Aneta KARASEK [0000-0002-6055-5150]*

IT TOOLS SUPPORTING EMPLOYEE MANAGEMENT IN A HIGH-TECH ENTERPRISE

Abstract

Nowadays, the rapid development of Information Technologies in several fields of socio-economic activity can be observed. High-tech companies develop or implement IT solutions in numerous areas, including employee management. In the studied high-tech enterprise, the IT solutions are used in order to facilitate employee management in recruitment and selection, development and training, evaluation, motivation, talent management and personnel-related services. The company implemented an integrated employee management system. This enabled data integration and improvement of employee management. Owing to the implementation of the tools, the company improve work efficiency in the course of procedures being standardized.

1. INTRODUCTION

At present, the dynamic development of Information Technology (IT) in several fields of socio-economic activity can be observed. The IT sector is one of the most rapidly developing branches in the global economy. In 2016, the IT software and services market was valued at approx. 1.136 billion EUR (Revenue from information technology (IT) services and software worldwide from 2005 to 2016 (in billion euros), (n.d.).). Knowledge management plays a vital role in innovation-developing enterprises. The field applies database systems presenting the decisive function on the success of high-tech manufacturers promoting knowledge management (Huang & Yao, 2018). Through knowledge transfer, organizations can

---

* Maria Curie-Sklodowska University, Faculty of Economics, Plac Marii Curie-Skłodowskiej 5, 20-031 Lublin, Poland, aneta.karasek@umcs.pl

provide employees with access to the resources needed to implement innovative projects (Śliwa & Kosicka, 2017). It ought to be noted that knowledge workers can enhance the innovation level, whether at the company or national level (Patalas-Maliszewska, 2014). Therefore, the management of knowledge workers as a key resource is critical in enterprises operating in the sector.

Employees in the high-tech sector develop or apply IT solutions in their daily work. As a consequence, they expect employers to introduce such tools into both HR and trainings. It can be observed that the employees seek meaningfulness in their work, enjoy intellectual and technical challenges, have a strong need for creativity and risk taking, identify more with their profession or technology than with their employing organizations, and place high value on autonomous and flexible working arrangements (Kirk & Belovics, 2007). Therefore, an adequate adaptation of IT tools employed in HRM processes is significant so that the tools support employee management and workers are satisfied with the application of the solutions.

The introduction of IT solutions depends upon several factors. The cultural context is one of these. Studies indicate that there exist discrepancies with regard to the adoption of IT solutions' functionalities. The neo-institutional theory can provide explanations for most of them (Simón & Esteves, 2016). In the United States, 67% of enterprises declared they introduced IT tools in HRM in order to improve business processes (*Sierra-Cedar 2016–2017 HR Systems Survey White Paper, 19th Annual Edition*). The largest concentration of high-tech sector enterprises can be observed in the Silicon Valley in USA. The companies are resourceful and are not only able to sense new opportunities (and threats) but make use of their abilities, introduce necessary changes or modifications when their newly founded success comes under threat. This requires the presence of employees possessing specific competences enabling them to create innovative solutions and tools which support employee management so that workers are able to meet requirements and challenges companies face.

2. ROLE OF IT TOOLS IN EMPLOYEE MANAGEMENT

IT solutions are increasingly applied in enterprises. As a consequence, they stimulate the effectiveness of business operations. In addition, they offer remote access, which is frequently exploited by employees. The solutions are used in order to facilitate employee management in recruitment and selection, development and training, evaluation, motivation, talent management and personnel service.

New technologies support recruitment and selection because they enable candidates to be matched to specific positions and duties depending upon their competences. IT solutions allow for the collection and analysis of considerable amount of data on the candidate. They also facilitate selection because they offer

the opportunity for information on the candidate, their performance, correspondence and meetings to be stored in one location. In addition, the solutions allow for novel methods aiming to evaluate candidates' competences to be implemented. The following can be enumerated among IT solutions employed in recruitment and selection (Stone, Deadrick, Lukaszewski & Johnson, 2015): e-job description, e-application of candidates and initial e-selection of the applications, e-assessment and evaluation, online interviews (e.g. videoconferences), decision-making facilitated by IT tools on the basis of the combination of predictive results and comprehensive assessment, and the evaluation of the efficiency of e-selection system and access to vital predictors. At present, these processes are supported by social media, in particular by LinkedIn, Facebook, Twitter, and discussion groups attracting specialists in specific sectors. Studies indicate that the decision regarding the application of social media in recruitment depends upon their potential job-related benefits, their ease of use, and their significance as perceived by influential individuals (El Ouirdi, El Ouirdi, Segers & Pais, 2016). Owing to the application of social media in recruitment, time to fill positions is shortened. However, the potential applicant perceptions ought to be recognized. Studies in the field indicate that perhaps some of the dynamism (i.e. more frequent updates and interactive features) associated with social media websites translates more easily into increased familiarity with a particular organization than a mere visit to a static corporate webpage does (Intindola, Lewis, Flinchbaugh & Rogers, 2017). There are differences between countries in implement functionalities and US companies make a much more extensive use of information-oriented functionalities: benefits, diversity, FAQs, employee testimonials and interview tips. (Simón & Esteves, 2016). As a consequence, becoming familiar with tools employed in recruitment in American companies seems worthwhile.

At present, enterprises implement development initiatives and are on a constant look out for novel forms of development and learning. Studies indicate that companies applied tools for learning and development in 65% of US surveyed organizations (*Sierra-Cedar 2016–2017 Survey White Paper*). Employees increasingly pursue e-learning which applies various teaching techniques: simulations, games, roleplaying, mobile and social learning, story-telling, avatars and virtual reality. As a consequence, participants become engaged in the training and have the opportunity to interact with other trainees. On the other hand, satisfaction associated with the participation in such a training is connected with the applicability of knowledge because it offers trainees a greater flexibility (Stone, Deadrick, Lukaszewski & Johnson, 2015). Training cost is also lower when compared with traditional trainings (Stone, Deadrick, Lukaszewski & Johnson, 2015). In addition, employers encourage employees to develop by means of educational platforms and Learning Management Systems (LMS). LMS offer the opportunity to improve the effectiveness of trainings and to reduce training costs. However, prior to these being implemented, one ought to consider specific

learning management solutions for organizations with dominant learning styles of employees (Ramírez-Correa, Rondan-Cataluña, Arenas-Gaitán & Alfaro-Perez, 2017). During developing a system, it is critical to take various needs of diverse recipient groups into consideration.

Gamification is introduced in order to motivate and develop employees. It enables behavior and habits of employees to be modified and employees' engagement in trainings to be boosted. Companies use mechanisms of games in order to motivate behavior significant from their point of view. Such mechanisms exert an impact upon engagement, experimenting and employee performance (Werbach & Hunter, 2012). This is especially valid for employees representing generation Y (Chamorro-Premuzic, Akhtar, Winsborough & Sherman, 2015). Owing to the use of games, employee behavior may be controlled and workforce may be stimulated to undertake actions which may seem difficult to complete.

Tools facilitating talent management gain particular significance for high-tech companies because talented employees enable new company development opportunities to be generated. Studies indicate that companies applied tools for talent acquisition in 80% of US surveyed organizations (*Sierra-Cedar 2016–2017 Survey White Paper*). At present, conditions associated with increasing requirements voiced by talents result in companies rethinking tools they apply. The integration of talent data with pan-organizational business and operational data constitutes one of the current trends. This has particular importance with regard to the organization's innovation (*Sierra-Cedar 2016–2017 Survey White Paper*). This stems from the fact that several characteristics, e.g. personality, are difficult to be measured. Therefore, companies apply big data in talent management in order to make apt decisions pertaining to talented workers, which exerts an impact upon organizational performance as well (Russell & Bennett, 2015) . In addition, companies use new tools for evaluating workplace talent and potential, e.g. machine-learning algorithms, social sensing technology and gamified assessment tools (Chamorro-Premuzic, Akhtar, Winsborough, & Sherman, 2017).

At present, employee performance is supported by IT tools facilitating the aggregation of data and information on the performance. 68% US surveyed organizations applied tools for performance management (*Sierra-Cedar 2016–2017 Survey White Paper*). The assessment based upon employee performance is significant because it consolidates their motivation and contributes to improved organizational effectiveness (Arvanitis, Seliger & Stucki, 2016). IT tools applied in the performance review offer information on employee productivity. As a consequence, actions aiming to improve the situation and career development management are possible (Bondarouk & Brewster, 2016). Studies indicate that employees whose performance was assessed by online tools manifested significantly higher performance than those evaluated on the basis of traditional instruments (Payne, Horner, Boswell, Schroeder, & Stine-Cheyne, 2009). Scholars indicate the possibility of applying a fuzzy logic concept in employee performance review.

This enables for costs associated with the review to be reduced (Samuel, Omisore, & Atajeromavwo, 2014). Access to specific information on employees opens the opportunity for suitable actions to be taken which aim to improve the effectiveness of initiatives undertaken by employees.

At present, HR management tools are the ones which are the most frequently applied. The organizations that are operating in a vibrant business market (e.g. high-tech firms) need to emphasize on evidence-based approach and implement transformative HR practices (Bodla & Ningyu, 2017). These improve employee management processes, offer access to specific data and the possibility of employee self-service. Owing to a growing automation of administrative work and ready access to data, decision-making is decentralized. This enables those responsible for HRM to focus more effectively upon complex, judgement-oriented and demanding duties (Marler & Parry, 2016). Employees are perceived as active consumers of HRM services in the employee-centered approach. Therefore, companies implement solutions facilitating HR flow and making the process as effective as possible.

Studies indicate that employees create value from the provided HRM services by utilizing their knowledge and skills. Authors highlight that HRM service providers are able to improve HR service utility and HR value perception by offering improved value propositions (e.g. HR portals with higher user-friendliness, new services adjusted to users' needs) (Meijerink, Bondarouk & Lepak, 2016). This may motivate employees to use HRM services more effectively (Meijerink, Bondarouk & Lepak, 2016). It is of particular significance in relation to employees of the high-tech sector, who create and apply IT solutions in their daily work. In addition, these employees demand independence and high standards of services from their employers. As a consequence, studies aiming to identify and assess the application of IT tools in managing employees of the sector seem valid.

3. DATA AND METHODOLOGY

The objective of the study was to identify and assess the application of IT solutions in the following fields: recruitment and selection, development and training, evaluation, motivation, talent management, and HR in a high-tech company located in the Silicon Valley in USA. The study was conducted by means of a case study approach in 2015. Results were analyzed on the basis of the analysis of organizational documents, interviews and observations.

4. RESEARCH RESULTS

Enterprise „Z" was established in 2012. In 2014 it received a distinction from Forbes magazine. The company develops software facilitating personnel management. In 2015, the company employed 1500, who worked primarily in San Francisco, California and Scottsdale, Arizona. The dynamic development of the enterprise resulted in the number of employees reaching 2000 in 2016.

The employment of workers contributing to the realization of operations is of critical importance for the functioning and development of a high-tech company. In order to manage the recruitment process and applicant pool, the company employs the ATS system in recruitment and selection. In addition, recruiters may filter work applicants with regard to the score and answer they offered to a particular question. As a consequence, the cooperation of recruitment teams and joint review of applications and the approval of employment opportunities are possible. In addition, owing to alerts and notifications, applicants are up-to-date on the process. The system has been employed in the company since 2014. This was observed to facilitate communication and the realization of the process. According to employees' opinions, the application of the solution prevents bias. This is because decisions are based upon the review of specific skills, characteristics and qualifications. It also enables talented workers to be identified. It can be argued that selection was effective, which seems to be acknowledged by a low employee turnover. In addition, big data was analyzed on the basis of a specific algorithm identifying required employee competences. Respondents also recognized threats associated with the solution. The analysis may help to indicate a candidate who possesses suitable knowledge, references and experience in the execution of projects. However, personality features remain largely unknown. In addition, the selection of appropriate keywords which would allow for these to be checked in the available information posed problems as well.

Employee development is supported by e-learning and education platforms. In order to develop the competences, a learning management system was introduced. The system supports the development of employee competences. Users highlighted benefits emerging from the application of the system. It enabled the development of skills to be monitored and supplied and tracked tailor-made education plans and materials. In addition, the interface and navigation were user-friendly. The solution allowed for several development-related initiatives, which addressed a broad spectrum of employees, to be conducted. Social media were rarely employed in company "Z". Respondents indicated that, due to the fact that they spent most of their working time in front of a computer screen, they found the development of relations via direct contact significant.

The company employed an integrated employee management system. It enabled employee performance to be reviewed, HR affairs to be managed, employees to be motivated and remunerated. The system also allowed for employee self-service. The company believes that owing to data integration, effective employee

management is possible. The tool applied in the company features a panel for managers enabling crucial operations to be done, including the employment of a new worker, change of positions or salary, etc. Reports generated from business intelligence systems supported daily work of managers because they allowed for HR and financial data to be accessed, edited and analyzed in real-time.

5. CONCLUSIONS

Human resources management in high-tech companies is facilitated by IT tools enhancing HRM processes. The IT solutions prevent bias because decisions are made on the basis of suitable skills, features and qualifications of employees. Studies in the field indicate that the solutions enhance communication and delivery of HR processes. As a consequence, the management are able to focus upon strategic operations. In addition, owing to the application of IT tools, data and information are compiled in a single location. This facilitates access and enables improved personal decisions to be made.

Users play a considerable role in the application of IT tools in recruitment and selection, development and training, evaluation, motivation, talent management and HR. They are the ones who create content, use the tools and make decisions based upon the data provided in these. Therefore, it is vital to examine user needs, user experience, and benefits they obtain in connection with the tools, and opportunities for improving the solutions.

Owing to the application of IT tools in employee management, data is collected and used in the decision-making process. This results in administrative costs being reduced. It ought to be noted that the implementation of IT solutions enhances services addressing stakeholders (i.e. work applicants, employees and owners). This is of vital importance for high-tech companies, whose employees seek innovative solutions and require support in developing competences, motivation or stimulation of talented employees.

The practical implications include the fact that the enterprises of the high-tech sector may utilize the aforementioned good practices in supporting their employees. The surveyed company gained experience in the field and devoted time to reflect upon the needs of users and benefits offered by the solutions. Owing to the implementation of the tools, the HR department may improve work efficiency in the course of procedures being standardized. However, the solutions ought to be adjusted to specific companies. The author is aware of the limitations of the present study. One of these is the lack of quantitative data. However, the consent to make the data available, along with information on the applied solutions, was problematic due to the fact that companies seek to protect their knowledge and know-how. Prospective studies and the expansion of the research model to encompass recent developments in artificial intelligence and mobile apps are foreseen.

REFERENCES

Arvanitis, S., Seliger, F., & Stucki, T. (2016). The relative importance of human resource management practices for innovation. *Economics of Innovation and New Technology*, *25*(8), 769–800.

Bodla, A. A., & Ningyu, T. (2017). Transformative HR practices and employee task performance in high-tech firms: The role of employee adaptivity. *Journal of Organizational Change Management*, *30*(5), 710–724. doi:10.1108/JOCM-02-2016-0030

Bondarouk, T., & Brewster, C. (2016). Conceptualising the future of HRM and technology research. *International Journal of Human Resource Management*, *27*(21), 2652–2671. doi:10.1080/09585192.2016.1232296N

Chamorro-Premuzic, T., Akhtar, R., Winsborough, D., & Sherman R. A. (2017). The datafication of talent: how technology is advancing the science of human potential at work. *Current Opinion in Behavioral Sciences*, *8*, 13–16. doi:10.1016/j.cobeha.2017.04.007

Revenue from information technology (IT) services and software worldwide from 2005 to 2016 (in billion euros). (n.d.). In *The Statistics Portal.* Retrieved March 1, 2019 from https://www.statista.com/statistics/268632/worldwide-revenue-from-software-and-it-services-since-2005

Huang, P., & Yao, Ch. (2018). Key success factors in high-tech industry promoting knowledge management. *Journal of Interdisciplinary Mathematics, 21*(2), 509-517. doi:10.1080/09720502.2018.1451607

Intindola, M. L., Lewis, G., Flinchbaugh, C., & Rogers, S. E. (2017): Web-based recruiting's impact on organizational image and familiarity: too much of a good thing? *The International Journal of Human Resource Management*. doi:10.1080/09585192.2017.1332672

Kirk, J., & Belovics, R. (2007). The high- tech industry and its workers. *Journal of Employment Counseling*, *44*(2), 50–59. doi:10.1002/j.2161-1920.2007.tb00024.x

El Ouridi, M., El Ouirdi, A., Segers, J., & Pais, I. (2016). Technology Adoption in Employee Recruitment: The Case of Social Media in Central and Eastern Europe. *Computers in Human Behaviour*, *57*, 240–249. doi:10.1016/j.chb.2015.12.043

Marler, J. H., & Parry, E. (2016). Human resource management, strategic involvement and e-HRM technology. *The International Journal of Human Resource Management, 27*(19), 2233–2253. doi:10.1080/09585192.2015.1091980

Meijerink, J. G., Bondarouk, T., & Lepak, D. P. (2016). Employees as Active Consumers of HRM: Linking Employees' HRM Competences with Their Perceptions of HRM Service Value. *Human Resource Management*, *55*(2), 219– 240. doi:10.1002/hrm.21719

Patalas-Maliszewska, J. (2014). Can local knowledge workers significantly contribute to the growth of the national level of innovation? *Applied Computer Science*, *10*(1), 44–54.

Ramírez-Correa, P. E, Rondan-Cataluña, F. J., Arenas-Gaitán, J., & Alfaro-Perez, J. L. (2017). Moderating effect of learning styles on a learning management system's success. *Telematics and Informatics, 34*(1), 272–286. doi:10.1016/j.tele.2016.04.006

Payne, S. C., Horner, M. T., Boswell, W. R., Schroeder, A. N., & Stine-Cheyne, K. J. (2009). Comparison of online and traditional performance appraisal systems. *Journal of Managerial Psychology*, *24*(6), 526–544. doi:10.1108/02683940910974116

Rusell, Ch., & Bennett, N. (2015). Big Data and talent management: Using hard data to make the soft stuff easy. *Business Horizons, 58*(3), 237–242. doi:10.1016/j.bushor.2014.08.001

Samuel, O. W., Omisore, M. O., & Atajeromavwo, E. J. (2014). Online fuzzy based decision support system for human resource performance appraisal. *Measurement*, *55*, 452–461. doi:10.1016/j.measurement.2014.05.024

Sierra-Cedar 2016–2017 HR Systems Survey White Paper, 19th Annual Edition

Simón, C., & Esteves, J. (2016). The limits of institutional isomorphism in the design of e-recruitment websites: a comparative analysis of the USA and Spain. *The International Journal of Human Resource Management*, *27*(1), 23–44. doi:10.1080/09585192.2015.1004186

Stone, D. L., Deadrick, D. L., Lukaszewski, K. M., & Johnson, R. (2015). The influence of technology on the future of human resources management. *Human Resource Management Review*, *25*, 216–231. doi:10.1016/j.hrmr.2015.01.002

Śliwa, M., & Kosicka, E. (2017). A model of knowledge acquisition in the maintenance department of a production company. *Applied Computer Science*, *13*(3), 41–54. doi:10.23743/acs-2017-20

Werbach, K., & Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press.