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**Organizations' maturity for Human Resources Analytics
in Europe**

Organizāciju cilvēkresursu analītikas attīstības līmenis Eiropā

BACHELOR PAPER

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Annotation

Human Resources Analytics that operates with data for decision-making processes became a hot topic globally. The bachelor thesis aims on investigating the maturity level of European organizations for Human Resources Analytics and providing with recommendations for organizations, HR professionals and academic institutions in successful adoption of HR analytics. Research is based on qualitative data and was collected by interviewing four Human Resources Practitioners. The research concluded that interviewed organizations are familiar and have significant need for HR analytics. The main challenge is related to the lack of professional skills, however, the expectations of HR analytics for future are positive.

Keywords: HR Analytics, Big Data, Data-driven HR, HR Management, Decision-making

Anotācija

Cilvēkresursu analītika, kas operē ar datiem lēmumu pieņemšanas procesos, visā pasaulē kļuva par aktuālu tematu. Bakalaura darba mērķis ir izpētīt Eiropas cilvēkresursu analītikas attīstības līmeni un sniegt ieteikumus organizācijām, cilvēkresursu speciālistiem un akadēmiskām iestādēm, lai veiksmīgi ievest cilvēkresursu analītiku. Pētījuma pamatā ir kvalitatīvi dati, kuri tika iegūti intervējot četrus cilvēkresursu speciālistus. Secināts, ka ir būtiska vajadzība pēc cilvēkresursu analītikas un intervētiem organizāciju pārstāvjiem šī tēma ir pazīstama. Galvenais izaicinājums ir saistīts ar profesionālo prasmju trūkumu, tomēr nākotnei cilvēkresursu analītikas cerības ir pozitīvas.

Atslēgas vārdi: Cilvēkresursu Analītika, Lielie Dati, Cilvēkresursu Datu Vadība, Personāla Vadība, Lēmumu Pieņemšana

TABLE OF CONTENTS

Introduction	6
1. Theoretical aspects of Human Resources.....	8
1.1 Human Resource Management.....	8
1.1.1 Evolution and definitions of Human Resources Management.....	8
1.1.2 Human Resource Management and Strategic Human Resource Management	9
1.2 Big Data as a driver in digitalization of HR Management	11
1.2.1 Evolution and definitions of Big Data.....	11
1.2.2 Tools for Big Data.....	13
1.2.3 Strategic decision-making in HR Management	15
1.2.4 Analytics as a new tool for HR	17
1.2.5 Challenges and opportunities of Human Resources Analytics	21
2. Analytical part on Human Resources Analytics as one of the main trends in Human Resources	24
3. Empirical Research on European Organizations maturity in Human Resources Analytics.....	35
3.1 Methodology	35
3.2 Results on the perception of Human Resources Analytics of interviewees in organizations	36
3.3 Discussions on the level of Human Resources Analytics in interviewed organizations and its resemblance to the literature	43
Conclusion and Recommendations	48
Acknowledgements	51
Bibliography	52
Appendices	57
Appendix 1 Details about interviewees.....	57
Appendix 2 Research questions	57
Documentary page.....	58

TABLE OF FIGURES

Figure 2.1 Top 2017 global trends in Human Resources listed by importance (percentage of businesses).....	24
Figure 2.2 Outlook on factors influenced the progress of Human Resources Analytics during the years 2014-15 (percentage of businesses) *	26
Figure 2.3 Outlook on factors influenced the progress of Human Resources Analytics during the years 2015-16 (percentage of businesses) *	28
Figure 2.4 Percentage of respondents rating HR analytics trend “important” or “very important” in 2017	29
Figure 2.5 Trends relevance in Nordic countries in the next years starting from 2017 (percentage of businesses).....	30
Figure 2.6 Reasons to adopt HR analytics in European organizations (percentage of businesses).....	31
Figure 2.7 European investment plan 2015 in HR analytics (percentage of businesses)	31
Figure 2.8 Budget allocated in 2017 for HR analytics adoption (percentage of businesses) ..	32
Figure 2.9 Middle East investment plan 2015 in HR analytics (percentage of businesses)	32
Figure 2.10 Popular HR metrics used in Middle East (percentage of businesses).....	33
Figure 2.11 Asia investment plan 2015 in HR analytics (percentage of businesses).....	34
Figure 3.1 The level of readiness of HR analytics by the results of interviewees in organizations.....	42
Figure 3.2 The author's model of recommendations for the research conducted.....	47

INTRODUCTION

Human Resources Management (HRM) is steadily moving forward to data driven and evidence based decision-making processes. One of the main goal of HRM is to be a strategic partner of an organization, however, the most difficult challenge is to turn data about people into valuable and worthy tool for analysis. Nevertheless, Human Resources (HR) Analytics became a popular trend in the past few years which has the capability to solve this challenge. HR analytics as a new field in a technologically savvy world has advanced tools to make different types of analysis and turn people data into competitive advantage of an organization. The necessity of HR analytics has been covered in a literature review, nevertheless, organizations are still struggling with challenges and difficulties in implementing this powerful tool and turn traditional HRM from the intuitional decision-making to evidence based one. Even though, HR analytics has big opportunities and amazing features, it also has pitfalls where less experienced organizations can make mistakes and have huge losses. Thus, this field is still developing it has a progress in adoption by organizations worldwide.

The bachelor thesis **aims** on providing analysis of the Europe organization's maturity in HR analytics. The current situation of HR analytics is not yet developed in all organizations and is still slow in adopting due to different challenges. The objective of this research is to dig into HR analytics and its adoption in interviewed organizations. The author has chosen explanatory approach for the empirical research by using qualitative method. Therefore, main advantage of implementing qualitative research in this study is that this type of research is a good method to receive needed data. Additionally, non-probability sampling technique by type of convenience sampling was implemented, because this technique is applicable in a way that interviewees were chosen due to their approachability. The author arranged four interviews with HR practitioners from Europe with the average experience 3-5 years in large and mid-sized enterprises operating in outsourcing services. Interviews with HR practitioners were made through social networks. The personality of the interviewees and organizations are represented in Appendix 1, however, to ensure anonymity of interviewees, this is not shown in the results section and this was done in order to equalize the data collected. Data collection consisted of detailed semi-structured interviews in order to receive necessary data. To analyze the interview data, the author decided that the best approach is cross-case analysis. This approach was suitable due to the fact that analysis was conducted more than once.

The structure of this bachelor thesis covers theoretical aspects of Human Resources Management and touches Big Data with Human Resources Analytics in the Chapter 1. Chapter 2 focuses on the HR analytics as one of the main trends in Human Resources and shows the

situation from global perspective of it and comparing diverse regions as Europe, Middle East and Asia. Empirical research in the Chapter 3 provides methodology and analysis of data collected by the interviews. Results then are presented and discussed by comparing with the literature. Author concludes the paper with the recommendations for the research conducted.

1. THEORETICAL ASPECTS OF HUMAN RESOURCES

1.1 Human Resource Management

1.1.1 Evolution and definitions of Human Resources Management

Historical data shows that Human Recourse process draws back to mid-1920s when managers did the HR related tasks by their own and by 1930s managers were not capable to work on both sides. The need for HR specialists was increasingly expanding as the employees were the most essential part of the organization. It was much easier and time saving to give the responsibility to hire, fire, lead the employment process, recruit, analyze, etc. Rapidly this department gained new duties as guarantee to follow government regulations and record keeping, arranging recreational and social programs. The department that now is attributed to the name of personnel ran out of organizational authority and unity, on the contrary it was filled with employees who didn't have such authority to make proper decisions and was at the very low level. Nevertheless, gradually high demand for more complex labor relations in World War II left a significant mark on personnel process by creating the need of making a shift in personnel function and searching for skilled workers.¹

Prosperity of personnel department started after the World War II due to the accelerating growth of industrial and technological development. During the 1950's personnel generated policies regarding procedures, rules and uniform policy as well to ensure that every employee receives fair and egalitarian treatment.² In that period of time managers came to realization that employee engagement and work efficiency have huge influence on an income of an organization.³ The legislation referring to employment had gained power and gave an impact to all aspects in the 1960s to 1970s by creating equal employment opportunity (EEO) and affirmative action. It is important to mention that personnel practitioners were forced to work on tasks they were never taught before. Therefore, the term Human Resources, that was related more to gaining potential and a promptness to management by anticipation substituted the term personnel, that was initially concentrated on employee utilization.⁴ Moreover, HR departments had high interest on legislation and the scope of department was growing in accelerating way claiming more data and reports, therefore changing their perspective from taking care to protecting.⁵ EEO and affirmative action remained as a base of HR's duty throughout the 1980s. Moreover, fast growing field in IT generated Human Resources Information systems, which contains of static information about the employees, and left a mark as a vital area of HR.

1 Diane, Arthur "Fundamentals of Human Resource Management", AMA Self-study 2015

2 Diane, Arthur "Fundamentals of Human Resource Management", AMA Self-study 2015

3 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204.

4 Diane, Arthur "Fundamentals of Human Resource Management", AMA Self-study 2015

5 Kavanagh, M., Thite, M. & Johnson, R. «Human Resource Information Systems.», SAGE Publications: Thousand Oaks, California, 2015

according to past two decades, HR has expanded as a big diverse department with its own values and mission.⁶ During 1980s, Human resource information systems (HRIS) were taken into action and supporting organizations for faster and easier decision making. (Stone & Dulebohn, 2013). During the late 1980 to early 1990s, HRM's aim has changed from workforce administration to development and training that generated somehow the shift in IT sector.⁷ Over the last decades, HRM had dramatic changes that have brought new functions and totally differs from the HRM in the beginning of the road.

1.1.2 Human Resource Management and Strategic Human Resource Management

Human Resource Management (HRM) gathers all the processes concerning human resources to meet individual, social and organizational objectives.⁸ HRM plays a crucial role in people's work and relationships within an enterprise to achieve goals and effectiveness internally and externally in a successful way.⁹ People have a high priority in every business that's why HRM needs them to structure the flourishing organization by training skills, encouraging to higher level performance and assuring that they feel in a productive and friendly atmosphere.¹⁰ One of the leading roles in HRM plays skilled employees that take responsibility to make decisions in case to accomplish companies objectives.¹¹ The definitions slightly differ from each other, however the very meaning still concerns on efficient utilization of manpower for achieving the organizational and individual goals as well as objectives.

HRM's primary objective is to be able to take care of the employees working life from start to the end in an organization, meanwhile assuring that they do their best in accomplishing companies goals and objectives. HRM department is a touchpoint between the top management and the employees. Its duty is to guarantee smooth working in organization by arranging workforce, offering trainings to develop skills, keeping the motivation and group morale, reinforcing employer-employee cooperation. Quality of work life is a vital part of an organization, therefore it's crucial to enhance a well-being in physical and psychological way. Moreover, moral values and behavior among employees within as well as outside of organization.¹²

The range of HRM according to the Institute of Personnel Management covers aspects as personnel and labor (people), welfare (working conditions) and industrial relations.¹³ To cope

6 Diane, Arthur "Fundamentals of Human Resource Management", AMA Self-study 2015

7 Kavanagh, M., Thite, M. & Johnson, R. «Human Resource Information Systems.», SAGE Publications: Thousand Oaks, California, 2015

8 Edwin B. Flippo, «Personnel Management.», New York: McGraw-Hill, 1984, 5

9 Institute of Personnel Management, «Personnel Management in India» Bombay: Asia Publishing House, 1973, 29–30

10 David A. Decenzo and Stephen P. Robbins «Personnel Human Resource Management», New Delhi: Prentice Hall of India Learning, 1973, 3

11 George T. Milkovich and John W. Boudreau, «Human Resource Management.», Homewood, IL: Irwin, 1998, 6

12 Pravin Durai "Human Resource Management" Pearson India, 2010

13 Institute of Personnel Management, «Personnel Management in India» Bombay: Asia Publishing House, 1973, 29–30

with that it's necessary to notice SHRM. The term strategic human resource management is relatively new that concentrates on strategy of HRM in accomplishing goals of an organization and gaining profit.¹⁴ Due to the change in technological sector, demographics and increasing globalization in the 1980s, HRM started being strongly connected with strategy of an organization.¹⁵ HR functions and human capital are SHRM resources in what human capital deals with everything related to employees.¹⁶ HR and SHRM overall had experienced four stages of changes from playing administrative role in the first; the second stage was developing and training human capital; third involved strategy and the last but not least HR and SHRM are vital parts of business strategy overall.¹⁷ Therefore, HR business strategy is divided to implementing, contribution and full partnership.¹⁸ Nevertheless, this is not satisfactory for HR strategy and needs to progress in a way to be the core of all business processes.¹⁹ This argument demands for decision making in HRM to come along with the outside and inside expectancy in an organization that is a strategy itself.²⁰ According to studies of Brockbank, organizations that have high level of performance come along with HR functions in an external environment.²¹ There are obstacles too, as the constraint on the size of human capital decision-making and how it can be a touchpoint in overall business. Moreover, there can be a huge force on HR practitioners who need to have a knowledge how to use it as a tool for making decisions.²² HRM concerns on the productive utilization of a workforce for accomplishing diverse goals and aims to be one of the main strategic business function.

Digitalization of HR Management

Decision-making is a vital part in HR processes to accomplish mission that concentrates on gaining profitability and success in organization.²³ However, decision-making in HRM is still very new with slow development and not precise data to work with. Everything where data is situated is called as data driven HRM or HR intelligence that is opposite to gut feeling.²⁴ According to Boudreau & Ramstad, data-driven HRM has three diverse stages as a base is data, then come metrics and decision-making. The other side of the coin is, however, that HRM has

14 Walsh, K., Sturman, M. & Longstreet "Key issues in strategic human resources. The Scholarly Commons" School of Hotel Administration Collection, 2010

15 Schuler, R. & Jackson, S. 2005. A quarter-century review of human resource management in the U.S.: the growth in importance of the international perspective. *Management Review*. 16, 1: 1-25.

16 Walsh, K., Sturman, M. & Longstreet "Key issues in strategic human resources. The Scholarly Commons" School of Hotel Administration Collection, 2010

17 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

18 Lawler, E. & Mohrman, S. 2003. HR as a strategic partner: What does it take to make it happen? *CEO Publication*. 03, 2: 430.

19 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

20 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

21 Brockbank, W. «HR's role in a world of pervasive information», 2015, 295-302

22 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

23 Boudreau, J. & Ramstad, P. «Beyond HR. The new science of human capital.» Harvard Business School Press; Boston, 2007

24 McAfee, A. & Brynjolfsson, E. «Big data: the management revolution.», *Harvard Business Review*. October 2012, 60-69

large number of data which is often unstructured and not clearly understandable to use. The essential focal point of data-driven HRM lays in storing and organizing data that makes a shift in turning the data into weighty material of decision-making process. As the reason HRM concentrates more on strategy, the need for decision making processes increases. Nonetheless, here is a place for challenges as receiving specific data which is not correct or unstructured, historical or worthless that can cause difficulties in using such data and connect it with business activities.²⁵ Data-driven HR faces up diverse challenges due to the quality of data and hinders the evidence based decision-making processes.

1.2 Big Data as a driver in digitalization of HR Management

1.2.1 Evolution and definitions of Big Data

Big data and analytics plays a crucial role in IT and nowadays businesses.²⁶ The use of big data and analytics shows great potential in a new era of IT-enabled innovations.²⁷ The popularity of big data can be associated with the information visibility which has enhanced and created opportunities to analyze the areas that were complicated to reach.²⁸ These days society receive and share huge amount of information and data.²⁹ While other information technologies save and access data, big data gives the power to analyze.³⁰ By using big data, organization design that relates to structures, people, rewards, processes and also policies,³¹ is able to analyze enormous amount of data and bring it into understandable report for different departments, which can improve the decision making and furthermore improve the performance of the organization.³² Digitally-savvy organizations are already acquainted with big data to monetize the information flow,³³ nevertheless great part of large and mid-sized organizations still have difficulties in integrating big data into their organizational cultures.

In the 18th century, the term “data” gave rather quantitative understanding as it “was most commonly used to refer to facts in evidence determined by experiment, experience, or

25 Boudreau, J. & Ramstad, P. «Beyond HR. The new science of human capital.», Harvard Business School Press; Boston, 2007

26 Shao, B. B. M., & Lin, W. T. “Assessing output performance of information technology service industries: Productivity, innovation and catch-up. *International Journal of Production Economics*”, 2016, 43-53

27 Frizzo-Barker, J., Chow-White, P. A., Mozafari, M., & Ha, D. “An empirical study of the rise of big data in business scholarship” *International Journal of Information Management*, 2016, 403-413

28 Liu, J., Li, W., & Wu, J. “Rethinking big data: A review on the data quality and usage issues” *ISPRS Journal of Photogrammetry and Remote Sensing*, 2016, 134-142

29 Demirkan, H., & Delen, D. “Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud. *Decision Support Systems*”, 2013, 412-421

30 Bello-Orgaz, G., Jung, J. J., & Camacho, D. “Social big data: Recent achievements and new challenges.” *Information Fusion*, 2016, 28, 45-59

31 Galbraith, J., Downey, D. and Kates, A. *Designing Dynamic Organizations: A Hands-On Guide for Leaders at All Levels*. 1st ed. 2002

32 McAfee, A., & Brynjolfsson, E. “Big Data: The Management Revolution” *Harvard Business Review*, 2012, 60-68

33 Petter, J., & Peppard, J. “Big Data = Big Opportunities: If the CEO Takes the Lead” *IEDP Ideas for Leaders*, 2013

collection”.³⁴ Nowadays, the definition of data has changed. The latest definition of data can be described as “anything recordable in a relational database in a semantically and pragmatically sound way”.³⁵ Therefore comes the term Big Data, with a non-professional eye big can be defined as something massive in size, number, or involving many people or things. Nonetheless, there is more than simple term of Big Data.

John Snow was the first one who mentioned about Big Data in 1854. This period of time was described as “the most terrible outbreak of cholera which ever occurred in this kingdom” by John Snow. Snow collected all available data about the deaths and located their origin in the Broad Street area. After analyzing gathered information, he made a connection between the outbreak and a water “pump”, that led to that closing the “pump” was equal to reduction in the number of infections. By John Snow’s method it is clear to observe the perfect representation of Big Data and analytics mentioned in an early history.³⁶ Despite that Big Data has a long history, it has started gaining speed in accelerating way recently.

Features of Big Data

Despite the term big data is quite young and its origin can cause arguments. The recent definition of big data is attributed to Doug Laney with Gartner describing big data as three Vs: volume, velocity, and variety.³⁷ The volume of the data relates to the size of the data, velocity to the speed of data flow, and variety to the sources and types of data.³⁸ IBM and Microsoft decided to add veracity or variability as the fourth V to describe big data, which relates to the messiness and trustworthiness of data. Nonetheless, McKinsey & Co. included value as the fourth V connected with insights of big data and its worthiness.³⁹ To sum up, big data is a group of huge amounts of complicated and different type of data that is pretty hard to manage easily by the contemporary data processing technologies.⁴⁰

Collecting, storing, and analysis of information with Big Data become less complicated and affordable, giving fast access, visibility and transparency of information. First and foremost, these techniques can be more accurate and predictive to help leading the organization

34 Rosenberg, Daniel “‘Raw data’ is an oxymoron” Cambridge: MIT Press, 2013, 33

35 Frické M. “Big data and its epistemology. *Journal of the Association for Information Science and Technology*”, 2015, 652

36 Ben McDonald “John Snow – the Father of Big Data from 1854” Published in 2017, <https://www.linkedin.com/pulse/john-snow-father-big-data-from-1854-ben-mcdonald/>

37 Svetlana Sicular, Gartner , Inc. “Gartner’s Big Data Definition Consists of Three Parts, Not to Be Confused with Three “V”s”

<https://www.forbes.com/sites/gartnergroup/2013/03/27/gartners-big-data-definition-consists-of-three-parts-not-to-be-confused-with-three-vs/#5b773d0742f6>

38 P. Chen, C., & Zhang, C.Y. “Data-intensive applications, challenges, techniques and technologies: A survey on Big Data.” *Information Sciences*, 2014, 314-347

39 Chen, M., Mao, S., & Liu, Y. “Big data: A survey. *Mobile Networks and Applications*”, 2014, 171-209

40 P. Chen, C., & Zhang, C.Y. “Data-intensive applications, challenges, techniques and technologies: A survey on Big Data.” *Information Sciences*, 2014, 314-347

better than before.⁴¹⁴² According to Brynjolfsson et al,⁴³ the organizational performance rate is higher because of efficiency and effectivity of better decision making. Moreover, performance can be measured with accurate and detailed information of each employee or inventory.⁴⁴ Unfortunately, in many organizations decisions are based on intuition which is the opposite for data-driven decision making⁴⁵ and it doesn't depend only on a lack of technical development, but also on a lack of readiness for a change in social and cultural environment in organizations.⁴⁶ Despite of benefits that Big Data provides, there are still challenges appearing and problems to overcome. One of the biggest problem related to Big Data is the high cost of the basic physical and organizational structures and facilities.⁴⁷ All in all, Big Data is large in an enormous way and is not possible to handle by the tools previously handled the data analysis, however, if the organizations manage to adopt advanced specific tools and have capability to cope with them, there is a promising growth for their competitive advantage.

1.2.2 Tools for Big Data

Artificial Intelligence

Artificial intelligence is described in general as the “design of intelligent agents” and is based on Big Data features.⁴⁸ More precise definition of AI describes systems that think and act like humans in a rational way.⁴⁹ An honest belief is that AI has the possibility to substitute human beings.⁵⁰ Because AI is originally programmed by humans on specific algorithms and is much intelligent than human, it can cause a threat to humanity overall.⁵¹ According to Bostrom:

“By a ‘superintelligence’ we mean an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills. This definition leaves open how the superintelligence is implemented: it could be a digital computer, an ensemble of networked computers, cultured cortical tissue or what have you. It

41 Frizzo-Barker, J., Chow-White, P. A., Mozafari, M., & Ha, D. “An empirical study of the rise of big data in business scholarship.” *International Journal of Information Management*, 2016, 403-413

42 McAfee, A., & Brynjolfsson, E. “Big Data: The Management Revolution.” *Harvard Business Review*, 2012, 60-68

43 Brynjolfsson, E., Hitt, L. M., & Kim, H. H. “Strength in numbers: how does data-driven decision-making affect firm performance?” Cambridge: Working Paper, Sloan School of Management, MIT, 2011

44 Fanning, K., & Grant, R. “Big Data: Implications for Financial Managers.” *Journal of Corporate Accounting & Finance*, 2013, 23-30

45 McAfee, A., & Brynjolfsson, E. “Big Data: The Management Revolution.” *Harvard Business Review*, 2012, 60-68

46 Chow-White, P. A., & Green, J. G. “Data mining difference in the age of big data: communication and the social shaping of genome technologies from 1998 to 2007.” *International Journal of Communication*, 2012, 28

47 Wang, Y., & Wiebe, V. J. “Big Data Analytics on the characteristic equilibrium of collective opinions in social networks.”, 2014

48 Poole, David, Mackworth, Alan, & Goebel, Randy “Computational intelligence: A logical approach.” Oxford: Oxford University Press, 1998

49 Russel, Stuart J. & Norvig, Peter “Artificial intelligence: A modern approach.” Englewood Cliffs, NJ: Prentice Hall, 1995

50 Barrat, James “Our final invention: Artificial intelligence and the end of the human era.” New York: Thomas Dunne Books, 2013

51 Hawking, Stephen, Russell, Stuart, Tegmark, Max, & Wilczek, Frank Stephen Haw-king: “Transcendence looks at the implications of artificial intelligence – but are we taking AI seriously enough?”, 2014

<http://www.independent.co.uk/news/science/stephen-hawking-transcendence-looks-at-the-implications-of-artificial-intelligence-but-are-we-taking-9313474.html>

also leaves open whether the superintelligence is conscious and has subjective experiences”.⁵² As the world gets more innovated, Artificial Intelligence is something big and requires in-depth researches with undiscovered outcomes.

Data Mining

Therefore, comes data mining which can handle Big Data.⁵³ Data mining is the process of selecting needed information from huge volumes of data.⁵⁴ Usually data mining is very broad in discovering, it includes artificial intelligence, database systems, data visualization, statistics knowledge, etc. Data mining is an effective tool which helps to predict some trends or behaviors in the future from some features of data. The goal of data mining is divided into descriptive and predictive analytics. Descriptive one relates to describing the general features of human interpretable data set and predictive one concern on forecasting the value of a particular attribute based upon the values of other attributes.⁵⁵ Data mining process is available to find needle in a haystack; however, it doesn't collect data, it is based on historical data. More proper term for data mining is “knowledge mining from data”.⁵⁶ With algorithms provided by data mining, it is possible to make precise analysis to enhance business functions.

Algorithms and Machine Learning

Algorithms are located in the heart of computing that is clearly connected with Big Data and is useful tool to transform it.⁵⁷ Everything and everyone is surrounded and influenced by algorithms.⁵⁸ The meaning of algorithm is “any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output. An algorithm is thus a sequence of computational steps that transform the input into the output”.⁵⁹ However, algorithms are not able to learn, comparing to machine learning process that has two learning methods: supervised learning, during which a machine is taught new things by training data that has the input and output already defined and connected; oppose to that statement, unsupervised learning has no output data, giving an effort for an algorithm to search for patterns, correlations, or clusters to discover similarities.⁶⁰ Despite this definition has the

52 Bostrom, Nick “How long before superintelligence. *Linguistic and Philosophical Investigations*”, 2006, 11

53 Begoli, E., & Horey, J. «Design principles for effective knowledge discovery from big data.», *Software architecture (WICSA) and european conference on software architecture (ECSA)*, 2012

54 Han, Jiawei, Kamber, Micheline, & Pei, Jian “Data mining: Concepts and techniques.” Waltham, MA: Morgan Kaufmann, 2012

55 Han, J., Pei, J., & Kamber, M. “Data mining: concepts and techniques.” Morgan Kaufmann, 2011, 5

56 Han, Jiawei, Kamber, Micheline, & Pei, Jian “Data mining: Concepts and techniques.” Waltham, MA: Morgan Kaufmann, 2012

57 Cormen, Thomas H., Leiserson, Charles E., Rivest, Ronald L., & Stein, Clifford “Introduction to algorithms.” Cambridge: MIT Press, 2009

58 Pasquale, Frank “The black box society. The secret algorithms that control money and information.” Cambridge: Harvard University Press, 2015

59 Cormen, Thomas H., Leiserson, Charles E., Rivest, Ronald L., & Stein, Clifford “Introduction to algorithms.” Cambridge: MIT Press, 2009

60 Mohri, Mehryar, Rostamizadeh, Afshin, & Talwalkar, Ameet “Foundations of machine learning.” Cambridge: MIT Press, 2012

analogy with data mining, data mining is more stable with limited data set and uses exact method of mining.

Big Data shaping Human Resource Management

Big data will have a significant impact within an organization and will change the way people are working. First and foremost, Big Data transforms the way the HR department is functioning and as a result all the employees are also influenced. Probably the brightest case about connection of Big Data and HRM is Moneyball. Billy Beane as a general manager of baseball team “Oakland Athletics” experiences shortage of money in a team, where the players are the most valuable pattern, this situation forced Billy to look for different ways of getting a talent. By using and analyzing Big Data, he handled to create a team that was not the ordinary one, nevertheless competitive and highly successful. This undoubtedly shows strategic HRM combined with Big Data. One of the benefits of Big Data in HRM is availability to give access to all needed information and stay in touch with every employee everywhere. According to that, Big Data will transform HRM to function more resilient, ever changing and responsive by using technological potential of Big Data.⁶¹

According to Kaufman the evolution of the term HRM is as follows: “HRM as the people management component of organizations, a holistic system’s view of individual HRM structures and practices, a strategic perspective on how the HRM system can best promote organizational objectives, HRM system alignment with organizational strategy and integration of practices within the system, and emphasis on the long-run benefits of a human capital/high-commitment HRM system”⁶² This consideration underlines the essential role of HRM in organizations and the general strategy. To gain competitive advantage out of Big Data, strategic HRM should deal with transformation in a strategy.

1.2.3 Strategic decision-making in HR Management

Metrics of HR has come along with decision-making HRM starting from 1970s by measuring workforce quantity, salaries and time of working. Gradually, by mid 1980s organizations interest in comparing results between each other on diverse facts became a hot topic to consider.⁶³ By mid 1990s, HR metrics have advanced and took out data related to processes of the ins and outs of an organization. Year by year, HR data became big and by

61 Lewis, Michael “Moneyball: The art of winning an unfair game.” New York: W. W. Norton, 2003

62 Kaufman, Bruce E. “Evolution of strategic HRM as seen through two founding books: A 30th anniversary perspective on development of the field. Human Resource Management”, 2015, 389–407

63 Kavanagh, M., Thite, M. & Johnson, R. «Human Resource Information Systems.», SAGE Publications: Thousand Oaks, California, 2015

advanced technologies HR metrics were born.⁶⁴ The reason to consider utilization of HR metrics and measuring is the availability to describe, explain, predict and optimize.⁶⁵ Metrics which can be qualitative and quantitative itself is a “accountability tool that enables the assessment of a function’s results” that shows performance of a single unit as a foundation for decision-making. Efficiency and effectiveness of HR metrics doubtlessly affect outcome metrics. As a base level of HR tasks is efficiency metrics that deals with administrative dimension of an organization and operations. This type of metrics differs from other metrics by its simplicity, however come up with limited access to strategy of organization. The second level of metrics pyramid is attributed to the function that relates to measuring the value of human capital and operates with people which can be complex enough. Furthermore, HR metrics third level concentrates on productiveness of workforce providing with functional policies as training for example where results and new skills developed are measured. Last but not least reaches the top of the HR metrics pyramid and is defined as strategic or impact metrics that supports external and internal decision-making in an organization to accomplish a competitive advantage. Regardless of HR metrics four levels, it is necessary to note that metrics are still just a solution for measuring and focusing on specific task, not on metrics.⁶⁶

Strategic decision-making in HRM changes data and metrics into worthwhile material to analyze. Moreover, the focus of decision-making should be conducted in the IT sector which directly influences HRM and decision support systems future. DSS (decision support systems) or so-called BI (Business Intelligence) involve analytics and metrics that can be utilized as a part of HRIS to cope with decision-making processes. These tools are in a high demand; however, it has a little amount of observation in the HRM arena. There are arguments that HRM doesn’t have its own DSS variation and should have a decision-making framework.⁶⁷ Decision-making process can be divided into managerial functions that are performed by all managers and operative ones by HR managers for all departments.⁶⁸

First and foremost, managerial process consists of planning that is responsible for future and should provide with precise forecasting of a successful plan by setting up goals and objectives, rules and procedures, specifying plans and forecasting techniques. Planning plays a key role to all other managerial processes. When a plan is in action, organizing take up the baton. This process consists of setting up a structure and authority of an organization. Organizing process must involve departments lead by authorities and employees that are given

64 Becker, B., Huselid, M. & Ulrich, D. «The HR Scorecard: Linking people, strategy and performance.», Harvard Business School Press: Boston, 2001

65 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

66 Ulrich, D. & Dulebohn, J. «Are we there yet? What’s next for HR?» Human Resource Management Review, 2015, 188-204

67 Ulrich, D. & Dulebohn, J. «Are we there yet? What’s next for HR?» Human Resource Management Review, 2015, 188-204

68 Pravin Durai “Human Resource Management” Pearson India, 2010

specific tasks to accomplish. Any company should consider staffing in case to fill organization with the right workforce. Staffing aims to put in place HR policies that include wage fixation, working environment, recruitment, etc. People, as a vital tool for any organization, should be chosen by specific characteristics, compensated if needed, trained and acknowledged with a work, evaluated by performance standards and so on. Directing, which defines leading/motivating, and controlling closes this circle of managerial functions. Even if staffing relates to managerial function, this process tends to be more operative one. One of the operative processes include procurement which deals with present and future vacancies of an organization. Development of the workforce is vital for an organization's growth; compensation works with pay systems and payrolls; maintenance process is concerned on retention of efficient employees by developing healthy environment in a workplace and last but not least is integration operative process that consists of maintaining good and morale relationships between employees from different levels. Managerial and operative processes have similarities and connectedness that cannot exist separately.⁶⁹ However, these functions also have a number of drawbacks as structured, semi-structured and unstructured operative function.⁷⁰ The HR structured function is related to the automated administrative HRIS tasks, on the contrary is unstructured one and semi-structured is partly computerized. Nonetheless, HRIS needs human beings for evaluation decision-making processes.⁷¹ To conclude, strategic decision-making splits to managerial and operative processes with structured, semi-structured and unstructured data and plays a crucial role in HR.

1.2.4 Analytics as a new tool for HR

As it was mentioned before the term HR metrics were developed around 1980s and have experienced remarkable evolution.⁷² The first-time business analytics were mentioned are from DSS tools that became known during 1960s to 1970s by executive information systems and online analytical processing. Afterwards to 1990s, data warehousing and business intelligence occurred in the arena of analytics.⁷³ HR analytics is a way of communicating by mixing data from various sources; one of greatest features of HR analytics is casting a light on a specific situation and predicting the future.⁷⁴ According to Bassi, HR analytics varies from the very base of HR metrics to predictive HR to enhance the performance of workforce, decision-making

69 Pravin Durai "Human Resource Management" Pearson India, 2010

70 Simon, H. 1960. The new science of management decision. Harper & Row: New York.

71 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204

72 Bassi, L. «Raging debates in HR analytics.», People & Strategy, 2011, 14-18

73 Watson, H. «Business analytics insight: hype or here to stay?», 2011, 33-37

74 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.», Amacom Books: New York, 2010

processes by using different techniques and measuring human capital.⁷⁵ The core of analytics is people and how they perceive the environment and strive to draw out needed valuable data with the knowledge how to utilize it.⁷⁶

When using analytical tools, it is often not focused on preferable business outcomes, but on tools and data which is preliminary.⁷⁷ For this reason, rather than maintaining new methods it is necessary to focus on another new type of attitude and specter for HRM to transform and expand its performance in organizations. HR analytics is often used to measure turnover or attrition and the main reason for that is because this type of data is easy to get in the HR database and is comparably easy to analyze.⁷⁸ Generally speaking, HR analytics is very new limited field and is not often used with outer data in HRM decisions because analytics are generated to be visualize tools rather than future decision-makers.⁷⁹

HR analytics, practically, is utilized with metrics and reporting techniques that are pretty simple and can expand into more complicated analytical models when the level of intelligence increases. The basic stage of analytics often concentrates on enhancing processes that occur at the current time by organizing and collecting data. This type of reporting is preliminary one, doesn't forecast and usually easy to cope with, nevertheless data scope enlarges in accelerating way and this process becomes more complex. According to Fitz-enz, a little more developed reporting process is measured by QIPS which include quality, innovation, productivity and service that focuses on organizational goals and is generated by top management.⁸⁰ By QIPS reporting it is possible to show adding value precisely and compare one organization with another in so called benchmarking. The circumstance of benchmarking can occur when it comes to other organizations and their data collecting to make the comparison, because the quality of data may be different.⁸¹

Usually analytical tools are divided into descriptive, predictive and prescriptive types. Descriptive analytics focuses on a past behavior and explores connectedness and differences between the various groups.⁸² One of the features of this type of analysis is that it gives a possibility to compare trends over the historical data and often aims on enhancing processes or reducing prices. There are many tools that can cope with descriptive analytics as OLAP reporting, basic data mining or data visualization. On the contrary, predictive analytics concentrates on a future leaning on the past and current data calculating probability and possible

75 Bassi, L. «Raging debates in HR analytics.», *People & Strategy*, 2011, 14-18

76 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

77 Rasmussen, T. & Ulrich, D. «Learning from practice: how HR analytics avoids being a management fad.», *Organizational Dynamics*, 2015, 542; 1-7

78 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

79 Gale, S. «Predict (still in) the future.», *Human Resource Management Systems*. August 2015, 44-47

80 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.», Amacom Books: New York, 2010

81 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

82 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.», Amacom Books: New York, 2010

changes.⁸³ In accordance with Fitz-enz, four things lie under forecasting the future that are attributed to recognize the patterns of past and current facts, what are the trends hiding behind them, availability to analyze the sequence of these events and have the ability to indicate the probability of specific thing in the future.⁸⁴ Statistics and data mining with diverse algorithms are one of helpful tools for predicting the future events.⁸⁵ Last but not least is prescriptive analytics that aims on ways of decision making and optimizing the workforce.⁸⁶ One of brightest examples of this analysis is attrition that focuses on probability of an employee giving up on a position. Usually this type of analysis is made by simulations and mathematical programming⁸⁷ and gives the overview from now to future.⁸⁸

All in all, meantime there are six major methods used in HR analytics. First and foremost are human capital facts that aims on measuring and controlling key performance indicators of workforce. Next method consists of adapting transformations in business environment to the employees that is made by talent supply chain. Predicting the employee turnover and retention is used also as HR analytics feature and called talent value model. Organizations also use HR analytics for forecasting the workforce to measure the size of it and lay off or hire people if necessary. Analytical HR is one of these six methods that aims on individuals and their necessity for attention and performance. And the last one is analysis of human-capital investment and focuses on what actions to implement that can have the serious impact on the organization. However, many organizations still are stick to traditional HRM with Excel sheets for simple analytics, nevertheless it depends on the scope of an organization and investments in technological sector.⁸⁹

HR analytics is constructed on the same principles as the rest of business analytics and is based on high quality of data, direction of the enterprise, analytical guidance, analysts and strategic goals.⁹⁰ HR analytics processes are relatively new field and not fully covered. Human Capital Management for 21st century (HCM:21) is a strategy generated for systematization and comprehensive analysis of data. The model of HCM:21 is composed of four elements that are scan, plan, produce and predict. Scanning, as the first element, requires strategic investigation of external and internal environment of organizational targets. Thus, it is vital to compare the results with the existing capitals as employees, structural capital which includes equity of an organization and relational resources and enhancement of it. Scanning is a base for the next

83 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

84 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.», Amacom Books: New York, 2010

85 Watson, H. «Business analytics insight: hype or here to stay?» Business Intelligence Journal. Student Edition 2015, 33-37

86 Fitz-enz, J. & Mattox, J. «Predictive Analytics for Human Resources.» Wiley and SAS Business Series: Wiley, 2014

87 Watson, H. «Business analytics insight: hype or here to stay?» Business Intelligence Journal. Student Edition 2015, 33-37

88 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.», Amacom Books: New York, 2010

89 Davenport, T., Harris, J. & Shapiro, J. «Competing on Talent Analytics.», Harvard Business Review, 2010, 52-58.

90 Davenport, T., Harris, J. & Shapiro, J. «Competing on Talent Analytics.», Harvard Business Review, 2010, 52-58

element as planning that contains of capability, engagement and development. Capability planning separates the workforce by essential ground for the organization to survive in a market, operational importance and its usage to accomplish specific goals, uniqueness to be diverse and competitive in a market and flexible for changes. As a consequence, to achieve success in capability planning, it is essential to measure the performance of employees and highlight the greatest, provide with training and development course, examine the outcome and make sure that things move by established plan. Afterwards, producing takes the baton and relates to optimization and delivery integration that are focused on enhancing productivity of different processes in HR services. Last but not least is predicting element focusing on strategy, operations and primary indicators that help to forecast future events and make comprehensive analytics with these four elements.⁹¹ HCM:21 is a complex framework for HR analytics and gives an overview of diverse conditions of utilizing it.

HR analytics can be organized by different ways and diverse analytic experts.⁹² Specific areas can be covered by external analysts and give deep understanding for them, however, may not be related to broader scope of HRM as well as internal analysts from other departments of an organization may have particular views on different aspects, but not in-depth understanding of HRM department. Nevertheless, organizations usually lean towards third-party companies that are professionals in HR analytics field.⁹³

According to Levenson, HR should enable HR analytics inside the HR department in an organization, due to the fact that there are many challenges occurring in a need for external and internal analysts. HR analytics center of expertise (HR-ACE) is a proposal of Levenson to develop or enhance analytical competence of HR practitioners.⁹⁴ Gale argues that HR-ACE should be ready to put a break on several analyses that are high demanded for accomplishing the needs of HR department. Moreover, internal HR data is not enough and it is vital that other departments, external consulting agencies and academic resources share analytical data with HR department in order to make accurate analysis for specific purpose. All the HR practitioners should have an understanding of HR analytics, but it can be as proficient as in HR-ACE. Nonetheless, it is complicated to manage and create many circumstances to have a rapid success in HR analytics.⁹⁵ On the other side of a coin, it can be noted that when the need in HR analytics progresses, the interest and connectedness with other departments matures.⁹⁶ Moreover, only

91 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.» Amacom Books: New York, 2010

92 Levenson, A. «Hamessing the power of HR analytics.», Strategic HR Review, 2005, 28-31

93 Naasz, K. «Advances in "big data" and analytics can unlock insights and drive HR actions.», HR focus, 2015, 1-4

94 Levenson, A. «Hamessing the power of HR analytics.», Strategic HR Review, 2005, 28-31

95 Gale, S. «Predict (still in) the future.» Human Resource Management Systems, 2015, 44-47

96 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204

organizations with cross functional data will lead the new business arena with high tech technology sector and this is due to diverse sources from where data comes from.⁹⁷

In this day and age, there is a lack of professionals in analytical fields and it is extremely hard to find ones. HR analysts should have not only knowledge how to extract and analyze the data, but also have strong communication skills.⁹⁸ In reality, HR professionals have made a decision to be a part of HR career in order to avoid quantitative side of an organization.⁹⁹ Nevertheless, the studies have found out that year by year key competences of HR practitioners come to enhancing technology, information and HR analytics, thus have great effect on organization's performance.¹⁰⁰ HR analytics transforms people data into valuable analysis using different tools and has different challenges as for example scarce of skilled employees. Nevertheless, this field is relatively new and is not covered fully yet.

1.2.5 Challenges and opportunities of Human Resources Analytics

Many challenges occur in HR analytics due to the fact that this field is not fully covered yet by academic researches, despite that there is a place for promising opportunities due to the fact that organizations operating in data-based environment have higher rate of performance and there is a positive competitive advantage in comparability with other organizations.¹⁰¹ However, one of the main challenges of HR analytics is data that is expanding in an exponential manner and is complicated to gather and handle as it was mentioned in previously. Even if organizations will take a risk and calculate and control everything that is broad, there is no warranty that the data will be accurate and useful for further actions. Additionally, it is vital to note that organization have a fixed data only for usage of particular department, thus it is unable to share it for complete picture of a situation for analysis.¹⁰² Another challenge for HR analytics is operations, because this field is not only about gathering data but also utilizing it in order to receive results shaping an organization overall. In case to take meaningful advantage of reports made by HR analytics it is vital to note that only usage of numbers might be hard to focus and read, or in a worst case- not useful at all.¹⁰³ However, reports that are made by the help of data and analytical tools don't always follow up with immediate changes in organizational actions.¹⁰⁴ According to Castellano, argues that HR analytics is not replacing natural thinking of human

97 Mondore, S., Douthitt, S. & Carson, M. «Maximizing the impact and effectiveness of HR analytics to drive business outcomes.», *People & Strategy*, 2011, 20-27

98 Watson, H. «Business analytics insight: hype or here to stay?» *Business Intelligence Journal*. Student Edition 2015: 33-37.

99 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

100 Ulrich, D., Younger, J., Brockbank, W. & Ulrich, M. «The State of the HR Profession.», *Human Resource Management*. 2013, 457-471

101 McAfee, A. & Brynjolfsson, E. «Big data: the management revolution.» *Harvard Business Review*, 2012, 60-69

102 Cravino, L. «Measuring what is important.», 2010, 17-25.

103 Castellano, S. «Decision Science.», 2014, 32-37

104 Rasmussen, T. & Ulrich, D. «Learning from practice: how HR analytics avoids being a management fad.», *Organizational Dynamics*, 2015, 542: 1-7

being, but implementing a silver lining between a human thinking and analytics. It is vital to understand that it is hardly possible to replace qualitative side of HR department as interviews and this side should be a supplemental part for rough data. Thus, there should be the right balance between measuring and managing diverse types of information and often it is not the same operation. Even if HR analytics mostly focuses on forecasting the future, it doesn't ensure that the past is a right tool for future analysis.¹⁰⁵ Besides that, it can be noted that the way of data presentation straightly affect the decision-making operations of an organization, thus it is vital not only to analyze the data but also have the availability by these reports to catch an eye of other representatives in an internal and external environment of a particular group.¹⁰⁶ Equally important challenge for HR analytics is workforce, development and training of HR professionals in a way how trends are changing, and the major challenge for it can be large expenses for either finding skilled employees or enhancing existing workforce.¹⁰⁷ Moving forward, the challenge to adopt HR analytics roughly depend on organizational culture that can vary from intuitional decision-making to rational and prudent approach for a specific problem or question.¹⁰⁸ Last but not least challenge is data transparency and privacy of employee's personal data that should be protected.¹⁰⁹ There is a significant risk in utilizing diverse data and sources in order to make specific analysis and not take into consideration personal data usage regulations that can be not appropriate for existing law which can lead to heavy punishments from the government.¹¹⁰ HR analytics has challenges to overcome and long road to do so, but the opportunities are promising to enhance organizational performance and competitive advantage.

The literature review has given an outlook of Human resource management from the beginning and to the era of digitalization as data-driven HRM and HR analytics. First and foremost, the author gave an overview of the evolution of HRM and how it has changed in its prosperity period. HR and SHRM evolution developed from playing administrative role to developing and training human capital; then involved strategy and afterwards HR and SHRM are vital parts of business strategy overall.¹¹¹ There were many arguments about data-driven HRM processes in literature review. According to Boudreau & Ramstad, new and data-driven HRM is based on data, decision-making and metrics. Nonetheless, an obstacle can be receiving specific data which is not correct or unstructured, historical or worthless that can cause

105 Castellano, S. «Decision Science.», 2014, 32-37

106 Welbourne, T. 2015. Data-driven storytelling: the missing link in HR data analytics. *Employment Relations Today*. 41, 4: 27-33.

107 Davenport, T., Harris, J. & Shapiro, J. 2010. Competing on Talent Analytics. *Harvard Business Review*. October, 2010: 52-58.

108 McAfee, A. & Brynjolfsson, E. «Big data: the management revolution.», *Harvard Business Review*, 2012, 60-69

109 Castellano, S. «Decision Science.», 2014, 32-37

110 Gale, S. «Predict (still in) the future.» *Human Resource Management Systems*, 2015, 44-47

111 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» *Human Resource Management Review*, 2015, 188-204

difficulties in using such data and connect it with business activities.¹¹² Tools for data-driven HRM are used to accomplish and achieve organizations strategical goals^{113 114}, however these tools cannot function separately. Moreover, Big Data was mentioned and in data-driven HRM it has its own impact. HRM should have a shift in strategy, in order to gain competitive advantage with Big Data. Throughout the literature review, it is important to note that every organization should choose the tools for analytics leaning on their demands and needs due to the fact that different organizations follow diverse strategies that need correct approaches.¹¹⁵

As HR analytics is relatively new field comparing to HRIS, it can be noted from a literature that the rate of interest and researches in this field have increased and in mature organizations it brings to connectedness between the departments. These undoubtedly have a major impact on competitive advantage and performance of an organization.^{116 117} Nevertheless, human capital experience lack of professionals in analytical fields, due to the fact that many of HR practitioners have made a decision to be a part of HR career in order to avoid quantitative side of an organization.¹¹⁸ Many challenges occur in adopting HR analytics as: huge amount of data that cannot be shared depending on a department; operations and reporting with the meaningful outcome; workforce in this field is complicated to find as it was mentioned before; organizational culture that influence adopting HR analytics and privacy of data.

In summary, it can be said that HR analytics has shed a light to the use of analytical tools in order to achieve goals of an organization and still needs further researches due to the fact that it is still not covered. As a conclusion, throughout the literature review HR analytics has more advanced tools, however, it has challenges requiring more sophisticated knowledge and effort.

112 Boudreau, J. & Ramstad, P. «Beyond HR. The new science of human capital.» Harvard Business School Press; Boston, 2007

113 Fitz-enz, J. «The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments.» Amacom Books: New York, 2010

114 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204

115 Fitz-enz, J. 2010. The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments. Amacom Books: New York.

116 Mondore, S., Douthitt, S. & Carson, M. «Maximizing the impact and effectiveness of HR analytics to drive business outcomes.» People & Strategy, 2011, 20-27

117 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204

118 Ulrich, D. & Dulebohn, J. «Are we there yet? What's next for HR?» Human Resource Management Review, 2015, 188-204

2. ANALYTICAL PART ON HUMAN RESOURCES ANALYTICS AS ONE OF THE MAIN TRENDS IN HUMAN RESOURCES

According to Deloitte,¹¹⁹ in 2017 there was a tremendous change in Human Resources transforming it within and out. Due to technological changes and rise, doubtlessly there is a need in changes of how organizations perform.

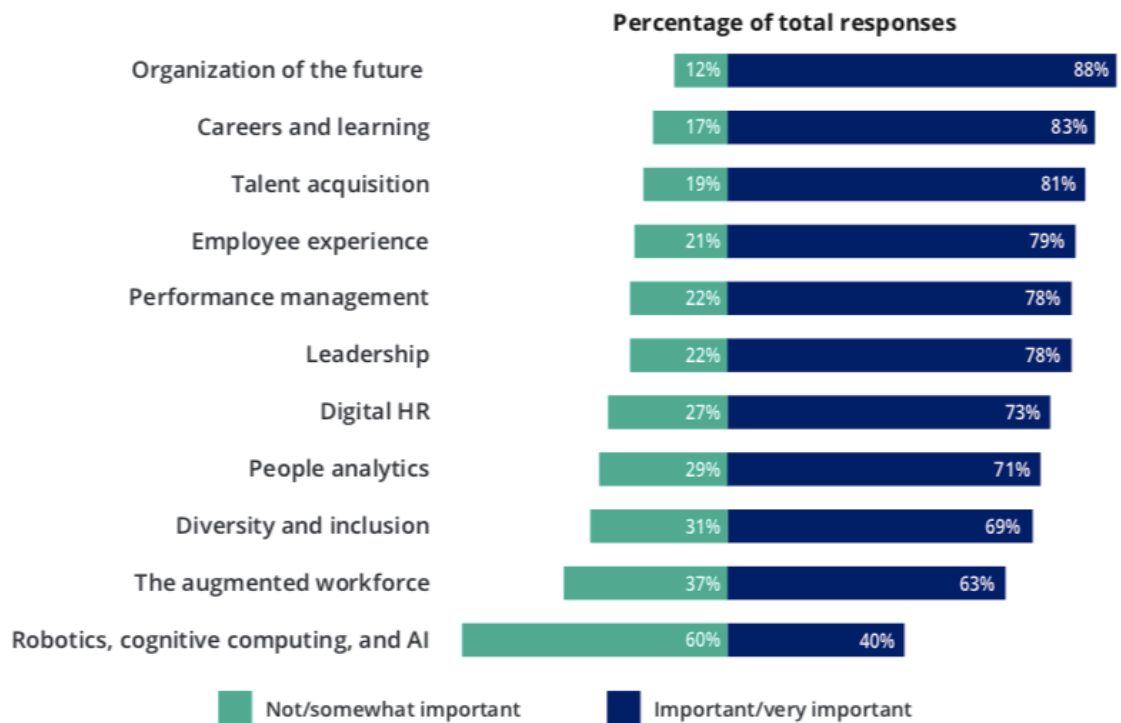


Figure 2.1 Top 2017 global trends in Human Resources listed by importance (percentage of businesses)¹²⁰

In the Figure 2.1, top eleven trends 2017 are represented. Organization of the future, careers and learning and talent acquisition stand as three top trends sorted by importance in a global context. Additionally, as HR analytics (People analytics) is an emerging and new field it is on the eighth place accelerating in a better way. The author explores more precisely HR analytics trend due to the fact that there is a main interest for it in the paper.

In 2014, world made a major shift in investment for growth and development of workforce due to the steadiness of economic sector worldwide. Businesses realized that the workforce at that time has transformed and the demand for new skills has risen. Twenty-first century is yet has come with new challenges that are global and interconnected. High-rate performances were attributed to organizations following global HR trends and implementing them on their strategies. Technological sector and population worldwide have grown and left

¹¹⁹ Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 2-6

¹²⁰ Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 6

marks on workforce of organizations which have transformed significantly. HR analytics became one of the top ten trends in Human Capital according to Deloitte report in 2014. At that time HR analytics slowly started to keep pace with Big Data, however, HR sector lagged behind other business sectors who utilized analytics more efficiently and professionally.¹²¹ Globally 86 percent of organizations had reported that HR analytics experience non-capability in usage. The rest 14 percent of organizations applied these capabilities to their systems and around 60 percent of overall surveyed organizations were disoriented in HR analytics in a way of conducting worthless decision-making processes. Notwithstanding, 57 percent of organizations' have invested in HR analytics, that is more than a half in a global context.¹²² Even if organizations expressed the significance and need for HR analytics, they were not ready to cope with the upcoming challenges. The surprising factor was that large competitive nations like Japan, United Kingdom and Germany reported that they are not sure about their readiness too.¹²³

World became technologically savvy that enabled employees all over the globe be unite and mobile for the human capital market. Information transparency almost of any organization can be known through the Internet, giving the possibility for people to discover about it before sending a resume. The war of and for talents became a buzzword in a global market. New ambitious generation differs of the previous one and demands larger opportunities and growth in their career path. To meet these requirements, organizations should be flexible and innovative. In 2015, as well as in 2014, organizations prioritized their ability engaging, leading and developing the workforce in Human Resources, however, non-capability has risen. The investment rate in Human Resources has increased steadily in 2014 for four percent due to technological development. Despite the increase in investment for HR technology, there was not a significant change in results due to the new challenges that are not capable to manage because HR should modify their processes and to gain competitive advantage of technology. In 2015, HR analytics still had very small shift in capability usage. Around 35 percent of organizations globally reported that they were not actively developing HR analytics that has decreased approximately to two percent comparing to 2014. The importance of HR analytics decreased from 78 percent in previous year to 75 percent in 2015, nevertheless, the usage of HR analytics was 8 percent (7 percent in 2014) throughout the year 2015.^{124;125} Even if the organizations have adopted HR analytics and related features, it wouldn't show the highest ROI right away, it would take time, expenses and courage to progress. All in all, there was not a

121 Global Human Capital Trends 2014, Engaging the 21st-century workforce , A report by Deloitte Consulting LLP and Bersin by Deloitte, 117-119

122 Josh Bersin, Karen O'Leonard, and Wendy. Wang-Audia, High-impact talent analytics: Building a world-class HR measurement and analytics function, Bersin by Deloitte, October 2013, www.bersin.com/library.

123 Global Human Capital Trends 2014, Engaging the 21st-century workforce, A report by Deloitte Consulting LLP and Bersin by Deloitte, 117-119

124 Global Human Capital Trends 2014, Engaging the 21st-century workforce , A report by Deloitte Consulting LLP and Bersin by Deloitte, 117-119

125 Global Human Capital Trends 2015, Leading in the new world of work, 71

huge progress in 2015 comparing to 2014 in HR analytics.¹²⁶ The following figure 2.2 summarizes factors that had a major impact on the growth of HR analytics and somehow hindered the progress of it throughout 2014 to 2015 in a global context.

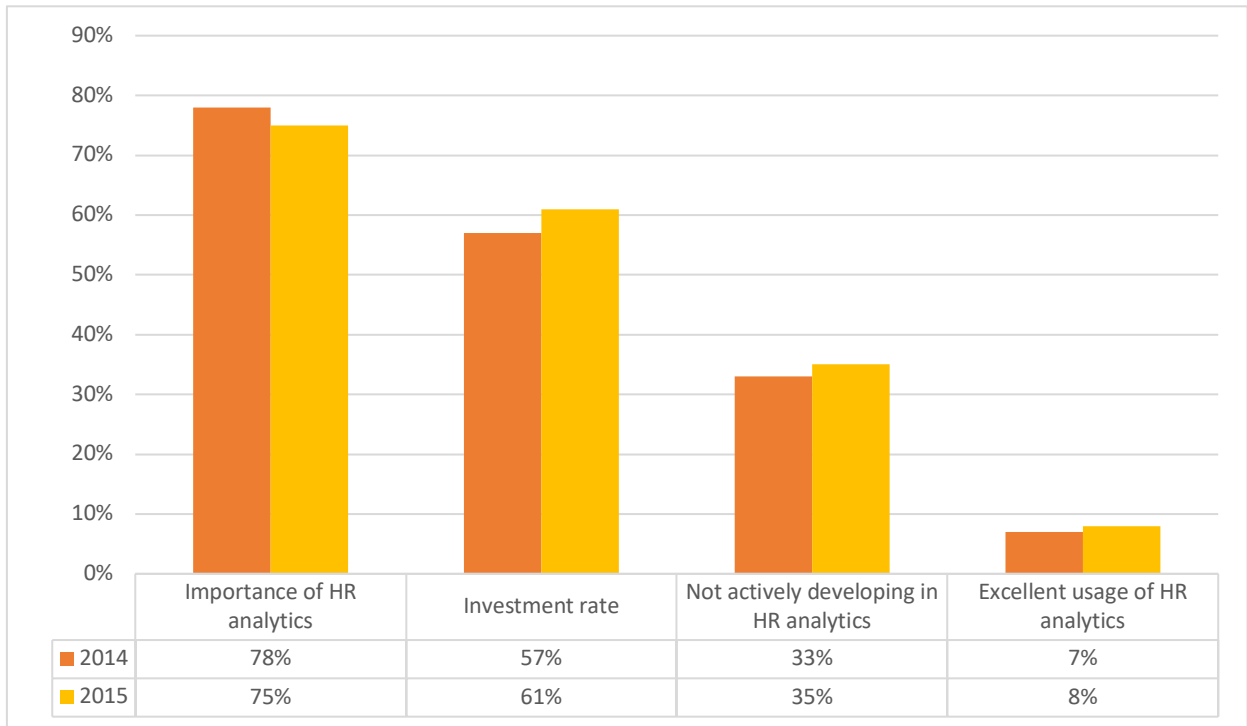


Figure 2.2 Outlook on factors influenced the progress of Human Resources Analytics during the years 2014-15 (percentage of businesses) *

* Source: Figure made by the author based on Global Human Capital Trends created by Deloitte in 2014-15^{127/128}

Despite of neutral progress of HR analytics during the previous years, 2016 started strengthen its position around the globe and had a major impact on the secondary data collected. Organizational design became the most demanded trend in 2016 by transforming structures of organizations to teams-oriented. However, HR analytics was still in top ten trends as it was mentioned before in 2014. There were advances of organizations perceiving HR analytics as an important tool to pay attention, it has risen to 77 percent that is a little bit more. However, this result was significant due to the fact that the percentage of importance of HR analytics dropped significantly during 2015. Good news is that organizations changed the direction of implementing HR analytics in a way of mixing diverse teams and attempting to play strategic role as well. In 2016, around 50 percent, that means half of organizations globally, reported that implemented HR programs had an impact on their businesses that is approximately to ten

126 Global Human Capital Trends 2015, Leading in the new world of work, 2-13

127 Global Human Capital Trends 2014, Engaging the 21st-century workforce , A report by Deloitte Consulting LLP and Bersin by Deloitte, 117

128 Global Human Capital Trends 2015, Leading in the new world of work, 105

percent more than in 2015. Additionally, 44 percent of these organizations utilized HR analytics tools for forecasting business performance which had a dramatic rise comparing to 2015. The main trend that occurred in HR analytics in 2016 is that organizations began to use external data in their analysis to forecast future trends in diverse fields of Human resources.¹²⁹

HR analytics gave a progressive outcome in 2016 in many business areas. Organizations realized that they are able to control and analyze performance and recruiting. For example, insurance companies can indicate with HR analytics which requirements for a position are no longer needed according to top sales people who are performing better than who had these requirements, but low level of performance. Advanced technology companies developed a model that use predictive analytics to find out which candidates for a future position can have a danger of being “toxic employees” and have a capability to indicate and reduce the amount of them. This model also saves time of HR practitioners during the interviews. With HR analytics, organizations enhanced their productivity by analyzing the time of employees spent on specific tasks, for comparisons of productivity levels of employees and to be prepared for the absences by predicting models. As the high-performing employees are valuable these days, some organizations are using retention by analyzing and predicting when there is a threat that an employee will leave a position. Moreover, HR analytics is used to discover and analyze risks of inappropriate behavior of an employee. Even culture of an organization can be transformed by HR analytics which can be available by analyzing the external sources in the market about specific company.¹³⁰ Due to the rapid improvements and increasing competitive advantage, approximately 40 percent of organizations plan or already have done transformation of their HR systems to HR analytics.¹³¹ The lack of skills is becoming a period of transition due to the fact that there is a steady rise of HR analytics professionals.¹³² However, HR analytics still has a long road to develop, because some organizations are still weak implementing analytical tools.

The following Figure 2.3 was made by the author according to the data presented by Deloitte¹³³ and summarizes factors that had a major impact on the growth of HR analytics throughout 2015 to 2016 in a global context.

129 Global Human Capital Trends 2016, The new organization: Different by design, 8

130 Global Human Capital Trends 2016, The new organization: Different by design, 88-91

131 Katherine Jones, The buyer's guide to select- ing HCM Software, Bersin by Deloitte, July 17, 2014, <http://bersinone.bersin.com/resources/research/?docid=17733>

132 Josh Bersin, “The geeks arrive in HR: People an- alytics is here,” *Forbes*, February 1, 2015, <http://www.forbes.com/sites/joshbersin/2015/02/01/geeks-arrive-in-hr-people-analytics-is- here/#542b6d707db3>

133 Global Human Capital Trends 2016, The new organization: Different by design, 8

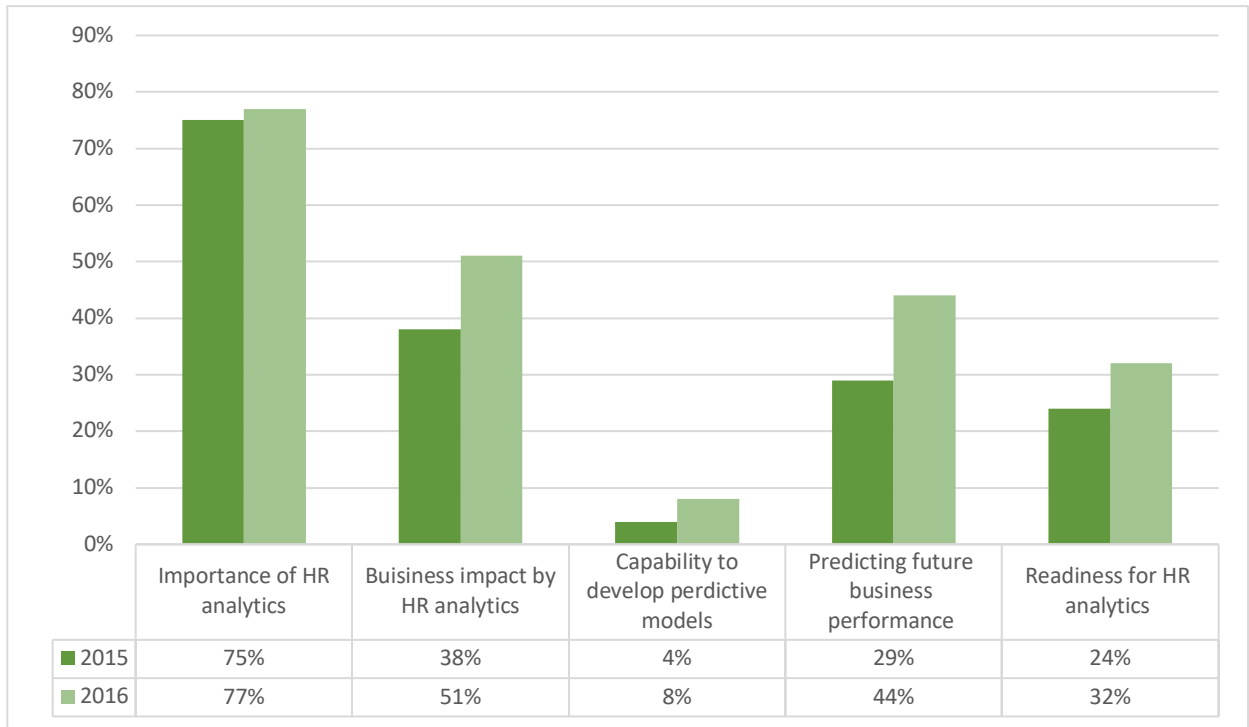


Figure 2.3 Outlook on factors influenced the progress of Human Resources Analytics during the years 2015-16 (percentage of businesses) *

* Source: Figure made by the author based on Global Human Capital Trends created by Deloitte in 2015-16 ^{134/135}

It can be clearly seen that the year 2016 had a dramatic progress in a way of developing predictive models which has increased twice and impacted the business performance by fifteen percent more than the previous year. Importance of HR analytics slightly changed, however, the readiness for HR analytics significantly progressed to 32 %. Moreover, 51 percent organizations reported that HR analytics began to play a vital part in a business impact. Doubtless, by these results, it can be said that HR analytics has started a fierce fight for a place under the sun.

Previous years were full of investment in HR analytics worldwide and finally it started to be more profitably pursued in 2017. HR analytics focuses not only in HR, but already is perceived as a business function in organizations.¹³⁶

134 Global Human Capital Trends 2015, Leading in the new world of work, 105

135 Global Human Capital Trends 2016, The new organization: Different by design, 88-91

136 Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 98

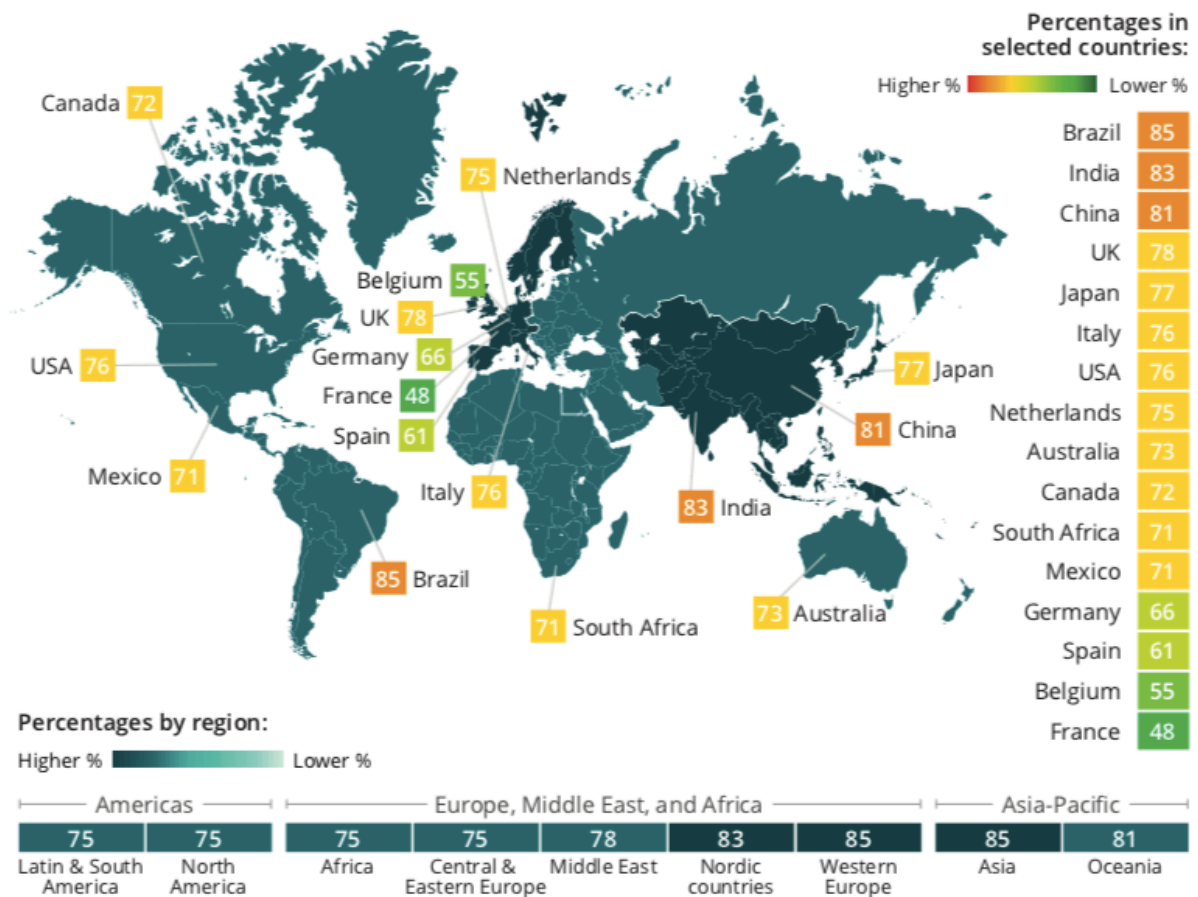


Figure 2.4 Percentage of respondents rating HR analytics trend “important” or “very important” in 2017¹³⁷

In the Figure 2.4¹³⁸ above it can be seen the global perspective of HR analytics by the country in 2017. Top 3 of countries as Brazil, India and China rated HR analytics as highly important in their organizations, while Central & Eastern Europe countries had lower percentage of the importance in HR analytics, however, Nordic countries with Western Europe still rated this trend very positively. Nevertheless, the data quality in HR analytics struggles challenges, thus organizations need to keep the data in an appropriate way implementing privacy and other related policies.¹³⁹ In 2017, there were several shifts in direction of HR analytics and the main one was that HR analytics focuses not only on employees, but on other business functions as well.

As the Nordic countries in Europe rated that HR analytics is highly important, the author decided to have a look on the situation in Finland, Norway, Sweden, Iceland and Denmark. The following figure from Nordic HR study 2017¹⁴⁰ represents current trends and its relevance in the next few years.

137 Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 98

138 Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 98

139 Rewriting the rules for the digital age, 2017 Deloitte Global Human Capital Trends, 100-103

140 Nordic HR Study 2017, HR’s view on future organizational challenges and opportunities, 11

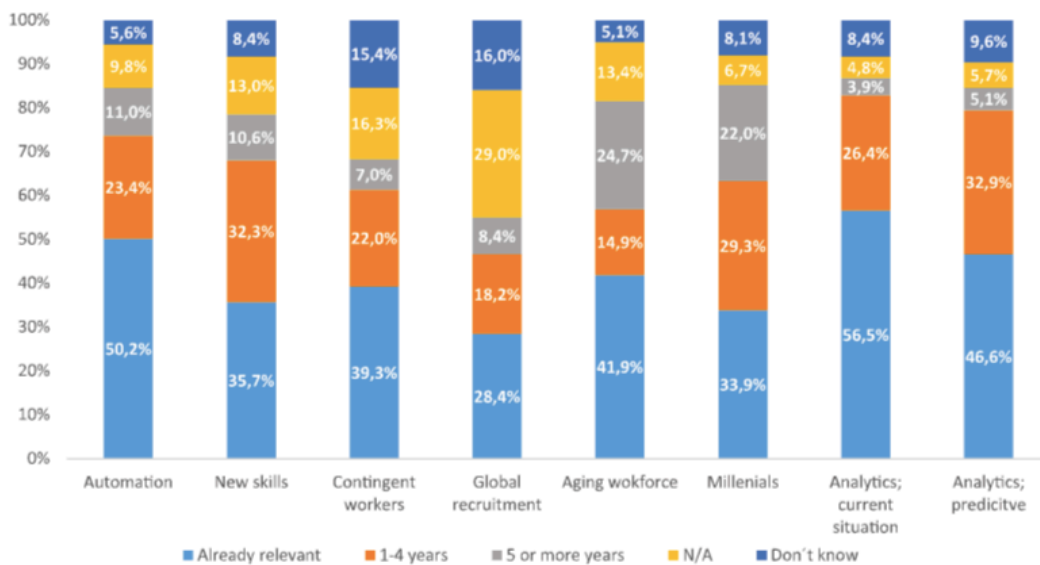
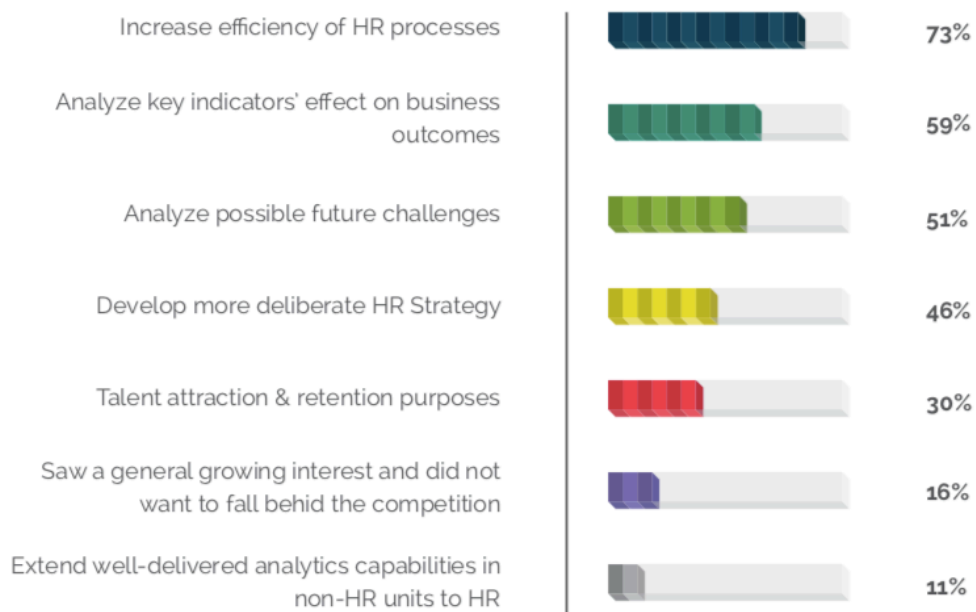


Figure 2.5 Trends relevance in Nordic countries in the next years starting from 2017 (percentage of businesses)¹⁴¹

As the figure 2.5 above shows, organizations in Nordic countries reported that HR analytics trend is already relevant with 56,5 percent and predictive analytics slightly less. In future 1-4 years, it is reported that this trend will be relevant still. That's good news from European perspective.

There are several reasons why European organizations adopt HR analytics. The following figure presented by Workforce Analytics Summit 2015¹⁴² describes the main reasons of HR analytics adoption.



141 Nordic HR Study 2017, HR's view on future organizational challenges and opportunities, 11

142 The State of Workforce Analytics in Europe 2015; Authors: Iris Kassim, Mihaly Nagy; Research underwriter IBM Smarter Workforce, 7

Figure 2.6 Reasons to adopt HR analytics in European organizations (percentage of businesses)¹⁴³

73 percent of organizations reported that HR analytics first of all helps to increase productivity of HR processes and is a main driver to implement this tool in HR. In addition, around 50 percent of organizations rated usage of predictive analytics to indicate future challenges and to transform their businesses more focused on HR strategy. Talent acquisition and retention don't stand behind as well and some organizations take advantage from analytical tools to do such analysis. However, some organizations adopted HR analytics due to the general interest and not lagging behind of all competitors.

The adoption of HR analytics requires large investments and in 2015 European organizations reported their future plans related to HR analytics.¹⁴⁴ The Figure 7 gives the outlook that describes organizations' plans in investing to HR analytics. Two main controversial indicators that have almost similar percentages is that investment will remain the same or will increase steadily. Main focus of investments is to enhance and develop skills and systems.

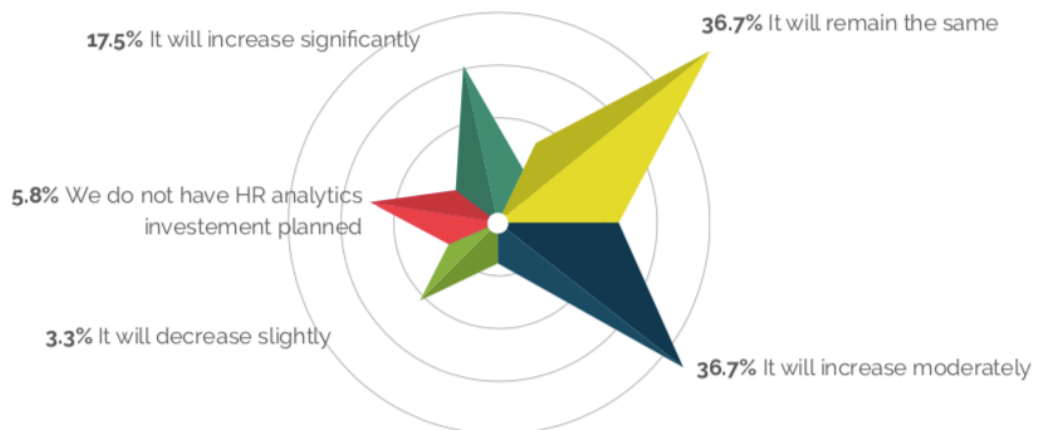


Figure 2.7 European investment plan 2015 in HR analytics (percentage of businesses)¹⁴⁵

In addition, the budget allocated for HR analytics adoption is separated similarly to the Figure 2.7. The investment in HR analytics, represented in Figure 2.8, vary from no investment at all to 1 million Euro in European organizations. More concretely, majority of organizations (42 percent) invested in HR analytics less than 50,000 Euro or 32 percent of them haven't allocated budget for analytics at all.

143 The State of Workforce Analytics in Europe 2015; Authors: Iris Kassim, Mihaly Nagy; Research underwriter IBM Smarter Workforce, 7

144 The State of Workforce Analytics in Europe; Authors: Iris Kassim, Mihaly Nagy; Research underwriter IBM Smarter Workforce, 9

145 The State of Workforce Analytics in Europe; Authors: Iris Kassim, Mihaly Nagy; Research underwriter IBM Smarter Workforce, 10

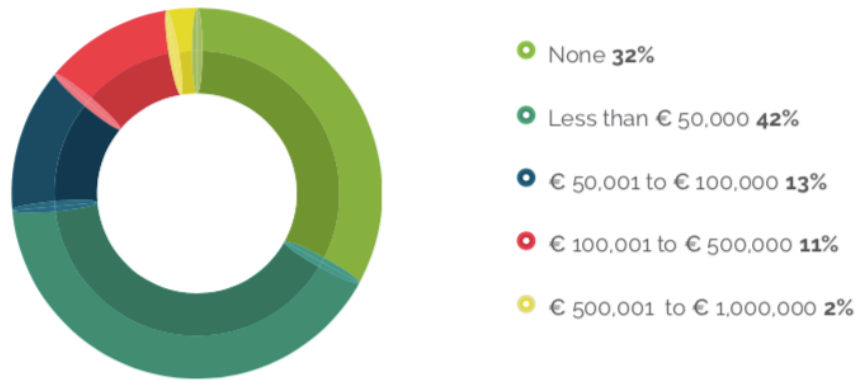


Figure 2.8 Budget allocated in 2017 for HR analytics adoption (percentage of businesses)¹⁴⁶

However, the situation in Middle East is not the same, because organizations are relatively young and have grown dramatically in the last 10-15 years. Due to this, organizations are also open to new tools and strive to keep pace with new trends. As it was shown in the Figure 4, Middle East rated HR analytics trend important for 78 percent in 2017. Additionally, there is a significant difference in HR analytics if organizations are international. The Figure 2.9 focuses on the investment plan in Middle East.¹⁴⁷

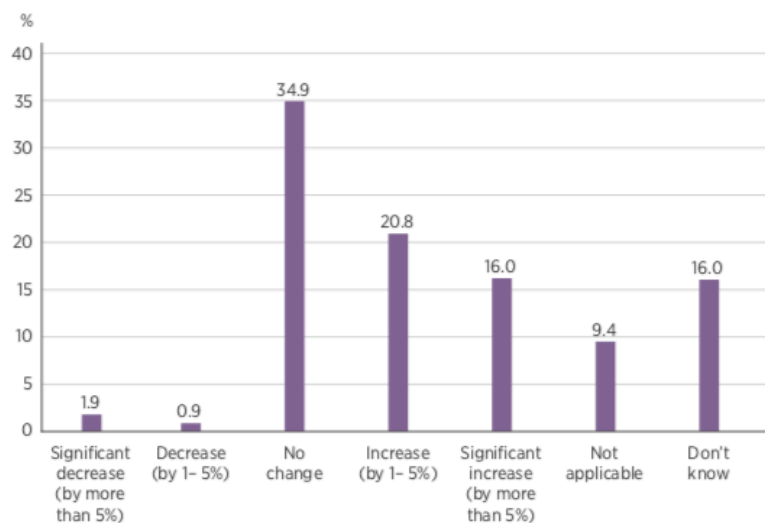


Figure 2.9 Middle East investment plan 2015 in HR analytics (percentage of businesses)¹⁴⁸

As it is seen from the Figure 2.9, investment in HR analytics development is going to increase or stay stable. One of the large percentage as 34,9 percent expect no change in this field, however, summing up there is around 36,8 percent is going to increase or significantly increase investments by 5 percent or more in HR analytics. Nevertheless, organizations move

146 The State of Workforce Analytics in Europe; Authors: Iris Kassim, Mihaly Nagy; Research underwriter IBM Smarter Workforce, 10

147 CIPD, Research report April 2015, Evolution of HR analytics: A Middle East perspective, 13-14

148 CIPD, Research report April 2015, Evolution of HR analytics: A Middle East perspective, 13-14

slowly in filling the capability gaps. Emerging trend as HR analytics have created many challenges in Middle East related to processes, reporting functions and training.

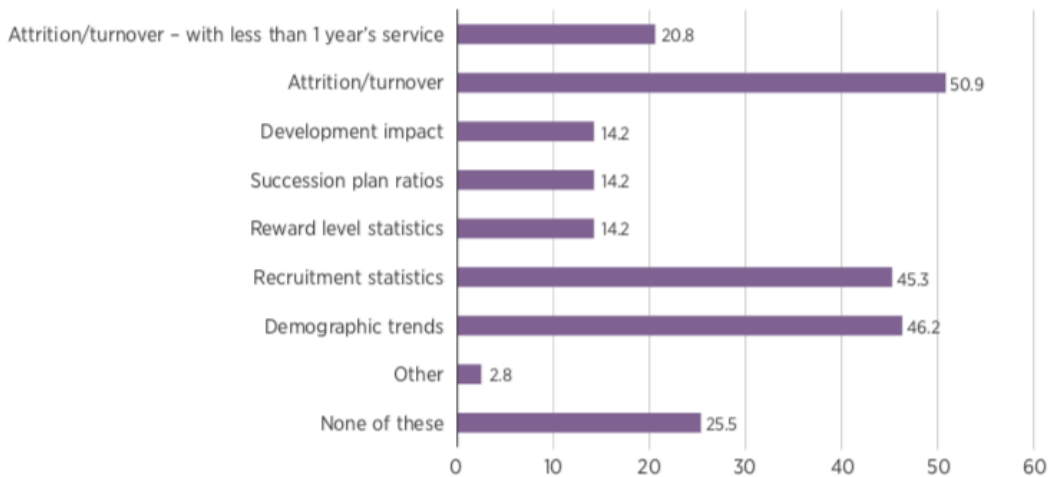
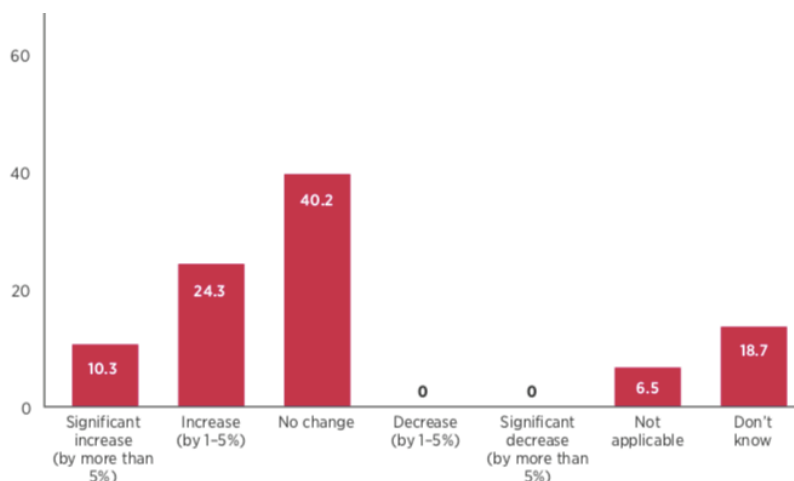


Figure 2.10 Popular HR metrics used in Middle East (percentage of businesses)¹⁴⁹

Despite what was written before, rapid growth in Middle East create opportunities for organizations to adopt HR analytics. There are several metrics used in Middle East organizations adopting HR analytics represented in the Figure 2.10.¹⁵⁰ Thus, most popular and frequently used metrics is attrition, turnover and recruitment analysis. That's a key indicator to show that Middle East is not lagging behind the rest of the world and enhances its HR analytics.

The situation by importance of HR analytics in Asian countries was rated on the highest level as 85 percent. The Figure 2.11¹⁵¹ focuses on the investment plan in Hong Kong, Singapore and Malaysia.



149 CIPD, Research report April 2015, Evolution of HR analytics: A Middle East perspective, 17

150 CIPD, Research report April 2015, Evolution of HR analytics: A Middle East perspective, 17

151 CIPD, Research report September 2015, Evolution of HR analytics: Perspectives from Singapore, Hong Kong and Malaysia, 16

Figure 2.11 Asia investment plan 2015 in HR analytics (percentage of businesses)¹⁵²

As it is seen from the Figure 2.11, investment in HR analytics development is going to increase as was rated by 24,3 percent of organizations. However, majority of organizations (40,2 percent) plan no change in investment. Last but not least, organizations have no decrease in investment, that is a very positive indicator.

To conclude, HR analytics is gaining speed and stood in 2017 in top ten trends in a global context. World became technologically savvy that enabled employees all over the globe be unite and mobile for the human capital market. Information transparency almost of any organization can be known through the Internet, giving the possibility for people to discover about it before sending a resume. The war of and for talents became a buzzword in a global market. New ambitious generation differs of the previous one and demands larger opportunities and growth in their career path. Throughout 2014 to 2017, HR analytics made a major shift and gained popularity in organizations. Additionally, previous years were full of investment in HR analytics worldwide and finally it started to be more profitably pursued in 2017. Doubtless, by the results provided above, it can be said that HR analytics has started a fierce fight for a place under the sun.

¹⁵² CIPD, Research report September 2015, Evolution of HR *analytics*: Perspectives from Singapore, Hong Kong and Malaysia, 16

3. EMPIRICAL RESEARCH ON EUROPEAN ORGANIZATIONS MATURITY IN HUMAN RESOURCES ANALYTICS

3.1 Methodology

The purpose of research aims at providing analysis of the European organization's maturity in HR analytics. The current situation of HR analytics is not yet developed in all organizations and is still slow in adopting due to different challenges. The author has chosen an explanatory approach for the empirical research by using a qualitative method. The reason of choosing explanatory approach is the intention of the author to discover insights to HR analytics that has not been covered fully. Qualitative research was chosen by the author, due to the fact that quantitative data is complicated to reach and conduct in HR analytics because it doesn't match with privacy regulations stated by the government. Therefore, the main advantage of implementing qualitative research in this paper is that this type of research is a good method to receive needed data. In this study, non-probability sampling method and type of convenience sampling was implemented, because this technique is applicable in a way that interviewees were chosen due to their approachability and the research cannot be generalized. The main disadvantage of this technique is that all HR practitioners in Europe were not covered and the research is not able to be related to the whole Europe's maturity in HR analytics. The author arranged four interviews with HR practitioners from Europe with the average experience 3-5 years in large and mid-sized enterprises operating in outsourcing services. Interviews with HR practitioners were made through social networks. The interviewees and organizations are represented in Appendix 1, however, to ensure anonymity of interviewees, this is not shown in the results section and this was done in order to equalize the data collected.

Data collection and analysis

Data collection consists of detailed semi-structured interviews in order to receive necessary data. The HR practitioners were from similar organizations who had basic or advanced knowledge of HR analytics. Semi-structured interviews were helpful in order to accomplish this explanatory study and due to the fact that this field is still relatively new, it was useful to use certainly this type of interview. These interviews consisted of questions about the common perception and understanding of HR analytics idea and model, including the need into such type of analysis, tools, or either enhancing existing use of HR analytics in their organizations and their outlook for future development of HR analytics. All interviews were managed by social networking, Face-time, audio calls and the author during these discussions has taken notes and afterward ensured the validity of the conversations. In addition, the main difficulty of conducted semi-structured interviews was its time consuming and due to the in-

depth discussions, the interviews were not made from the first shot or not discussed fully. After the interviews have taken place, received information of qualitative data was converted into the structured analysis of the results. The author was attentive in order to ask precise questions and control if the answer is changing the direction or not. Research questions (Appendix 2) that were asked in the interviews were the vital part of data collection.

A complicated part of qualitative research is unstructured data that was analyzed in large amounts. It was a challenge for the author to extract meaningful data from answers. As it was mentioned before, the interviews were written down during the conversation and afterward overview of collected data took place. The answers that were received have been sent back to the interviewee to ensure that everything is in order and not missed or misspelled. To analyze the interview data, the author decided that the best approach is cross-case analysis. This approach was suitable due to the fact that analysis was conducted more than once. By this, the author means, that the aim of the analysis was to analyze each answer separately and then all the answers to the same question were compared and put into “Results” chapter.

Research limitations

There are several research limitations that affected the quantity and quality of the study. Main limitation lies in the fact that interviewed HR practitioners were not representatives of the whole Europe. By this, the research that was conducted cannot be responsible that every organization has the same experience and knowledge in HR analytics as HR practitioners who has participated in the research. Following research limitation is related to the other HR practitioners who have diverse information and knowledge to include in addition in order to bring new insights from their own perspective. One more limitation was the confidentiality of the internal information that was not available to be shared by the interviewee, due to this fact, questions were more general and not specialized exactly in one organization or field. To conclude, a major limitation was time that was not enough to gather more data.

3.2 Results on the perception of Human Resources Analytics of interviewees in organizations

In this chapter, the results from the interviews are represented in order to follow the main interest of the research.

“Are you familiar with the HR analytics in your organization? Please, provide me with your general understanding of it.”

Results of this research question have concluded that HR practitioners are familiar with the term of HR analytics. Nevertheless, there were differences in an experience and knowledge about this sphere from the interviewees. Some of them were aware not only about theoretical part of HR analytics, but also a practical one.

“I’m familiar with lots of terms related to HR, however, HR analytics is complex and complicated for myself. I have basic understanding about historical data, predicting by analytics, even though haven’t practiced this feature yet. I assume that if an organization uses HR analytics, it speaks about its maturity level. From my point of view, HR analytics helps to calculate the turnover rate, what will be with it after some time and what to do to decrease its level” (Interviewee 3)

“My personal understanding of HR analytics is that with HR analytics tool you can manage so many things. It is HR and analytics combined. With this explosive mixture, organization can get a deeper understanding of its human capital, especially it refers to large organizations, where is a large number of workforce, thus a lot of data. For me HR analytics is something still not researched very well, but exciting.” (Interviewee 1)

“Well, HR analytics is something new and fresh in Human Resources arena. It is focused both on a past and future clinging the present together by reporting. Analytics by itself get the answers from large amounts of data, so I think, it is all about enhancing the company’s workforce, as well as external and internal environment. I know that with HR analytics you can do lots of analysis if you certainly know how, when and where to use it. Before making any type of analysis, it should be checked that there is a precise goal/problem which should be achieved/solved.” (Interviewee 2)

“I can say that for me HR analytics is completely different field of HR, for example it can deal even with predicting whether an employee will quit a job in a near future or not. So, you have all the cards in your hand to prevent it, because it is a good employee and you don’t want to lose him/her. But, anyways, it is hard to manage, because for my point of view, it is not discovered as fully as it can be.” (Interviewee 4)

“What do you think about HR analytics in organizations nowadays? Does it have any potential to grow? Is it necessary to have this type of tool?”

The answers were very emotional and every interviewee answered in an excited way.

“We are living in 21st century and for sure HR must keep up this pace and follow new trends!” (Interviewee 1)

As three of four interviewees were from large organizations, suggested the HR department should follow the trends not only within the country, but also outside of it. However, other interviewee, as being from the mid-sized organization, shared his hesitations about HR

analytics, because the term is not deeply discovered. In spite of this, all interviewees express the consent in the need for adopting HR analytics in organizations, because the main obstacle is the scarce of HR analytics competences, as it was mentioned before as challenges in literature review. Interviewee 3 shared that her choice fell into HR, because it was more about social sciences but not into statistics and analytics. However, as it is a new field with huge career opportunities, she won't mind to expand her knowledge. As the discussions about the need of HR analytics continued, the author analyzed the challenges occurring from the answers of interviewees.

One of the challenges refers to a strategical side of HR. In order if an analytical side of HR will develop and enhance, it can take a place of the main roles in strategic decisions of an organization. Interviewee 1 and 4 responded as follows about these challenges.

“I don't think that we need to prove that we are HR and we play a strategic role in a particular organization, because we deal with things that others don't. But anyway, sometimes I'm coming around to an opinion that we still need to be more than we are, develop somehow, because we have so much information with which we can change some imperfections and then with HR analytics we can be a solid strategic partner of an organization.” (Interviewee 1)

“From my observations, it is important to say that we as HR are kind of apart from the organization overall, I mean, we play a crucial role but we network rarely, we should do it much more. I claim that HR should be diverse, with different solutions, not the same all the time long.” (Interviewee 4)

Nevertheless, many men- many minds, because other interviewees had different opinion about this issue. The opinions were contradictory about the successful adoption of HR analytics and HR department being a strategic partner of an organization.

“HR has tough time now in a way that there are huge expenses chasing and proving its worthiness, but old methods don't work anymore. I cannot be sure that HR will become a main part of strategical lever arm of an organization, because implementing HR analytics is expensive and very complicated to find HR employees who would be interested and skilled in rebuilding HR to the analytical way of thinking. However, HR will not disappear in the near future, but without no action in large companies, there will be no growth.” (Interviewee 2)

“Of course, there is a possibility to adopt HR analytics elsewhere in Europe. HR is not perceived as a strong strategic partner of an organization, even if it will have HR analytics, is it worthwhile to invest? I mean, that HR analytics as a single tool does not bring profit and itself is complicated to achieve a ratio of a strategic partner. It is too much expenses without concrete warranty.” (Interviewee 3)

The interviewees agreed anyhow about the significant need in HR analytics in organizations' successful future. Nevertheless, classic HRM is described in literature review as more like a social science based on intuitional decisions and discussions with HR practitioners brought to the opinion that HR should move from intuitive way of decision-making to scientific based on mathematics.

“The future is now and I am not sure about my competence comparing to those who have a degree in analytics. So, my goal is to sharpen my skills in order to know next month's forecast or a year and give to a boss fair, fact-based reporting of it. That's why my opinion is that HR will be forced to grow in that way to be more accurate.” (Interviewee 3)

By observations of the author, it can be said that, other interviewees concluded that intuitive approach and science should have a right balance due to the fact that HR is anyway based on an intuitive thinking mindset. Moreover, interviewees argue that science should be implemented in HR to prove if the intuitive decision or statement is false.

“In my opinion, intuition is important as analytics in a way that it is an essential pillar in assumptions that should be done. I assume that on intuition HR cannot go far and it cannot affect decisions fully. Analytics helps in that case to make rational decisions. Both, analytics and intuition, is a great combination.” (Interviewee 1)

Interviewees also pointed out that organizations should raise the value and importance of HR analytics, because the lack of knowledge in this sphere is an obstacle for analytics to shift from intuitive to evidence based decision-making.

“One of the biggest challenges for HR analytics is to increase importance of it in Human Resources. Sometimes employees are not even aware about this tool, however, when everyone will, then HR analytics will have its great prosperity period elsewhere. It will encourage HR practitioner to expand their knowledge about new HR.” (Interviewee 2)

“What are the frequent tools and metrics used in HR analytics meantime?”

First and foremost, interviewees determined cases for a need to use HR analytics tools. By the answers of interviewees, the author detected several trends of using HR analytics in organizations as: recruitment, retention, to investigate a specific need for trainings, analysis concerned on cost and transforming organizations by predictive analytics for future tendencies.

“Most of all, we interact with retention techniques, recruitment processes, calculating a turn-over of an organization that is a hot topic now, observe how much time and price was spent for training an individual.” (Interviewee 2)

The results of this question show that interviewees in their organization are familiar with the tools for HR analytics and use it more or less frequently, but balance it with the traditional HRM and HRIS. Moreover, interviewees are working more in HR analytics with descriptive

and perspective analytics rather than with predictive one. Nevertheless, they strive to make steps towards these changes by forecasting future trends.

“In HR now we use it as much as we can benefit from. The only case when it is complex in usage is forecasting future events, because there are a lot of circumstances as data worthiness and privacy. It is vital to understand what exactly an organization wants to know in future and this can be a difficult part, because of its approachability.” (Interviewee 1)

The answer of Interviewee 1 shows that there is a beneficial usage in making reports in HR analytics. This can prove the digitalization of HRM in a broader context where an organization is concerned on decreasing a cost and increasing the efficiency and revenue. As previous answer touched a privacy topic, it should be noted that other interviewees also pointed out on Equal Employment Opportunity (EEO) regulations. Thus, it can be said that limitation of HR analytics as diverse regulations can hinder it to grow to what it can be.

“HR department employs people that is a huge part of any organization. we have information about any employee and to process it in HR analytics can be in particular cases not following the rules and regulations set by the government.” (Interviewee 3)

Interviewees shared that their organizations combine HRIS with analytics or fully shifted to HR analytics. This means, that organizations asked in European Union, already started to operate with HR analytics or balances between traditional system and analytical one.

“What are the obstacles impeding the implementation and increasing usefulness of HR analytics elsewhere in Europe?”

By this question, author wanted to discover what organizations do to increase the usefulness of HR analytics and which obstacles are encountered in this process. Interviewees expressed positive emotions about integrating HR analytics overall to HRM operations, however, as it was covered before, there are several circumstances hindering it to become one of the essential tools as uncertainty between classic HRM and evidence based one and privacy regulations. Again, interviewees allocated challenges in an answer to this question.

“Human Resources is too classic in nowadays world and it is complicated to change the mindset of all HR employees by turning their attention to metrics. I tell it due to the fact that in many old school universities, students graduate with the knowledge of legal studies, social sciences and of course traditional HRM, which is not enough nowadays. And then graduated students are not capable to cope with HR analytics. I know organizations that struggle to find skilled professionals due to expenses and lack of necessary human capital. Some of them tried to adopt HR analytics, but failed because they were not ready to handle and organize this.” (Interviewee 4)

Nevertheless, interviewees expressed their consent in importance and usefulness in integrating HR analytics in any way in order to influence decisions of an organization despite the size.

“I concede that when I talk about HR analytics all my colleges get involved and interested, doesn't it mean that HR analytics is useful tool that is vital in any organization? Of course, it is not easy though, but possible, even with circumstances. It depends on an organizational culture and how they cope with challenges.” (Interviewee 3)

As it can be observed from the previous answers above that there is a lack of competences in HR analytics and is considered as the main obstacle.

“My opinion is that usually people choose HR to avoid statistical and trend analysis. They are more humanitarian people interested in labor law. Thus, you should spend additional time and effort to get into analytics. Without motivation to do so, there is a gap in between successful integration of HR analytics.” (Interviewee 1)

Also, HR department can recruit professionals not in the particular department as HR, but also outside of it as IT specialists and analysts in order to strengthen HR analytics. However, there is an argument arising from an interviewee.

“Analysts have analytical mindset, they are not HRs. Of course, it is possible to train HR analytics, then HR overall, but, see, he/she should have analytical mindset first of all.” (Interviewee 2)

To sum up, the author concludes that HR analytics is not integrated in every organization due to the lack of necessary competences.

“Despite that HR analytics is facing challenges, what do you expect from it in the future?”

Throughout the literature review and the answers that were presented above, it is clear that HR analytics has repeated challenges. HR analytics will achieve future goals in order when organizations, by opinions of interviewees, should expand technological sector in an accelerating way. All of the interviewees concluded that their organizations determine to invest more in HR analytics and expand its features, thus it represents willingness of organizations to grow. One of the answers was interesting from the author's perspective.

“If organizations will use HR analytics only to enhance HR, then there is no need for that. I mean, why to adopt such an expensive tool just for HR goals without no benefit for strategical decisions of organizations overall? Organizations should think about their strategy and if HR analytics will help, then yes, they need it.” (Interviewee 2)

The analysis conducted by the interviews split into four main results summed up. Organizations interviewed in Europe are familiar with tools of HR analytics, but more with

descriptive and prescriptive than predictive analytics. Additionally, it can be noted that organizations are more or less mature in order to adopt HR analytics on a high level, however, have hesitations about challenges facing up. The author doesn't take the responsibility for less developed organizations, due to the fact that one interviewee mentioned about bad experiences in adopting HR analytics in some European organizations. Thus, challenges listed in results as well as in literature review have similarities such as e.g. lack of skilled workforce and intuition based decision-making rather than evidence based. Moreover, according to the results, the author observed a desire of HR professionals to become a strategic business partner in decision-making processes. It was clearly seen from interviewees answers that they are craving to expand HR analytics in a broader context.

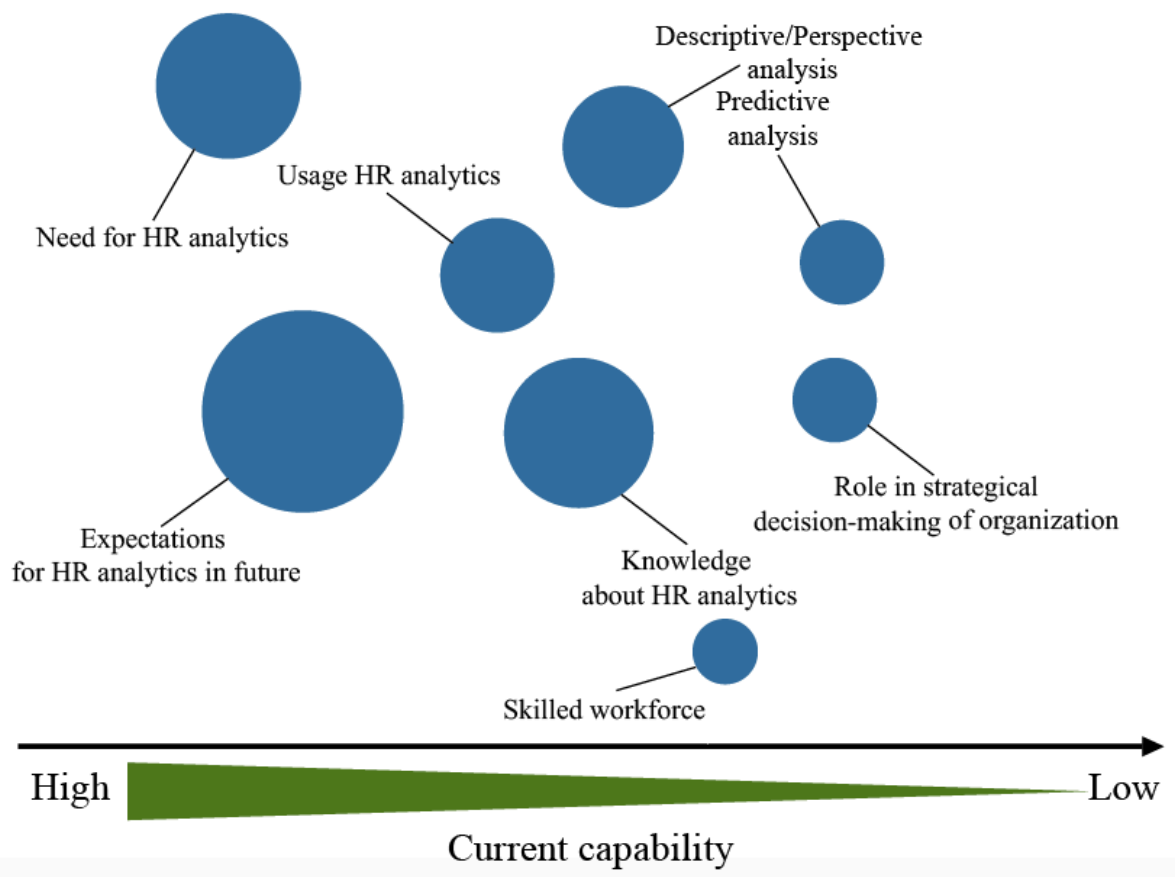


Figure 3.1 The level of readiness of HR analytics by the results of interviewees in organizations

Figure above sums up the main conclusions of the results. The interviewees are familiar with HR analytics; however, knowledge is more theoretical than practical of mid-sized organizations rather than large ones. HR analytics usage is balanced with traditional HRM, but is in advanced level with usage descriptive and prescriptive analysis more than predictive one. The research showed that there is a significant need for HR analytics, nevertheless, HR practitioners are not sure about their role in strategical decision-making of the organization

overall. Last but not least, there is still lack of skilled professionals for HR analytics, anyway, the expectations for HR analytics are highly positive.

3.3 Discussions on the level of Human Resources Analytics in interviewed organizations and its resemblance to the literature

This section is for discussing and analyzing the results and compare with the literature. As the main ideas from the answers were indicated and were as follows:

- Interviewees are familiar with HR analytics in their workforce and has clear vision about it.
- Interviewees already use in their organizations HR analytics and encourage further investments to this emerging field.
- Interviewees determine that HR analytics is a useful and important tool in organizations.
- Adopting HR analytics causes many challenges, especially lack of needed skills.
- Expectations from HR analytics are big and promising from the interviewees perspective.

Author analyzed each idea separately. First and foremost, interviewees showed their knowledge about the main idea of HR analytics in their workforce. From the results of the first question, interviewees had clear and even advanced understanding of HR analytics. The answers of interviewees were somehow similar to each other with minor differences which can be compared with the definitions of HR analytics in literature review. According to Fitz-enz and Mattox, HR analytics is often used to measure turnover or attrition and the main reason for that is because this type of data is easy to get in the HR database and is comparably easy to analyze.¹⁵³ Nevertheless, there were differences in an experience and knowledge about this sphere from the interviewees. Some of them were aware not only about theoretical part of HR analytics, but also a practical one. However, interviewees didn't share anything concerned about the easiness of the HR analytics processes. According to Bassi, HR analytics varies from the very base of HR metrics and traditional HR to predictive HR to enhance the performance of workforce, decision-making processes by using different techniques and measuring human capital.¹⁵⁴ Interviewees expressed the opinion that their organizations move towards advanced tools in HR analytics and strive to balance between classic HRM. Good news was that interviewees are not only leaning on traditional HR and trying to enhance their capabilities.

¹⁵³ Fitz-enz, J. & Mattox, J. 2014. Wiley and SAS Business Series: Predictive Analytics for Human Resources. Wiley; Hoboken, New Jersey.

¹⁵⁴ Bassi, L. (2011). Raging Debates in HR Analytics. McBassi and Company. People and Strategy. 34 (2)

Additionally, it can be noted that one interviewee shared the opinion about the focus of HR analytics, and concluded that it should be concerned on an organization overall not only to HR department which was also noted by Ramussen and Ulrich as using analytical tools is often not focused on preferable business outcomes, but on tools and data which is preliminary.¹⁵⁵

“Why to adopt such an expensive tool just for HR goals without no benefit for strategical decisions of organizations overall? Organizations should think about their strategy and if HR analytics will help, then yes, they need it.” (Interviewee 2)

Several trends of HR analytics familiar to interviewees were found in organizations as: recruitment, retention, to investigate a specific need for trainings, analysis concerned on cost and transforming organizations by predictive analytics for future tendencies. Interviewees in their organization are familiar with the tools for HR analytics and use it relatively frequently, but balance it with the traditional HRM and HRIS. Moreover, interviewees are working more in HR analytics with descriptive and perspective analytics rather than with predictive one. Nevertheless, they strive to make steps towards these changes by forecasting future trends. It is clear, by analyzing literature review and data collected, descriptive analysis, that focuses on a past behavior and explores connectedness and differences between the various groups¹⁵⁶ and prescriptive analytics, that aims on ways of decision making and optimizing the workforce¹⁵⁷ are much more popular in usage than predictive analytics, that concentrates on a future leaning on the past and current data calculating probability and possible changes.¹⁵⁸ The answer of the Interviewee 1 stated that to reach useful and allowed for usage data is more complicated to get and this can hinder the active use of predictive analytics.

“The only case when it is complex in usage is forecasting future events, because there are a lot of circumstances as data worthiness and privacy. It is vital to understand what exactly an organization wants to know in future and this can be a difficult part, because of its approachability.” (Interviewee 1)

All in all, organizations where interviewees operate, already use analytical tools and applications, however, with diverse circumstances. In addition, it is vital to highlight that organizations interviewed are more into reporting the HR data, but not all of them, large sized organizations are focused on influencing evidence based decision-making of an organization. Moving forward, interviewees suggested to operate internationally in order to follow the upcoming and current trends. All interviewees expressed the consent in the need for adopting HR analytics in organizations. By agreement of interviewees about the significance need in HR

155 Rasmussen, T. & Ulrich, D. 2015. Learning from practice: how HR analytics avoids being a management fad. *Organizational Dynamics*. 54(2): 1-7.

156 Fitz-enz, J. 2010. *The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments*. Amacom Books: New York.

157 Fitz-enz, J. & Mattox, J. 2014. *Wiley and SAS Business Series: Predictive Analytics for Human Resources*. Wiley; Hoboken, New Jersey.

158 Fitz-enz, J. & Mattox, J. 2014. *Wiley and SAS Business Series: Predictive Analytics for Human Resources*. Wiley; Hoboken, New Jersey.

analytics, it was noted that classic HRM as more like a social science based on intuitional decisions and discussions with HR practitioners should move HR from intuitive way of decision-making to scientific based on mathematics. In literature review, McAfee and Brynjolfsson wrote about the challenge in adopting HR analytics roughly dependent on organizational culture that can vary from intuitional decision-making to rational and prudent approach for a specific problem or question.¹⁵⁹ Interviewees agreed on that intuitive approach and science should have a silver ring between each other due to the fact that HR is anyway based on an intuitive thinking mindset.

As author took notice from interviewees, there are different opinions coming to one challenge about strategical side of HR in organizational decision-making processes. Interviewee 1 had uncertainty about being a strategic partner of an organization, because HR is still in its somehow infancy role and should expand their position in organizations decisions.

“We still need to be more than we are, develop somehow, because we have so much information with which we can change some imperfections and then with HR analytics we can be a solid strategic partner of an organization.” (Interviewee 1)

From observations of Interviewee 4, HR plays a crucial role in organizations, however, HR should be more connected with other departments and be diverse in decision making. Nevertheless, other interviewees had different opinion about successful adoption of HR analytics and HR department being a strategic partner of an organization. Interviewee 3 argued that there is no warranty to become a strong strategic partner with HR analytics, but too much investment in it is guaranteed. In literature review, strategical point of HR was touched in a way that it should have a shift in a strategy, in order to gain competitive advantage with Big Data. It is important to note that every organization should choose the tools for analytics leaning on their demands and needs due to the fact that different organizations follow diverse strategies that need correct approaches.¹⁶⁰ By analyzing both sides, it can be concluded that organizations interviewed are still in their beginning of being a strategic partner in organizations decision-making processes and all of the interviewees do their best to have a voice in strategical decisions of organizations.

One the main challenges in adopting HR analytics was the scarce of competences, as it was mentioned in literature review by Watson that there is a lack of professionals in analytical fields and it is extremely hard to find ones and HR analysts should have not only knowledge how to extract and analyze the data, but also have strong communication skills.¹⁶¹ As

159 McAfee, A. & Brynjolfsson, E. 2012. Big data: the management revolution. Harvard Business Review. October 2012: 60-69.

160 Fitz-enz, J. 2010. The new HR Analytics: Predicting the economic Value of Your Company's Human Capital Investments. Amacom Books: New York.

161 Watson, H. 2011. Business analytics insight: hype or here to stay? Business Intelligence Journal. Student Edition 2015: 33-37.

Interviewee 3 shared that she has chosen to work in HR because it was more about social sciences but not into statistics and analytics. Interviewee 1 also agreed that HR is chosen by practitioners to keep away from statistical and trend analysis due to the fact that they are more humanitarian people interested in labor law. These statements correlate with the literature and stated that HR professionals have made a decision to be a part of HR career in order to avoid quantitative side of an organization.¹⁶² Interviewee 2 had an interesting opinion about recruiting professionals not in the particular department as HR, but also outside of it as IT specialists and analysts in order to strengthen HR analytics. It was stated that for HR analytics is vital to have analytical mindset first and train it in order to fit HR requirements. From literature review perspective, there is a similarity between the data collected due according to Levenson HR analytics can be organized by different ways and diverse analytic experts.¹⁶³ Additionally the argument of Interviewee 2 correlates with what was stated by Naasz that external analysts can handle HR analytics field, but cannot correspond with the broad scope of HR. Nevertheless, organizations usually lean towards third-party companies that are professionals in HR analytics field.¹⁶⁴ The third-party consultancy companies were argued by one interviewee in a way that these companies first of all focus on their profit rather than on organizations and have tiny possibility to give wrong directions/advices by taking a lot of money. Last but not least, Interviewee 3 added that there is a needed interest and involvement of HR professionals in order to expand HR analytics much faster is it was also mentioned in literature review by Ulrich & Dulebohn as the need in HR analytics progresses, the interest and connectedness with other departments matures.¹⁶⁵ To sum up, organizations interviewed are still in scarce of skilled workforce for HR analytics and consider it as a challenge which has solution by employing external analysts.

As it was mentioned earlier, expectations from HR analytics are big and promising from the interviewees perspective. HR analytics will achieve future goals in order when organizations, by opinions of interviewees, should expand and improve technological sector. All of the interviewees concluded that their organizations determine to invest more in HR analytics and expand its features, thus it represents willingness of organizations to grow. In conclusion, collected data correlates with the literature review, however, have arguments as well.

162 Ulrich, D. & Dulebohn, J. 2015. Are we there yet? What's next for HR? *Human Resource Management Review*. 25: 188-204

163 Levenson, A. 2005. Harnessing the power of HR analytics. *Strategic HR Review*. 4, 3: 28-31.

164 Naasz, K. 2015. Advances in "big data" and analytics can unlock insights and drive HR actions. *HR focus*. 92, 5: 1-4.

165 Ulrich, D. & Dulebohn, J. 2015. Are we there yet? What's next for HR? *Human Resource Management Review*. 25: 188-204

The author provides organizations with recommendations that are starting or already working with HR analytics. The following figure 3.2 gives an overview of given recommendations.

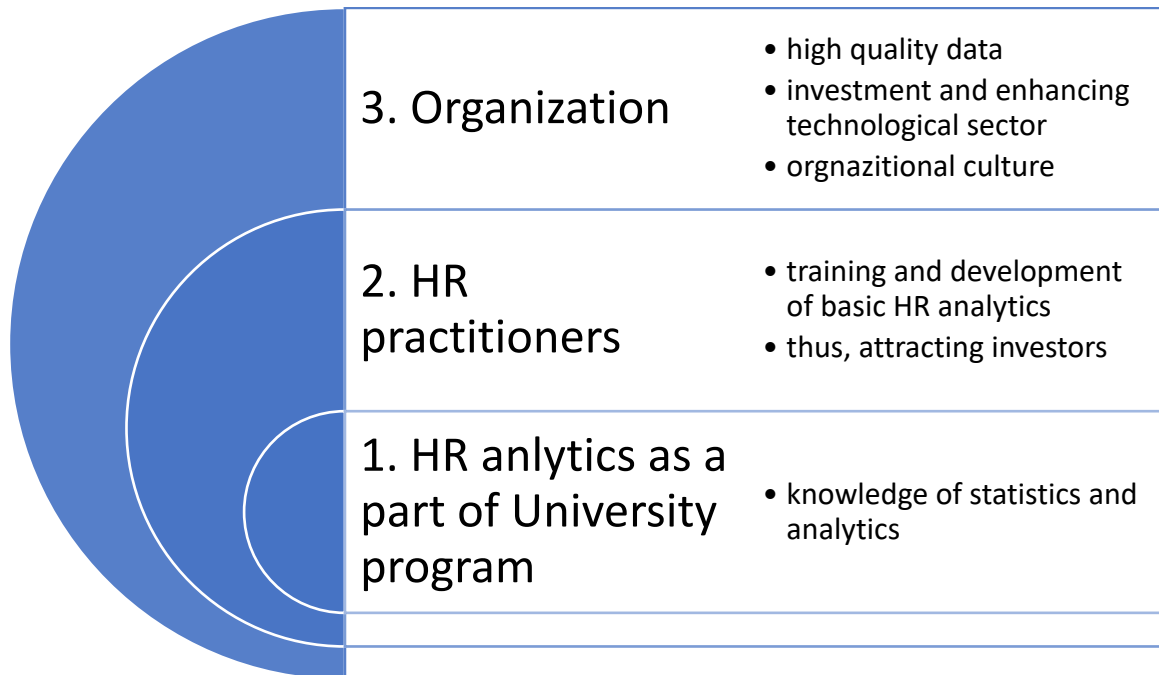


Figure 3.2 The author's model of recommendations for the research conducted

The recommendations are focused on organizations data quality that is vital to make operations with HR analytics. Development of HR analytics in trainings can be helpful and uncovering new competences of analytical mindset. The author suggests organizations to develop specific trainings or courses to give the overview of basic HR analytics to employees. This can be made in order to attract investors in a way that they will see the potential growth of HR analytics. However, the very base of successful implementing of HR analytics is to employ already skilled workforce, as it is a main challenge, these skills should be given in universities as a part of HR program. Thus, graduates will have basic knowledge about statistics and HR analytics and ready for emerging trends in their new workplace.

CONCLUSION AND RECOMMENDATIONS

Over the last decades, HRM had dramatic changes that have brought new functions and totally differs from the HRM in the beginning of the road. Thus, HRM concerns on the productive utilization of a workforce for accomplishing diverse goals and aims to be one of the main strategic business function. As the dramatic rise of technological sector, data-driven HR faces up diverse challenges due to the quality of data and hinders the evidence based decision-making processes. Big Data also became a new buzzword in HR, however, Big Data is large in an enormous way and is not possible to handle by the tools previously handled the data analysis. Nevertheless, if the organizations manage to adopt advanced specific tools and have capability to cope with them, there is a promising growth for their competitive advantage. To gain competitive advantage out of Big Data, strategic HRM should deal with transformation in a strategy. Strategic decision-making splits to managerial and operative processes with structured, semi-structured and unstructured data and plays a crucial role in HR. Afterward comes HR analytics that transforms people data into valuable analysis using different tools and has different challenges as for example scarce of skilled employees. Nevertheless, this field is relatively new and is not covered fully yet. Many challenges occur in adopting HR analytics as: huge amount of data that cannot be shared depending on a department; operations and reporting with the meaningful outcome; workforce in this field is complicated to find as it was mentioned before; organizational culture that influence adopting HR analytics and privacy of data.

HR analytics is gaining speed and stood in 2017 in top ten trends in a global context. World became technologically savvy that enabled employees all over the globe be unite and mobile for the human capital market. Information transparency almost of any organization can be known through the Internet, giving the possibility for people to discover about it before sending a resume. The war of and for talents became a buzzword in a global market. New ambitious generation differs of the previous one and demands larger opportunities and growth in their career path. Throughout 2014 to 2017, HR analytics made a major shift and gained popularity in organizations. Additionally, previous years were full of investment in HR analytics worldwide and finally it started to be more profitably pursued in 2017. Doubtless, by the results provided above, it can be said that HR analytics has started a fierce fight for a place under the sun.

The empirical research conducted that the interviewees are familiar with HR analytics; however, knowledge is more theoretical than practical of mid-sized organizations rather than large ones. HR analytics usage is balanced with traditional HRM but is in advanced level with usage descriptive and prescriptive analysis more than predictive one. The research showed that

there is a significant need for HR analytics, nevertheless, HR practitioners are not sure about their role in strategical decision-making of the organization overall. Last but not least, there is still lack of skilled professionals for HR analytics, anyway, the expectations for HR analytics are highly positive. As it was mentioned earlier, expectations from HR analytics are big and promising from the interviewees perspective.

Recommendations

The author made recommendations to organizations starting or already working with HR analytics. First of all, the recommendations are concerned on organizations as a whole. Organizations should focus on the quality of data that is vital to make operations with HR analytics. Additionally, development of HR analytics in trainings can be helpful and uncovering new competences of analytical mindset. It is vital to enhance technological sector and culture of an organization in order to successfully implement HR analytics and give the possibility for the entire workforce to grow. As workforce is an important lever arm of HR analytics and any other field, the following recommendation will be concentrated on HR practitioners. As the research and literature review showed that there is a lack of HR professionals skilled in HR analytics. The author suggests organizations to develop specific trainings or courses in order to give the overview of basic HR analytics to employees. This can be made in order to attract investors in a way that they will see the potential growth of HR analytics. Additionally, organization can offer specific lessons to enhance the competences of HR professionals who are operating in traditional HRIS. However, the very base of successful implementing of HR analytics is to employ already skilled workforce, as it is a main challenge, these skills should be given in academic institutions as a part of HR program. Thus, graduates will have basic knowledge about statistics and HR analytics and ready for emerging trends in their new workplace. The core of recommendations related to academic institutions are more complex and difficult to accomplish, nevertheless, it can be a turning point in skills challenge.

Limitations of the research

Due to the fact that research was made by using qualitative method, it does not represent all European organizations that could be more or less developed in HR analytics. Additionally, it was complicated to find related literature that would define HR analytics in an academic way and it was considered as an obstacle to investigate the term and field in depth. Moreover, the research was managed only with HR professionals and it was not enough due to the fact that there are different positions in particular organizations as line managers, IT specialists and others. The results of the research could've been different if the scope and diversity of

interviews were broader. The author agrees that the number of participated interviewees was not enough for sufficient and consistent research results. Trustworthiness of data collected is reliable, however, if the other practitioner was interviewed, the results could've been not the same. Other limitation was about time provided for the interview in order to receive full answers to some questions or they were shortly mentioned. In conclusion, conducted the research still has been accomplished and answered to the main questions about HR analytics in organizations.

Recommendations for further research

As the scope of the research was made by qualitative method and was not big, the author proposed recommendations for further research. HR analytics is an expanding field and offers great possibilities to make a broad research with sufficient results that represent deeper analysis. First and foremost, the author suggests to make large quantitative surveys in Europe to indicate the maturity level of diverse sized organizations for HR analytics. Additionally, it will be useful and efficient to conduct interviews with the analysts and IT specialist within an organization not related to Human Resources department to make comparisons and discover other insights. In order to achieve broader scope of the research, it's vital to pursue all aspects of any organizations, to discover new techniques or best practices used in HR analytics.

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APPENDICES

Appendix 1 Details about interviewees



Carla Bezzina- Human Resources Manager in Luqa (Malta), working in the company since May 2014.

Grigore Sala- Talent Acquisition Manager in Bucharest (Romania), working in the company since March 2014.

Elvis Schriemer- Human Resource Information Systems Specialist in Amsterdam (Netherlands), working since 2013.



Angela Luise Gillian- Human Resources Manager in Berlin (Germany), working since May 2014

Appendix 2 Research questions

The aim of the interview was to discover the maturity level of European organizations for HR analytics by conducting semi-structured interviews that were made through the social networks by Face-time and audio calls in period between 20th of April to 7th of May. The approximate time spent on interviews was 30-40 minutes and the following questions were asked:

- Are you familiar with the HR analytics in your organization? Please, provide me with your general understanding of it.
- What do you think about HR analytics in organizations nowadays? Does it have any potential to grow? Is it necessary to have this type of tool?
- What are the frequent tools and metrics used in HR analytics meantime?
- What are the obstacles impeding the implementation and increasing usefulness of HR analytics elsewhere in Europe?
- Despite that HR analytics is facing challenges, what do you expect from it in the future?

DOCUMENTARY PAGE

The bachelor paper “Organizations’ maturity for Human Resources Analytics in Europe” is worked out at the faculty of Business, Management and Economics of University of Latvia in the study program “Business Administration”.

With my signature, I certify that the research is made by myself, the information sources shown in the work are truly represented and the electronic copy is corresponding to printed version.

Author: Guzal Kurbonova _____ *dd.mm.yyyy*
(signature)

I recommend/ I do not recommend the work for the presentation

Supervisor: lecturer, M.admin Kristine Berzina _____ *dd.mm.yyyy*
(signature)

Reviewer: professor Dr.oec. Margarita Dunska

The work is submitted at the Study Center on _____.____.2018.

Person authorized by the Dean: methodologist Astra Zaļkalne _____
(signature)

Work is presented in the meeting of bachelor’s final probation committee on
_____.____.2018. protocol N. ____

Secretary of committee: M.sc.soc. Santa Sproģe-Rimša _____
(signature)

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