BMI in the Digital Era –
Competitive Advantage Through Human Capital Analytics

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The term "business model" gained popularity mainly due to the dotcom boom. As we are in the digital era, the approach is to focus on business model innovation. The greatest potential of such transformation lies in increasing efficiency and productivity using new digital business models. Analytics, supported by digital technology, will enable companies to make quicker and more informed decisions that are aligned to the business strategy. This paper aims to define the contribution of Human Capital Analytics (HCA) to Business Model Innovations (BMI) through a case study. The findings indicate the nature of the competitive advantage created by HCA.

Keywords: business model innovation, human capital analytics, digital transformation, Microsoft

INTRODUCTION

Digitization is changing; not only companies, entire industries, or business models but also functional areas (Fraunhofer Institute for Applied Information Technology, 2015). The Human Resources (HR) departments play a key role in digitizing companies in many ways. They promote the development of digital cultural elements, forms of work and skills, and support the personal work streams of digitization projects in the business units. At the same time, thanks to cognitive data processing and artificial intelligence, HR processes are becoming increasingly automated and individualized. HR itself will change, but at the same time it must proactively support the digital transformation process within the company. In addition to the actual "technical" digitization, there are additional factors that must be dealt by the HR department (European Economic and Social Committee, 2017). Demographic change, a shortage of skilled workers, a change in values, the environment - these and other megatrends are changing the demands on companies and therefore also on personnel work. Keywords such as flexibility and agility often determine the discussion about the new world of work. More jobs are becoming location independent and the work will increasingly take place in common virtual spaces. But not only has the working method itself changed; younger generations redefine the term "success". Old status symbols give way to new goals, such as work-life-balance, purpose, one planet, new work etc. (Bengtsson et. al., 2017). Digital transformation is changing every corner and department of the business, HR being one of the main pillars.

With the entire digital impact for several years, a new term has come to the fore in the HR area of many companies: Human Capital Analytics. But what is behind it? Is this a new hype or does this approach really offer the potential for a successful transformation of HR in the course of digitization? The topic of HCA is becoming progressively important due to increasing digitization (Deloitte, 2017). Although many companies are aware that employees represent a significant factor in achieving business success, the spread of HCA is lower than in certain business areas due to a variety of human, technical, business, legal, and corporate cultural factors.

Awareness of the benefits of HCA in several business areas and the variety of ways in which companies can optimize their business are beginning to appear in companies. Companies using HCA are more successful in employee retention and recruiting. A recent study by Deloitte shows that already 66% of German-, 75% of Dutch-, 76% of American- or 81% of Chinese companies classify HCA as "important" or "very important" (Deloitte, 2019). Often it seems that companies are failing in the concrete implementation, but the advantages show that it is worthwhile to deal with the topic of HCA. It's not just about optimizing HR processes in general, but also improving the efficiency of internal business strategies, which in turn has a positive impact on overall business goals. For this study, it was of interest to investigate the contribution of HCA to BMI and its linking to the business strategy.

LITERATURE REVIEW

The main concepts of this paper are innovation, business model and the use of human capital analytics. Digital economy has become more information intensive and data is becoming essential to national, regional and business competitiveness. One of the implications of this transition to a data-driven economy for companies is the development of new business models and in the same time, the transformation of key strategic functions within the company. First, the present paper seeks to analyze these implications by examining the literature of BMI. Second, this study will investigate how the transformation of one of the strategic business functions can take place through the lens of HCA and what the business impact may be.

The literature on the BMI is a young research field derived from Business Model literature (BM). BM literature's evolution has been widely divided into three study streams. First stream of the literature emerged in the early 2000's, when several researchers have sought to determine BM structure and progressively comprehend and classify value drivers of business models (Amit and Zott, 2001; Magretta, 2002). The second step in BM literature evolution is marked by the relationship between business model and company's performance. A considerable amount of literature has been published on this subject. These studies argued that BMs are becoming key drivers of the company's performance and successful BMs are seen as imitating or replicating instances (Zott and Amit, 2007; Chesbrough, 2010; Doz and Kosonen, 2010). In the third stream of the BMs literature, the business model is perceived as a future innovation unit. A growing number of studies centred around BM's innovation dimension and examined BMI from a multitude of perspectives (Foss and Saebi, 2016).

Over the past decade, most studies in this research field described BMI as a series of business activities focused on improving the value creation process. According to Aspara et al. (2010), BMI may be considered as value creation initiatives that challenge the current industry specific business models in a geographical area. Moreover, as noted by Abdelkafi et al. (2013:13) "BMI happens when the company modifies or improves at least one of the value dimensions". Investing in HCA in order to transform or innovate the current business model of a company means that it may help generate value through new human capital insights and measurement as well as human capital data-driven decisions. Our discussion presents HCA as a Human Resource Management innovation. As defined in the literature, HCA is a "HR practice enabled by information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, human capital, organizational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making" (Marler and Boudreau, 2017:13).

In the context of a digital and data-driven economy, HCA has a big impact in business, even if there is still an uncovered capability gap in the way business is moving to analytics (Minbaeva, 2017). This

change is reshaping the HR function, that is now in a transit state from an operational and administrative function, to a strategic one. Along with this needed transformation, however, there is increasing concern over HCA. Regarded as a valuable business tool, HCA can provide useful information about how the most important organizational resource can be measured and managed. It also offers a positive return on investment when its outcomes are actionable and transformed into strategic actions (Minbaeva, 2017). This view is also supported by a series of recent studies that present how HCA impacts the business decisions and business strategy (Levenson, 2011; Di Bernardino, 2011; Mondare et al., 2011; Coco et al., 2011) and helps achieving higher sales (Aral et al., 2012). Moreover, we have evidence that the efficiency measures developed through HCA are widespread and companies use analytics to assess the impact of HR activities in their businesses (Lawler et al., 2004). In contrast with this perspective, it is stated that this impact may take place if HR professionals will improve their analytical mindset and will rebuild their skills in order for HCA to become a part of HR function. However, previous studies assumed that HCA has no sustained impact on HRM and may in a long run disappear, when too high innovation expectations are not met (Rasmussen and Ulrich, 2015; Angrave et al., 2016).

Assuming that a business relies in particular on its intellectual capability to achieve success, then it should focus on the development of its human capital, as well as its deployment. Previous research has indicated that business stands in need to understand the value of its knowledge resources and as well as how can these intangible resources be managed in an effective way (Guthrie et al., 2012). In order to achieve the competitive advantage, HRM needs to align employee's capability and skills to organizational needs and business strategy (Bouguesri, et al., 2013). Moreover, companies with a value creation perspective, are strategically managing their human capital to increase the rate of knowledge creation and make sure the new knowledge is matching the company's needs (Edvinsson and Sullivan, 1996).

RESEARCH METHODOLOGY

The authors employed a descriptive research method, namely the case study. This has been utilized by a great number of authors in the BMI literature (Mezger, 2014; Günzel and Holm, 2013; Frankenberger et al., 2013; Dmitriev et al., 2014; Gambardella and McGahan, 2010; Yunus et al., 2010). The case study presents a complex analysis of a contemporary phenomenon. Past literature reveals several types of this research method. Yin (1994) as cited in Tellis (1997) noted three categories: descriptive, exploratory, and explanatory. Yin's approach is closely aligned with a realist-positivist orientation, as he conceptualizes this research method as a form of social science (Harrison, et al., 2017). Our approach is descriptive, as the case study was employed to understand and learn about the competitive advantage through the lens of innovation adoption. This study will therefore examine how a company can be differentiated on the market using HCA.

Given that the objective of this research is to describe how HCA can help create a significant competitive advantage in the market, the company chosen for this study is Microsoft. Since the authors had no control over the company environment, three different criteria for the case selection were used. Firstly, companies from developed economies since business analytics are more likely to be developed. Secondly, companies with more than one decade of foundation, as these business capabilities may take a longer time to be developed. Thirdly, companies exposed to an international market, as this could imply an ability to compete with international players on innovation. With the purpose of gaining a comprehensive understanding of the case, the data were collected by studying different documents. Using multiple sources allowed the authors to address various sides of the problem. Data were gathered by studying electronic documents from various sources (report of Chartered Institute of Personnel and Development, web articles from Technopedia, industry report from European Economic and Social Committee, Deloitte's consultancy reports), as well as other relevant case studies about Microsoft (Elman and Wettermann,2018; CIPD, 2014) and books from the fields of strategic management, entrepreneurship, knowledge economy, human capital, consumer strategy, social networking service and cloud computing. These sources were found both in electronic databases (e.g. Springer, Wiley Online Library, Microsoft

Press and Microsoft API and reference catalogue) and libraries (e.g. Central University Library "Carol I" and British Council Romania).

HUMAN CAPITAL ANALYTICS: KEY FIGURES FOR BETTER HR DECISIONS

HCA is an area in the field of analytics that refers to applying analytic processes to the human resource department of an organization with the main aim of improving employee performance and therefore getting a better return on investment. HCA does not just deal with gathering data on employee efficiency. Instead, it aims to provide insight into each process by gathering data and then using it to make relevant decisions about how to improve these processes (Techopedia Inc., 2019). HR departments are less known for relying their decisions on metrics. HR decisions are based on subjective factors - after all, the resource "manpower" is people, and these are unpredictable. What is interesting, however, is the fact that employee salaries account for a very large portion of a company's total spend. It would therefore be useful only to measure the effect of personnel actions to be able to make a clear statement about the benefits of such a measure in the context of business objectives (Tohanean et. al. 2018). Many companies have questions about the performance of their employees, but they often lack the tools to measure them. As the importance of human capital is growing, the new HCA trend is now trying to revolutionize HR departments and bring their goals one step closer to corporate goals.

The basics of HCA come from a variety of research areas, including motivational psychology, social psychology, behavioural science, as well as big data and business intelligence. HCA complements the experience and knowledge that a decision maker uses to manage the people and organize the business. Decisions concerning collaboration, communication and employees are supported by data and hypotheses. HCA therefore forms an interface between different business areas, such as human resources, management, controlling, marketing, corporate communications, and IT (Silva et. al., 2017). Among other things, methods of statistics (Key Performance Indicators) are used to investigate hypotheses derived from current issues. This allows management to make informed and targeted decisions.

Human Resource and Analytics seem to be two areas of activity that are not compatible. But HCA is now trying to link both areas together. As part of this new concept, tools of analysis are used to measure personnel processes. The human resources department collects data about a company's employees, such as employee performance. However, not only the measurement is in the foreground. It is even more important to look at the data collected in conjunction with other corporate metrics (Tohanean et. al., 2018). The influence of the processes of a human resources department on the entire company can be clarified. HR departments have previously collected various data, but these have not been properly utilized. For example, the number of employees leaving the company during the previous year is easily measured - but it is difficult to answer the question of "why". The new concept should help to answer these questions by making connections recognizable. In addition, previously collected data was characterized by a strong reference to past and present. As part of HCA, reliable predictions for the future can be made.

With the help of HCA valuable information about existing and potential employees can be made. Algorithms are used to predict the behaviour or suitability of employees for specific tasks. These can also be used by companies to calculate how likely it is for an employee to leave the company. When HCA is used in recruiting, you can find out what the odds of matching candidates are for specific job ads or which portals generate the most applications. With HCA in this area, the applicant and success rates can be measured on different channels. Key metrics include the number of applicants per channel, the clicks on the job ad, the conversion rate and the cost per candidate. These serve to optimize the use of recruiting channels (Tohanean et. al., 2019). In personnel planning, it is possible to calculate how many employees with which qualifications will be required for specific positions in the future. In HR marketing, it is possible to investigate why candidates apply to a particular job and to a specific company. In HR selection, HCA helps identify the most appropriate employee for a position, that is, the one with the best chance of performing well and staying in the company for a long time. In personnel development, the measures that are particularly effective for an employee with a specific level of knowledge can be

defined. Moreover, HCA in leadership development allows you to calculate which employees are most suitable for a leadership career. Another form of HCA is the age structure analysis. By including operating and personnel data as well as personnel measures, future scenarios can be developed as to what the personnel structure will likely look like. The methods to be used may be experimental designs or questionnaire studies. In the area of cooperation between employees and other business divisions, a data analysis of the social intranet can be carried out. It is possible to calculate how efficiently the transfer of knowledge takes place and how high the degree of networking between the employees is. If the reasons for termination of contract are recorded and analysed by departing employees, this can help to prevent dismissals. It is also possible to identify the characteristics of long-term employees to find out how employees can be tied to the company.

HCA is the name of the new HR management trend – not unfounded, as studies show that many top companies are already using analytics tools to align HR measures with corporate goals. But not all HR departments are ready for this change: there is a lack of human resources officers who cannot handle analysis tools and interpret results. However, if a system for personnel analysis has been successfully implemented, there are many advantages: employee performance can be increased, training measures can be made more efficient and qualified job candidates can be found faster. HCA seems to provide solutions to many major HR issues. It is therefore to be expected that the use of HR analysis tools will increase, and companies will invest more in this area.

MICROSOFT'S PERSPECTIVE TO INNOVATION AND VALUE CREATION

The case study will first present the Microsoft's approach to value creation and then will focus on describing diverse applications of human capital analytics. Furthermore, the study will try to identify how these applications may contribute to business performance and competitive advantage of a company.

Microsoft is situated among the largest technology giants. The company offers its clients both products and services, having a diversified business model. The business unit that generates the highest percentage of revenue is represented by office products and cloud services, followed by the business unit for server products. Windows stands on the third place regarding revenues, then gaming, search advertising, enterprise services and devices occupy the next places. The last business unit on the list is the newly integrated LinkedIn (in June 2016), the social media platform used for professional networking. However, we should mention that, from the revenue standpoint, Microsoft Office still remains the most successful product. The majority of the products and services are developed internally, through engineering groups. For instance, there is the Artificial Intelligence and Research group, by which Microsoft focuses on AI development, favouring innovation and progress efforts are made in terms of infrastructure, services and applications. Over the last four years, Microsoft invested on average almost quarter of its total revenues on research and development.

Innovations in business model help a company to leverage new technology. In a data-driven digital era, this is potentially the most transformational way to find the right human capital that fits business strategy and objectives of a company. When viewed as a strategic business process, HCA must be developed as an organizational capability in order to generate high business performance (Minbaeva, 2017). Therefore, HCA may be considered as an innovative way through which the competitive potential of business capabilities is realized. Moreover, when its results are actionable and effectively converted into strategic actions, HCA gives the opportunity to have the business impact measured. Based on developing the strategic ability to act and the analytical competencies of HR teams within a company, HCA helps the company create strong competitive advantage.

In his 2018's letter to shareholders, the CEO of Microsoft, Satya Nadella underlines the importance of the technological impact and how Microsoft is creating its competitive advantage on the digital era's market: through innovation and technology. He is Microsoft's executive from 2014 and till now, his contribution to the company consists of significant initiatives including moving the company to cloud computing and developing one of the world's biggest cloud infrastructures. As a dominant tech company, Microsoft strives to innovate and to acquire other firms, which would enable entering new markets. The

new Microsoft CEO, amended the strategic approach of the company by choosing to collaborate with companies and technologies that are competing with Microsoft, including Apple Inc., Salesforce, IBM, and Dropbox. In the 2018 annual report the CEO stated that the company's mission is "to empower every person and every organization on the planet to achieve more" (Microsoft, 2018). The company's platforms and instruments assist driving productivity for small businesses, competitiveness for large corporations, and effectiveness for the public sector. They also facilitate fresh start-ups, enhance results in health and education, and empower human ingenuity. In 2018, Microsoft France has officially opened its doors to an Artificial Intelligence School, preparing this way the workforce of today for the work of tomorrow. The presence of the full-timers, interns, freelancers, or contractors coming from different generations is contouring a new mixed workforce. While baby boomers are retiring, companies are starting to recruit the digital natives from generation Z.

Currently, the HR technology market is developing rapidly, seeking to fulfil the organizations' needs. Microsoft is a representative force of the HR tech market. Today, the company generates more than $8 billion in cloud revenue (Microsoft, 2018). The company is currently transforming the HR profession through HCA by reskilling the HR teams in order to operate as performance advisors. As in today's world, the human capital strategy is the main start point for the value creation process, HR teams stand in need of developing new ways to acquire talent, engage employees and develop further leaders. It became hard to manage human resources without a proper understanding of technology and innovation. Leading skills must be developed by HR professionals in areas as analytics, cloud, mobile as well as social technologies.

In the digital age, every process within a company is digitized, and with its differentiated strategy, Microsoft is winning clients, enabling companies of all sizes to digitize critical business functions. Launched in 2016, Dynamics 365 is a business resource planning, client relationship management and human capital management product line that contributes to the value creation process by integrating modular applications for different functions or processes, using a cloud-powered data model. This enables companies to rapidly and efficiently change and develop their business model. The single data model generates the chance to create custom applications that are not restricted to some specific business units or systems and can readily be incorporated into data and applications from third parties. Microsoft sends through this product an open invitation to innovate. A recent study found that companies realized an average $16.97 in returns for each dollar invested in HCA. Elman and Wettermann (2018) were writing about return on investment case studies on Microsoft's customer deployments, suggesting that businesses are taking advantage of the Microsoft's investments in cloud and analytics in order to be able to gain substantial returns by enhancing productivity and sales and reducing costs. Many of the deployments were related to BMI. The main factors that led the companies to value creation are the ability to innovate through Microsoft's solutions within the existing business model or creating a new one and the access to innovation through the cloud technology. Microsoft is one of the companies that gain more value by enabling other businesses to create value.

Microsoft is also delivering Power BI as a business analytics service. It facilitates sharing customized dashboards and interactive reports across the organization. One of the most valuable solutions built on Power BI is being represented by HCA. In 2017, Microsoft launched the Workplace Analytics for Office 365 that enables organizational analytics and provide behavioural insights which can be used in improving employee engagement, and thus, productivity. Microsoft uses Workplace Analytics through a multitude of initiatives — from understanding behaviours that drive enhanced staff commitment to recognizing the characteristics of top-performing executives that lead the cultural transformation of Microsoft from within. Microsoft genuinely believes that HCA is a competitive imperative for any HR team. Specialists within the company worked 13 years to create a data warehouse in order to face the business challenges as lack of data and quality of data. Due to its innovative services of which the company itself is taking benefit, early attrition at Microsoft is less than two years due to the high investments in a new hire; the estimated costs are at 150% of the employee's salary (CIPD, 2014).

CONCLUSIONS

The main goal of the current study was to determine how HCA is improving the business in the digital era. Data is collected more than ever before and using HCA, companies may create great business opportunities. Delivering people insights, HCA helps the business by nurturing competitively differentiating capabilities, as the human capital is now the business model's internal driver. HR function is going through a reshaping process, which involves the movement from an administrative and operational function to a strategic one. For that reason, HCA is becoming the authority that will improve the decision-making process by facilitating business opportunities identification as well as measuring their business impact. Making a difference from this point of view, HCA will help HR to take real-time and data-based decisions. Moreover, the transformation of all HR related processes is taking place in an interactive way, due to HCA. Because HR has a strong impact on business outcomes, HCA will also impact the business performance predictions. HCA will change the subjective way of making business decisions with the objectivity delivered by data findings. This provides a good starting point for discussion and further research. Companies may gain the competitive advantage through HCA by delivering future business predictions, but this may be challenged by the quality of data provided. On the question of how the business can stand out with a competitive advantage acquired through HCA, this study highlights that in a digital era, data-driven approach has becoming essential to business competitiveness.

Data and integration of data will certainly enable innovations in the business model to take place. The business model of a company represents its architecture of the value creation process and BMI may be the strategic business processes that strongly contributes to it; therefore, BMI should make companies able to translate technical success into business success with the help of information technology. Microsoft is a good company example to study the effects of leveraging data-driven technology, as the company puts data-driven decision making at the heart of its business strategy. Once a company is building an analytical capability to sustain the HCA development, it will automatically grow its human capital capacity. This may be considered a promising aspect of fostering a continuous learning organizational culture, from which a company may experience a distinctive competitive advantage. This may result from the company capability to incorporate all the data into its business processes as well as its strategy and daily operations. However, even if HCA is not going to address every challenge HR may experience, it will at least deliver a strong understanding about how the HR related processes need to be planned and optimized.

Broadly translated our findings indicate that, when viewed as an innovation unit, HCA may challenge diverse industry specific business models in order to achieve a strong competitive advantage. As keywords such as workforce diversity and innovation often determine the discussion about the new world of work, HCA is a new approach that offers the potential for a successful transformation of HR in the course of digitization. It may help the business acquire higher return on investment, being a powerful tool for HR to increase its strategic influence. Future investigations may be necessary to validate the kinds of conclusions that can be drawn from this study.

ACKNOWLEDGEMENTS

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