analytics_A_Preliminary_Exploration.
- [8] C. Janssen, Available, 2016, <http://www.CompanyofInvestopedia.com>.
- [9] J. Bersin, "Big Data in HR- Building a Competitive Talent Analytics Function", *The Four Stages of Maturity*, 2012, p. 8.
- [10] R.A. Dolzhenko, "People data (dannyye o lyudyakh) kak novoye napravleniye raboty s chelovecheskimi resursami", *Vestnik Omskogo universiteta. Seriya «Ekonomika»*, vol. 17(1), 2019, pp. 63-72.
- [11] I.M. Zaychenko, M.A. Yakovleva, "Prediktivnaya analitika v upravlenii tsepyami postavok", *Nauchnyy vestnik Yuzhnogo instituta menedzhmenta*, vol. 2, 2019, pp. 18-22.
- [12] Erik van Vulpen, "Employee Performance Metrics", Blog, https://www.analyticsinhr.com/blog/employee-performance-metrics/?utm_source=ActiveCampaign&utm_medium=email&utm_content=HR+Metrics+and+Reporting&utm_campaign=HR+Metrics+and+Reporting
- [13] S.V. Nazaykinskiy, O.L. Sedova, "Rol' HR analitiki v prinyatii upravlencheskikh resheniy v organizatsiyakh", *Vestnik RGGU «Ekonomika. Upravleniye. Pravo»*, 2017, pp. 9-19.
- [14] Volini Erica, Looking ahead: Where is reinvention headed? *Global Human Capital Trends*, 2019, URL: <https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2019/organization-reinvention.html>.
- [15] Bersin Josh, *The Bold New World of Talent: Predictions for 2016*, 2016, URL: <https://joshbersin.com/2016/01/the-bold-new-world-of-talent-predictions-for-2016/>.
- [16] Bersin Josh, *People Analytics: Here With A Vengeance*, 2017, URL: <https://joshbersin.com/2017/12/people-analytics-here-with-a-vengeance/>.
- [17] Bock Laszlo, *Work Rules*, 2015, URL: <https://workrules.net/#>.
- [18] Walmart, *Global People Analytics*, <https://www.walmart.com/search/?query=Global%20People%20Analytics>.
- [19] O. Rybakova, *Vnedreniye HR-analitiki*, 2017, URL: <https://hr-academy.ru/hrarticle/vnedreniye-hr-analitiki.html>.
- [20] O. Rykusova, *Obzor HR-media*, 2018, URL: http://obzory.hr-media.ru/kak_rossiiskie_kompanii_ispolzuyut_hranalitiku.
- [21] Dignan Larri, *People analytics: Five Things to Know*, 2016, URL: <https://www.zdnet.com/article/people-analytics-five-things-to-know/>
- [22] R.A. Dolzhenko, "People data (dannyye o lyudyakh) kak novoye napravleniye raboty s chelovecheskimi resursami", *Vestnik Omskogo universiteta. Seriya «Ekonomika»*, vol.17(1), 2019, p. 68.
- [23] C. Royal, G.S.S. Windsor, "Sustainable institutional investment models and the human capital analytics approach", *Routledge handbook of social and sustainable finance*, 2016, [http://refhub.elsevier.com/S0268-4012\(18\)30175-0/sbref0180](http://refhub.elsevier.com/S0268-4012(18)30175-0/sbref0180).
- [24] I.V. Rozdol'skaya, Ye.N. Vistorobskaya, L.G. Grebeniye, *Vestnik Belgorodskogo universiteta kooperatsii, ekonomiki i prava*, vol. 5, 2017, pp. 129-143.
- [25] E. Babushkin, *Blog ob HR analitike*, URL: <https://edwvb.blogspot.com/>.
- [26] IBS. HR analytics <https://www.ibs.ru/hro/hra-presentation.html>.

- [27] Sammit HR Didital <http://hr-media.ru/mezhdunarodnyj-Sammit-hr-digital-2018>. <http://hr-media.ru/mezhdunarodnyj-sammit-hr-digital-2018/>.
- [28] N. Devyatov, Press-reliz, 2018, URL: <https://ru-bezh.ru/press-releases/23728-mezhdunarodnyj-sammit-hr-digital-2018-itogi-glavnogo-otraslevog>