

KNOWLEDGE BASED EMPLOYMENT PROCESS – DATA DRIVEN RECRUITMENT

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Abstract: *The purpose of this paper is to highlight the main benefits and challenges of using a data-driven recruiting system in enterprises. The trend of increasing digital presence in all fields requires new knowledge and skills of employees. Sustainable development of enterprise is increasingly based on human capital and investment in it. Precisely in these conditions of business, on the one hand, there is increasing pressure to attract and hire the highest quality employees more efficiently, which implies large investments in the recruitment processes and on the other hand to justify those investments. The high-quality data-driven recruitment system provides a way to measure the contribution of recruiting process to the success, to adequately manage existing recruitment programs, and to justify investments in their further development. A special part of this paper will be consecrated to the trends and challenges of using data-driven recruitment in the context of the global crisis of the coronavirus COVID - 19 pandemic.*

Keywords: *Recruitment, Metrics, Data, Recruitment funnel, Human resource management.*

1. INTRODUCTION

We are operating in the age of complete digital transformation. The fourth industrial revolution, the big changes in robotics, artificial intelligence, Internet of Things (IoT), the auto industry, 3D printing, big data and nanotechnology, are certainly pushing the boundaries we are used to so far. In such conditions of disruptive changes, the key factor of company's sustainable development and competitiveness is no longer the value of its cash capital but the value of human capital - talented employees who are open, proactive and innovative.

Such changes in the business environment also require changes in human resource management, the processes of their planning, hiring, development and retention in the company. A particular challenge for enterprises and their human resource managers is the question of how to reach talented people and how to attract them. Recruitment of job candidates is becoming a critical activity of human resource management and requires increasing investment. Investments are primarily aimed at improving the recruitment activities of job applicants in order to shorten the time needed to close open positions. In order to make better decisions about the recruiting process and justify investments in them, it is necessary to explain and demonstrate the value of the recruiting process to improve the business of the company.

Human resource managers are increasingly under pressure to justify investments in the process of attracting candidates to company executives, as well as to make better decisions that will result in more effective activities regarding this process. In order to increase control over

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the both, recruitment activities and its outcomes, businesses and human resource professionals are increasingly relying on data-driven recruitment systems. Given that managers who rely on data, facts and research make better hiring decisions, using of analytical activities and certain recruitment metrics reduces the cost and time required to close open positions and leads to targeted improvements to the entire recruiting process. The purpose of this paper is to point out the importance as well as the key challenges in the field of data-driven recruitment, with particular reference to the trends in this field in the context of the global crisis caused by the coronavirus pandemic.

2. THEORETICAL BACKGROUND OF DATA – DRIVEN RECRUITMENT

Since that recruitment is one of the generic activities of human resource management (DeCenzo, Robins, 2007) the theoretical basis of data-driven recruitment can be found in the data-driven human resource management framework. „In order to become strategic, human resource management has been trying to quantify its contribution to business by focusing on efficiency metrics namely hiring cost per employee, turnaround time and effectiveness metrics such as employee engagement or employee retention and the like. It is increasingly being realized by organizations that right candidates hired at the right time in the right position with right cost directly contributes to the success of business“, (Mohapatra, Sahu, 2017). Many human resource management studies have demonstrated the link between the quality of this practice and the quality of the business (Barlett, Ghoshal, 2002; Barney, 1991; Becker, Gerhart, 1996; Delaney, Huselid, 1996; Guest, 1997; Fey, Bjorkman, Pavlovskaya, 2000).

The theoretical basis of the development of data - driven recruitment can be found in empirical researches of recruitment from an organizational perspective. Researchers Taylor and Collins, in their work „Organizational recruitment: Enhancing the intersection of research and practice“ pointed out that „a growing number of studies have empirically examined the impact of recruitment activities, often in conjunction with other human resource practices, on measures of organizational performance“. In summary, six studies (Delaney and Huselid, 1996; Huselid, 1995; Huselid and Becker, 1997; Koch and McGrath, 1996; Terpstra and Rozell, 1993; Williams and Drehrer, 1992) have examined the relationship between recruitment and firm-level measures of performance. Each study provided support for the hypothesized positive effects of recruitment activities, although in two cases recruitment effects were combined with those of other practices as an overall index, rather than assessed separately. Thus, there appears to be fairly strong and consistent evidence regarding the role of recruitment as a correlate of firm performance, including one set of recruitment effectiveness measures“ (Taylor, Collins, 2000). The demand for better quality demonstration of the link between recruitment and organizational performance in empirical studies certainly represents a significant stronghold of the data-driven recruitment system development.

„The attention given to the topic of employee recruitment by researchers has increased considerably in recent years. In addition to an increase in the number of studies being published, there has been an increase in the variety of recruitment topics being examined. For example, many of the early researches focused on the use of realistic job previews (i.e., providing job applicants with accurate information about what a position in an organization involves), recruitment methods, and recruiter characteristics (e.g., their behavior). More recently, research has shifted from these three areas and has begun to explore such topics as the timing of recruitment actions, recruit site visits, and on-line recruiting“, (Breaugh, 2008). „However, most recruitment research has investigated a single activity or stage of the recruitment process (e.g., realistic job previews,

recruitment sources, recruitment interview, site visit) in isolation of other recruitment activities and stages. As a result, we know very little about the combined effects of recruitment information from multiple recruitment stages“ (Saks, Uggerslev, 2009). As noted by Collins and Stevens “we have little knowledge regarding how various recruitment practices interact with each other” (Collins, Stevens, 2002, p. 1121). The foregoing indicates the importance of further research and development of data-driven recruitment aimed in measuring and demonstrating integrative approach of recruiting practices. In his paper, „Employee recruitment: Current knowledge and important areas for future research“, James Breugh presented such an approach to recruitment which indicate that the recruitment process must start with establishing recruitment objectives, and end with comparing the recruitment outcomes to the objectives. Also, the paper insists on a strategic approach to data-driven recruitment since the goals, methods, sources of recruiting depend on the company strategy and should be consistent with it (Breugh, 2008).

Changes in the business environment, primarily changes caused by the development of information technologies, have led to a complete transformation of the recruitment process. The development of the Internet, artificial intelligence, gamification, etc., has drastically influenced the change in how organizations identify, attract and select job applicants. The business success is increasingly dependent on new knowledge, competences and skills, which become a rare resource and a source of competitive advantage for the company. „Traditional research on employee recruitment and selection has focused on an understanding of the process from the perspective of the employer. Modern research studies have examined the process of recruitment and selection from the applicant’s perspective since not only do companies select employees, but applicants also select the organizations in which they intend to apply and are willing to work. (Gupta, Mohan, 2019, p. 39-40). The requirement to look at recruitment metrics from a different perspective, the job candidate perspective, came from researches of employer brand who, by analyzing this phenomenon, contributed to the development of data-driven recruitment from just this angle. „Most recruitment measurement approaches currently seek to understand the linkage between marketing media (source) and desired outcomes (applications and quality hires), but seldom integrate this with data relating to brand reputation and experience. Internally, most employee surveys measure the linkage between the overall employment experience and engagement, but seldom measure the impact of more specific brand associations“, (Mosley, 2016 p.236). „The concept has gained a lot of importance in the recent past because of the benefits that an organization derives from a strong employer brand in the form of attraction and retention of talent“, (Tanwar, Prasad, 2017 p.392).

3. IMPORTANCE OF DATA – DRIVEN RECRUITMENT

„Recruitment has become a top priority for many organizations today as they struggle to cope with labor shortages and the so-called “war for talent.”, (Saks, Uggerslev, 2009). „A survey by Deloitte (2005) of 1,396 human resource practitioners from over 60 different countries, found that the ability to attract and retain new talent were perceived as being the two most critical people management issues facing their organizations today. A total of 74 percent of respondents reported a moderate or high shortage (or anticipated shortage) in salaried staff and 53 percent reported a moderate or high shortage (or anticipated shortage) in hourly staff., (Christensen, Rog 2008 p.746-747). „Companies that will need to attract and recruit employees in the future will need to implement new strategies and tactics to address the immediate as well as long-term needs of reaching a targeted group of prospective employees. Employers must also “sell” the position to a prospective hire during the recruitment and interview process“, (Hamilton, 2009 p.34).

The foregoing forces companies to increasingly invest in processes and innovative recruitment methods. Key recruitment trends can be summed up in two directions: first, the application of sophisticated technology, social networking, artificial intelligence, gaming, which aims to automate the recruitment process, and second, recruitment marketing, which aims to create a company image as a desirable candidate, with quality reputation in the labor market. The push for more investment and key trends requires a shift from traditional recruitment to data-based recruiting.

„Data – driven recruitment is all about having a system for tracking, measuring, collating and analyzing candidate and employee data to use it in making better hiring decisions. Apart from helping in the recruitment, it also helps in providing unique opportunities to the existing talent in order to improve employee retention“ (Koshy, 2016). „The basic idea of recruitment metrics is establishing of a standard form of measurement. Recruitment metrics is a tool that are used to better recruitment decisions to receive the best return on investment. Using the metrics, the information will be gathered, analyzed and effective decision on hiring will be made. The recruitment metrics are quantifiable and can be compared established benchmark focusing on candidate quality. Recruitment metrics are the measurement standards that human resource professionals to gather, analyze, present valuable information during the hiring progress, but vary from organization to organization. These statistics can be used for better recruitment/ hiring decision making to receive best return on investment. The characteristics of the used recruitment metrics are: the metrics should be actionable and predictive, consistent, provide a benchmark for internal performance, open to peer comparisons and help in best quality of hire, and return on investment. (Prasad, Mangipudi, Vaidya 2019)

Importance of data – driven recruitment is: supply critical information to the management group and provide input to on strategies business issues; improve the human resource standards to align its business goals; help in developing strategies to focus on what is important, and what is expected. Allow effective and efficient use of limited available resources with high business impact and continuous improvement of the recruitment process. The recruitment metrics are used to enhance the recruitment process, helping to align the correct objectives, vision and mission of an organization. Metrics also provide the credibility and consistency to the recruiter, which drives the organization to pursue aggressive recruitment strategies with accountability“. (Prasad, Mangipudi, Vaidya, 2019)

4. RECRUITMENT FUNNEL AND ITS OPTIMIZATION THROUGH DATA – DRIVEN RECRUITMENT

One way of explaining these significant recruiting analytics activities is to use a recruiting funnel. Recruitment funnel is a way of looking at the recruiting process, a useful display of all the stages that job seekers have to go through: Career Website Visitors, Applications, Interviews, Offers and Hires (Jobvite, Recruiting Benchmark Report 2019). Survey data was conducted by the online recruitment platform „Jobvite“, based on data from 10 million applications and 50 million job seekers, and the following priority metrics from each stage of the recruiting funnel: the number of unique visitors to companies career website, the number of applications received for a specific job opening, the number of interviews conducted for each requisition, the number of offers extended to candidates for a particular open position, the candidates who have accepted companies offer letter, analyzed year-over-year, are shown in Table 1. (Jobvite, Recruiting Benchmark Report 2019)

Table 1: Recruiting Funnel Stages 2016-2018

	2016	2017	2018	Benchmark criterion	Benchmark criterion meaning
Visitors to Applicants	8%	13%	18%	> 18%	having a career website that's fueling a great candidate experience
Applicants per Open Requisition	52	36	29	> 35%	doing a good job at getting high quality candidates
Applicants to Interviews	15.25%	12.31%	12%	> 12%	company need fewer candidates to get to the interview stage - a sign of more efficient processes and better use of data and automation to make the hiring process more efficient
Interviews to Offers	19.78%	28%	28%	> 12%	company usually spend time interviewing the right candidates
Offers to Hires	83%	90.64%	95%	> 12%	candidates are more likely to accept job offers because company gives out very competitive offers above market rate
Top-to-Bottom	0.19%	0.41%	0.56%	> 0.56%	a reflection of overall funnel efficiency
Average Time-to-Hire (Days)	39	38	38	< 38%	spending less time for recruiting, signal of increased efficiency

Source: Jobvite, Recruiting Benchmark Report 2019

In their work, „A Review of the Role of Marketing in Recruitment and Talent Acquisition“, Alashmawy and Yazdanifard, placed recruitment marketing on top of the recruitment funnel: the recruiting stages on top of the recruitment funnel „create the awareness and increases the recognition of the organization, help the prospective candidate to consider what the organization offers and induce the interest to apply for the job; after application candidates enter the traditional recruitment channel that processes the application, selects candidates for evaluation and finally takes the hiring decision. Recruitment marketing incorporates employer branding not only to acquire the best talent for an open job but also for future jobs“. (Alashmawy and Yazdanifard, 2019, p. 571) James Breugh, points out that these precise parts of the recruiting funnel are not sufficiently measured - „little attention has been given to pre-hire variables such as attracting the attention of the type of individuals targeted for recruitment. In particular, more attention needs to be given to job applicant perceptions of and reactions to specific recruitment actions (e.g., timely job offers) given that they likely mediate the relationships between an organization's recruitment actions and outcomes in many situations“, (Breugh, 2013. p.391). Starting from the above, it can be pointed out that data - driven recruitment should rely on two separate but related analytical groups of activities: quantitative and qualitative metrics.

The first group of analytical activities in data-driven recruitment relates to quantitative recruitment metrics (also known as Recruitment KPIs). They are focused on costs, capacities and time, show what happened, but do not explain why something happened. They serve as the first indicator of changes in recruitment, unproductive recruiting channels, poorly designed job ads, inadequate methods, uncompetitive offers, etc. They are used by comparison with benchmark values of other companies in the industry. Managers generally prefer quantitative metrics since they can be expressed in numbers and compared more easily. We distinguish pre-hire and post-hire measures. Some of the most commonly used metrics are: time to hire, time to fill, application abandonment rate, applicant conversion rate, applicant quality, offer acceptance, source pre-hire, new hire retention rate.

The second group of analytical activities in data-driven recruitment relates qualitative recruitment metrics. They are aimed at better understanding of the target group being recruited. They

require more time to collect data and they are significantly more demanding than Recruitment KPIs. They answer the question why something happened. Knowing the target group, their needs, habits and interests is key of designing a successful recruitment process. „Prospective employees are as particular about choosing the right organization, as about choosing the right job. Organizations are increasingly trying to assess and enhance their attractiveness to prospective applicants“ (Srivastava and Bhatnagar, 2010, p.2). Potential candidates are not homogeneous group, their needs and expectations vary greatly depending on seniority, job type, career stage and other characteristics. Therefore, segmenting the target group and creating different approaches for each is very important for success in recruitment. The most commonly used metrics of this type are interviewing, organizing focus groups and individual interviews. The data obtained through these metrics is used to measure candidate experience that relates to everything that potential candidates think, feel, or how react during the recruiting process.

„The candidate experience is one of the most discussed topics in recruiting funnel. A good candidate experience will make candidates the brand ambassadors of any company. There are the dangers associated with treating your candidates poorly. A poor candidate experience has a bottom-line impact of candidates getting disillusioned with the company and never seeking employment in the company again. Not only that, they may refer to others not to apply to that company. In contrast, a good candidate experience will lead to establishment of a strong employer brand image and widening of the talent pool. This will help the company in attracting top talent and getting its vacancies filled at lesser cost and time. Candidates are one of the most important stakeholders of any organization. They should be treated like an organization will treat its customers. There is need to stay in touch with the candidates, even if they are not selected or if they want to apply for another opening“ (Gupta, Mohan, 2019, p. 39-40).

Companies need to identify and focus on the candidate touchpoints in the recruitment funnel in order to improve candidate experience. More often, new employees are taken for the sample because they are easier to reach, the entire recruiting process is still fresh for them, they have gone through this process in other companies and they share experiences and valuable information about it: why they chose company, what attracted them, which part of the recruiting process left a good impression on them, and not exactly the best impression, where they were informed about the company and which of those sources they consider to be the most credible, based on their experience in the recruiting process how likely they would be to recommend the company to their friends etc. However, starting from the fact that new employees like being employed in a particular company, their answers may be biased and therefore it is necessary to strike a balance with the target group and outside the company, externally.

5. KEY DATA DRIVEN RECRUITMENT CHALLENGES CAUSED BY CORONAVIRUS

The beginning of 2020 global economy has been rocked by coronavirus pandemic. According to UN forecasts, the economic and labor crisis created by the COVID-19 pandemic could increase global unemployment by almost 25 million people. Coronavirus will have a huge impact on job market and recruitment. The biggest trend in the recruiting caused by the coronavirus pandemic is obvious: the largest number of companies, instead of recruiting and hiring people, are dealing with staff reductions. The top five industries affected by coronavirus are: travel and tourism, hotels, bars and restaurants, entertainment, business conferences and trade shows, manufacturers. A large number of talented professionals with a set of rare skills and compe-

tencies have remained or will be out of work. This can be a good opportunity for company's recruiters to leverage their data-driven recruitment systems, especially in the employer brand field, in order to attract professionals because they are the ones who will get the business out of crisis with their ideas and expertise.

On the other hand, some industries like shipping and delivery companies, health care and logistics companies, grocery stores and delivery services, online learning companies, remote meeting and communication companies and childcare providers are facing a sudden need for a huge number of new employees. Those who continue to recruit in a time of coronavirus face with the great challenge to attract and hire a large number of candidates in a short period completely remotely. This won't be possible without quality system of data driven recruitment.

Many companies, even before the pandemic, had a problem with getting high quality employees and filling some open positions. In February 2020 there was a 47% reduction of applications on average across all industries compared with February 2019, according to WaveTrackR's report. This reduction is expected to grow even more after coronavirus pandemic. In the time of crisis people are reluctant to make big life changes, such as changing jobs. Similar to companies, candidates are laying low, waiting to see what will happen. They prefer to stay in the security of their current job in uncertain times. (Zojceska, 2020). Because of the foregoing, the purpose of quality data - driven recruitment system which is reflected in indicating which sources are the most effective in identifying and attracting talent, will gain more and more importance.

The global crisis caused by the coronavirus pandemic will force many companies to cut operating costs. In times of crisis, the first most common reduced costs are employment-related costs. Reducing the cost of employment must not jeopardize the quality of the people who will be hired in the coming period. A high-quality data-driven recruitment system can greatly enable efficiently and effectively managing this type of cost.

6. CONCLUSION

Finding new and more effective approaches of creating effective indicators for data-driven recruitment is happening on a daily basis in many organizations. The data-driven system provides metrics that help management to track and control results, spot problems and take corrective action. When we talk about data-driven recruitment, we need to keep in mind that this is a company's very complex intangible asset and has different motives for measurement.

The key motives for establishing and developing data-driven recruitment practices can be summarized as follows: improving recruiting activities (monitoring current results for the purpose of undertaking corrective actions, identifying strengths and weaknesses of process in order to make better decisions, encouraging changes in processes, baseline for determining which activities are most appropriate for the company from financial, time and human reasons, possibility of comparison with other companies in this field), proving the importance of recruiting for the company (justification for investing in activities, proving that recruiting is equal with other activities in human resources management, collecting data for the purposes of promoting these activities and future programs) and determining the impact of recruitment on the organizational performance (building a database which helps to determine the recruitment contribution to organizational performance, calculate the return on investment in a programs, predict the future benefits of various recruitment programs).

Because of the novel area of data-driven recruitment and the still very limited amount of academic research, it is likely that there still can be found many challenges that have not yet been identified. „The challenges that have been recognized are classified in five different types. The first type of challenge is the data related ones. Many have been concerned with the challenge of too much data and metrics. If organizations try to measure everything, know everything and control everything, the task in hand might be too extensive and as a result nothing gets measured properly. The second type of challenge is the recruitment analytics process related ones. Recruitment analytics is not only about collecting data, but also knowing how to use it. If too many metrics are used, the result might only lead to a significant number of reports that no one is reading. The third type of challenge is the people related challenges. Analytics might offer a good excuse to treat employees as pure resources and special attention should be paid to the “human side” of human resources. The fourth types of challenges are the managerial challenges. Organizational culture and/or management do not support the analytical culture or its development. The fifth and last type of challenges is the ethical and privacy related challenges. Organizations need to be able to protect the sensitive employee information. Collecting and using data from different internal and external sources might expose the organizations to discrimination lawsuits“ (Jensen-Eriksen, 2016. p,82).

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