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THE BENEFITS OF HR ANALYTICS

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Abstract: The aim of this paper is to present the benefits of using HR analytics in enterprises. The research sample included 44 practitioners employed in HR departments of Silesian enterprises. In the study a questionnaire was used where 88.6% of people surveyed indicated the benefits of using HR in the area of recruitment, and 83.6% of respondents believe that analytics affects efficiency through the better planning and utilizing of the workforce, and also positively impacts the company's organizational culture. Employees from large companies demonstrate knowledge of HR analytics to a greater extent than those employed in the SME sector.

Keywords: HR analytics, HR controlling, HR management.

1. Introduction

It is indisputable that human capital is the most important element in an organization. Although employees are the fundamental asset, they are also the most substantial cost. For the above reason, HR management should be a central pillar in all organizations.

Over the past 100 years the way of managing processes in the HR area has changed, moving from operational management towards strategic one. This century, thanks to the development of technology, HR management has become more effective. The fourth industrial revolution fundamentally changed the way people live, work, and relate to one another (Schwab, 2015). Smart Human Resources 4.0 (SHR 4.0) is part of the Industry 4.0 new concept. Innovations in digital technologies used in Smart HR 4.0, such as cloud computing, Big Data, the Internet-of-Things (IoT), Robotic Process Automation (RPA), artificial intelligence (AI), and fast data

networks (4G/5G) have increased the effective management of new generation employees (Hecklau, Galeitzke, Flachs, and Kohl, 2016).

HR controlling can be defined as an internal Human Resource Management (HRM) system which has the following core functions: staffing, development, compensation, safety and health, and employee and labour relations. HR analytics is associated with HRM, giving the emphasis on optimizing recruitment, assessment, promotion, remuneration, retention and turnover (Tursunbayeva, Di Lauro, and Pagliari, 2018).

The paper discusses the benefits of HR analytics within an organization. The study consists of five sections. The first is the introduction, the second describes the HR analytics, and the third section is devoted to the review of literature. The fourth section presents the research methodology and the results of the study on the benefits of HR analytics to the Silesian organizations. The summary and conclusion present the findings and research implications as well as its limitations.

2. Defining HR analytics

HR analytics is a relatively new term which first appeared in the academic literature in 2004 (Marler and Boudreau, 2017). Analytics is defined as the intersection of computer science, decision-making, and quantitative methods to organize, analyze and explain the increasing amount of data generated by modern society (Mortensen, Doherty, and Robinson, 2015). Adding the 'HR' component indicates that these analyses concern the people inside the organization (Heuvel and Bondarouk, 2017). Therefore HR analytics can be defined as a systematic identification and quantification of the people drivers of business outcomes with the purpose of making better decisions (Heuvel and Bondarouk, 2017). In the literature, the notion of HR analytics is also used in reference to people, talent or workforce analytics.

Analytics brings benefits in many HR areas of business, for example:
* in recruitment and talent acquisition, because it can measure candidates' experience and collect feedback data from job applicants; HR analytics is able to provide recommendations at the end of the recruitment process which reduces costs and time to employ staff by the accurate identification of the most qualified candidates,
* in performance measurement, it focuses on business issues, e.g. sales productivity, workforce effectiveness, and optimizes the cost of the workforce to drive profit growth,
* in workforce planning, the aim is to ensure that the organization has the necessary employees for current and future requirements,
* in personnel retention, it indicates hidden patterns to understand employee resignations using metrics such as employee satisfaction based on historical data from many years, machine-learning techniques are often able to find factors affecting resignations which may be difficult for managers to observe,

- in budgeting HR costs, it monitors and manages various personnel expenses, analyzes specific trends, and forecasts future evolutions.

HR analytics collects data across the organization from different parts of the business. First of all, the data reside in HR Information Systems (HRIS) and comprise employee demographics, for example, name, address, gender, age, ethnicity, occupation, seniority, tenure, salary levels, marital, and family status, employee's work, salary and promotion history, training history including licences and certificates. As well as data for analysis, the following can be found in a payroll system: employee scheduling software, recruiting tools/applicant tracking systems and employee engagement surveys. HR analytics also involves non-HR data which come from the Management Information System used in the enterprise (such as ERP). For instance, the following data can be used: from the finance module – revenue, cost, profit; from the marketing module – customer satisfaction and retention; and from the production module – volume, defect rates, returned goods (Diez, Bussin, and Lee, 2019).

HR analytics provides descriptive, predictive and perspective analysis (Reddy, 2017). Descriptive analytics depicts relationships based on current and historical patterns and its focus is on a process improvement (Reddy, 2017). Descriptive analytics is based on the HR metrics which measures key HRM performance outcomes such as effectiveness and efficiency. The metrics (Key Performance Indicators, KPI) can be used in different areas of personnel functions, for example: human resource planning, recruitment and selection, learning and development strategy, performance management, talent and career management, employee benefits, pension and allowances, release from the organization, health, safety and employee well-being (Wawer, 2018). HR Metrics for Employee Productivity and Performance typically include turnover, profit and labour costs – e.g. profit generated by employees calculated as yearly or monthly profit and divided by the number of employees, or profit per employee, which is equal to business profit divided by the number of employees.

The predictive analysis, including numerous statistical techniques such as modelling and data mining, uses current and historical data to predict the future outcomes. On the other hand, prescriptive analytics uses simulation and optimization algorithms to predict outcomes and provide decision options, showing alternative impacts (Reddy, 2017). Other types of analyses mentioned in the literature (Nocker and Sena, 2019) include network analysis – a suite of tools which allows the identification of connections between employees within organizations which contributes to performance. Another type of analytics relies on conducting sentiment analysis to test the "mood" of personnel and detect any signals regarding dismissal (Nocker and Sena, 2019). The information provided by HR analytics is easily readable due to intuitive dashboards and charts.

In Poland, an example of HR analytics usage is the investment potential survey conducted by the recruitment company, Antal sp. z o. o. (Antal, n.d.), for a client who

planned to create a new production line and increase employment by 50 persons. Before making the final decision, the client wanted to check whether the region planned for the investment had sufficient human resources to ensure the launch of the new factory. Antal conducted a quantitative survey, in-depth interviews, as well as a content analysis in traditional and modern media. The analysis included: the best sources of obtaining specific candidates (advertising portals, Social Media, direct research), salaries offered in the region, motivation to change employment, competition analysis as well as trends and forecasts for the local labour market. Finally, the client received a comprehensive summary report which allowed for designing a competitive salary system and to plan recruitment. In turn, that enabled the acquisition of even 'hard-to-reach' candidates who fitted the desired profile.

Another example of HR analytics usage is the project of implementing HR Qlik Sense in Securitas Polska sp. z o. o. by Hogart Business Intelligence Sp. z o.o. (Hogart Business Intelligence, n.d.) The aim of the project was to build HR analytics supporting managers in making key decisions in the HR area. The HR Qlik Sense application is a source of HR knowledge concerning: salaries, pay increases, employee rights, holidays, retention and rotation rates, seniority or employment structure in Securitas, Poland. HR Qlik Sense is also integrated with the SAP HR and a payroll module as well as public data from the Central Statistical Office on average wages and unemployment rates (for particular voivodeships and counties ('powiat')). This implementation of HR Qlik Sense brought the following benefits for Securitas Polska:

- a quick and easily accessible analysis of required measures at the most detailed level via dashboards and their comparison with official statistics,
- process automation, elimination of manual data entry and mistakes,
- all data are consistent and available in one application; managers from three divisions: Controlling, HR and Operations can make decisions based on the same current data,
- support in recruitment, thanks to the cross-sectional analysis of historical data, Securitas Polska engages employees with the lowest rotation risk.

3. Literature review

HR analytics is a subject of considerable discussion in the academic literature, although there is a noticeable research gap related to HR analytics in Poland.

Tursunbayeva et al. (Tursunbayeva et al., 2018) have analysed the term People Analytics (PA) in academic research and online search traffic since 2002. The searches of academic literature were undertaken adopting a subset of seven core keywords (HR analytics, Human Resources analytics, people analytics, workforce analytics, employee analytics, human capital analytics, talent analytics) using the Scopus database. The authors searched for each keyword in Google to identify vendors of PA services and tools. They noticed that there were many PA tools offering functional and strategic benefits on the market. The research yielded

58 papers, but most of them were general overviews or discussions of PA as an area of practice. According to the researchers, it is difficult to find evidence in the literature to prove the benefits of using HR analytics. The lack of empirical studies exploring the outcomes of PA implementation encouraged them to carry out further studies.

Nocker and Sena (2019) discussed the opportunities offered by talent analytics to HR practitioners. Their study described the benefits and costs associated with the use of talent analytics. The authors analysed case studies on how talent analytics could improve decision-making and also the costs related to the data governance and ethics that were generated. The conclusions drawn from the study are: first, talent analytics used in a proper way may help the senior management align HR strategies with value creation; second, there were three factors moderating the relationship between performance (measured by profitability, customer satisfaction, innovation, efficiency) and talent analytics: technical knowledge of analytics, access to data, and understanding how to use the results of analytics to improve the performance of organizations.

Sivathanu and Pillai (2018) pointed out two main benefits of Smart HR 4.0: attracting, developing, retaining new-age talent, and more efficient, faster HR operations resulting in leaner HR departments.

Heuvel and Bondarouk conducted research regarding the future of HR analytics using a sample of 20 practitioners in 11 large Dutch companies in 2017. The authors were interested in the application, structure, value, and system support of HR analytics in 2025. Their findings indicated that HR analytics would become an established discipline with a proven impact on business outcomes and a major influence in strategic and operational decision-making in the coming years. The authors concluded that the future development of HR analytics would probably be driven by the prominence of employee data integration with data from other departments of the organization, namely finance, marketing, sales, and also social media, and personal devices.

HR analytics is also a subject of interest of vendors and providers of business consulting. For instance, the Deloitte Global Human Capital Trends Report (Deloitte Development LLC, 2017) was based on a survey of 10,000 HR and business leaders, and art of the report is devoted to People Analytics. It was noted that although 71% of companies saw people analytics as a high priority in their organizations (31% very important), the progress of adopting this trend in organizations was slow. Analytics is applied to a wide range of business areas but recruiting remained the most important, followed by performance measurement, compensation, workforce planning and retention. The Deloitte report specified the following barriers of HR analytics in organizations: usable data (8%) and a good understanding (9%) of the dimensions driving performance.

4. Research methodology, results and discussion

This study contributes to the literature by exploring the benefits of HR analytics in Polish enterprises in the Śląskie Voivodeship.

The paper focuses on addressing the following questions:

Q1: In what area does HR analytics bring benefits according to HR practitioners?

Q2: Does knowledge about HR analytics depend on the size of the organization?

Based on the above research questions, the following hypotheses were posed:

H1: HR practitioners perceive benefits in using HR analytics in organizations, mainly in the area of recruitment.

H2: Practitioners employed in large organizations have more knowledge about HR analytics than those in SMEs.

The study was conducted in February 2020 in enterprises located in Silesia, in which only HR practitioners were chosen for the sample consisting of 44 respondents whose detailed characteristics demographics are presented in Table 1.

Thus, 39% of the respondents were from micro, small and medium enterprises (1-249 employees), and 61% from large companies (more than 250 employees). The respondents represented a broad cross-section of industries, including services 68%; trade 9%; and manufacturing 23%. As far as ownership of capital is concerned, 65% are from companies with Polish capital, while 35% with foreign capital.

The study involves a questionnaire in which a five-level Likert scale was used. The respondents were asked to indicate if they agree or not with statements

Table 1. Distribution of the sample

Characteristics	Answer	Frequency
Gender	Male	9
	Female	35
Employment in SME sector	Yes	17
	No	27
Industry	Service	30
	Trade	4
	Production	10
Ownership of capital	Polish	29
	Foreign	15

Source: own elaboration based on data analyzed.

regarding the benefits of implementation of HR analytics in their organizations. The format of the five-level Likert item is as follows: 1 – strongly disagree, 2 – disagree, 3 – neither agree nor disagree, 4 – agree, 5 – strongly agree. The responses to the eight questions asked in the questionnaire are presented in Table 1. The differences between the number of the given answers were caused by fewer responses to the following questions (question 1-42 answers, and question 8-41 answers).

The study employed the quantitative research methodology with the support of the SPSS software. First, Cronbach's alpha coefficient for the entire scale, which in the final version included eight items, was calculated. This coefficient, which provides an overall assessment of the reliability of the measure and internal consistency, was acceptable (0.753). Next, the frequencies and volatility measures were calculated (Table 1).

Table 2. Frequency of answers and descriptive statistics

Questions/Answers	Strongly disagree (1)		Disagree (2)		Neither agree nor disagree (3)		Agree (4)		Strongly Agree (5)		Mean	Std. Dev.	Rank
	freq.	%	freq.	%	freq.	%	freq.	%	freq.	%			
1. I know HR analytics	2	4.5	8	18.2	5	11.4	21	47.7	6	13.6	3.50	1.11	6
2. HR analytics supports decision making	1	2.3	1	2.3	10	22.7	22	50.0	10	22.7	3.89	0.87	5
3. HR analytics has a beneficial effect on organizational culture and its perception	0	0	0	0	6	13.6	21	47.7	17	38.6	4.25	0.69	2
4. HR analytics increases efficiency through better planning and budgeting	1	2.3	2	4.5	3	6.8	17	38.6	21	47.7	4.25	0.94	2
5. HR analytics increases the efficiency of recruitment	0	0	1	2.3	4	9.1	13	29.5	26	59.1	4.45	0.77	1
6. HR analytics reduces the costs due to process automation	0	0	3	6.8	13	29.5	11	25.0	17	38.6	3.95	0.99	3
7. HR analytics requires the use of ICT	1	2.3	2	4.5	10	22.7	18	40.9	13	29.5	3.91	0.96	4
8. HR analytics is important in my organization	3	13.6	2	4.5	18	40.9	8	18.2	10	22.7	3.32	1.27	7

Freq. – frequency.

Source: own elaboration based on the analysed data.

The respondents most often agreed with the statement that HR analytics increases the efficiency of recruitment by acquiring talents, increasing the number of competent candidates, reducing recruitment costs (in total 88.6% positive answers). Next, the respondents indicated that HR analytics increases the efficiency of business through better workforce planning, and budgeting for personnel costs (86.3%). Moreover, 86.3% of respondents indicate another benefit: an advantageous effect on organizational culture, perception of the company by employees and an increase in

employee satisfaction, while 63.6 % of the respondents claim that implementation of HR analytics impacts on process automation, and 40.4% of the respondents assert that HR analytics is important in their organizations.

In further analyses, the variables containing answers were transformed by grouping its categories together. If the answer was positive, i.e. agree or strongly agree, the variable was coded as 1, otherwise as 0. Next, a chi-square test for independence was carried out to test distributions of the differences between variables. The results (Table 3) proved that there was a relationship between the size of the company and knowledge about HR analytics. An explanation could be that analytics relies on techniques that produce large volumes of data (big data), therefore small organizations may not have high quality data or analytical capabilities. However, no relationship was found between capital ownership and type of business and knowledge.

Table 3. Pearson chi-square results

Relationship between	Pearson chi-square	p
Knowledge and company size	5.303	0.021
Knowledge and industry	1.556	0.459
Knowledge and capital ownership	1.930	0.165

Source: own elaboration based on data analyzed

The last question of the questionnaire concerned the tools used in the area of HR. The respondents were asked to indicate all IT tools supporting HR analytics in their organizations, more than one could be selected. The results are presented in Table 4.

Table 4. IT tools used in HR analytics in enterprises

IT tools	Frequency (in %)
HRM system	18
Own IT tools supporting selected HR processes	34
ERP module	15
Excel spreadsheets	52
Number IT tools used	9
No answer	15

Source: own elaboration based on data analysed.

The most commonly used tool is Excel, which is indicated by 52% of companies, while 18% of respondents declare that their organizations employ HRM systems and 34% have their own dedicated HR tools.

5. Conclusion

Analytics is a new trend in the HR area, which leads to decision-making based on data instead of intuition and estimates. In recent years, i.e. after 2010, interest in HR analytics has increased noticeably (Marler and Boudreau, 2017). This trend is also reflected by advertisements on recruitment websites, as HR analysts are sought for on the labour market, e.g. there were 51 such job offers at the time of writing this article (Pracuj.pl, n.d.).

The research results clearly show that both companies from the SME sector and large entities perceive the benefits of HR analytics. The respondents from both groups indicated the same benefits of HR analytics. However, the outcomes indicate the existing barriers to the use of valuable insights from analytics of HR operations in SME enterprises, which can be the lack of the suitable knowledge or skills within the HR analytics area.

The research conducted by Deloitte Consulting LLP's (Deloitte Development LLC, 2017) showed people analytics as strongly related to improved talent outcomes and organization's profitability. High-maturity organizations, which use people analytics in a sophisticated way, report 82% higher three-year average profit than their low-maturity counterparts.

The research contributes to the literature in several ways. First, it presents benefits of HR analytics for organizations. Second, it can be useful for HR practitioners to understand the meaning of HR analytics as a new trend to improve information quality and organizations' profitability.

The identification of benefits provides an important basis for further surveys aimed at barriers in implementing HR analytics in companies.

However, the findings have to be interpreted in light of certain limitations, the main one being the small sample size of HR specialists. The other limitation concerns the fact that this study focuses only on organizations in Poland.

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KORZYŚCI Z ANALITYKI HR

Streszczenie: Celem artykułu jest przedstawienie korzyści z zastosowania analityki HR w przedsiębiorstwach. Próba badawcza obejmowała 44 praktyków zatrudnionych w działach HR śląskich przedsiębiorstw. Badanie przeprowadzono metodą ankietową. 88,6% osób wskazało korzyści z zastosowania HR w obszarze rekrutacji, 83,6% respondentów uważa, że analityka ta wpływa na efektywność przez lepsze planowanie i wykorzystywanie siły roboczej, a także korzystnie oddziałuje na kulturę organizacyjną firmy. Pracownicy z dużych firm deklarują większą znajomość analityki HR niż zatrudnieni w sektorze MSP.

Słowa kluczowe: analityka HR, controlling HR, zarządzanie zasobami ludzkimi.