

The Rise (and Fall) of HR Analytics

A Study into the Future Applications, Value, Structure, and System Support

Sjoerd van den Heuvel* & Tanya Bondarouk

University of Twente, Faculty of Behavioural, Management, and Social Sciences, HRM Department, P.O. Box 217 7500 AE Enschede, The Netherlands

*Contact author: s.r.h.vandenheuvel@utwente.nl

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“No one can predict the future course of the HR profession. No one can predict how HR practices will change in the future. Thinking about the future, however, helps us to prepare for it. Thinking about the future may lead to innovative insights. Thinking about the future may help to change today’s HR practices in positive ways.” (Ulrich, 1997: 231). Much of the change today, and even more of it in the future, will be driven by new technological advancements, availability of Human Resource (HR) data.

In 1980s the first automation of some HRM processes (payroll and data administration) attracted scholarly attention that focused mostly on examining factors affecting adoption of HR Information Systems (HRIS) and identification of HR practices to be automated (DeSanctis, 1986; Mathys & LaVan, 1982; Lederer, 1984; Magnus & Grossman, 1985; Taylor & Davis, 1989). That research taught academics and practitioners a great deal of assembling a set of technological requirements that were needed for HRIS to succeed: customization and integration of HRIS, interfacing with corporate Information Systems, centralization of records (Magnus & Grossman, 1985). However, business reported only but limited employment of HRISs, while academic research was even stronger limited.

The 1990s have brought quicker and more intensive developments in both academic and business lives. In these years, the usage of Information Systems for HRM was limited, but slightly increasing, and research started collecting evidence that HRIS would reduce administration in HRM processes. Organizations showed an increased awareness for the broader possibilities of implementing computer systems in HRM (Kossek, Young, Gash, & Nichol, 1994; Mathieson, 1993; Hannon, Jelf, & Brandes, 1996; Haines & Petit, 1997). This decade showed

increased interests among scholars in HRIS, although – still limited in numbers – academic publications tried yet to “catch up” with the growing practice of HRIS. While the period of two decades (1980s-1990s) has brought awareness and slowly growing full-of-doubt acceptance of Information Systems in HR practices, years that followed showed a rapid growth and interrelatedness of Information Systems and HR practices, mostly because of the developments with the Internet. The Internet's takeover of the global communication landscape was almost instant in historical terms: it only facilitated 1% of the information flowing through two-way telecommunications networks in the year 1993, already 51% by 2000, and more than 97% of the telecommunicated information by 2007 (Hilbert & López, 2011).

In the 2000s, the HRM function seemed to take on board many of the technological developments available. The term electronic HRM (e-HRM) appeared in the practice, and the academic community accelerated its effort in understanding a (by then) two-decade standing practice of e-HRM/HRIS. Companies broadening the scope of e-HRM applications: although administrative e-HRM was still the most popular application (62% of companies), there was increased use of strategic applications like talent acquisition services (61%), performance management (52%), and compensation management (49%) (CedarCrestone, 2006). This decade has seen numerous publications and academic discussions reported in the proceedings of newly born e-HRM conferences (Bondarouk & Ruël, 2009).

Forward to today, organizations are no longer surprised about making personnel management digital. The administrative applications are still the most popular for self-portal, payroll administration and record keeping. But companies broaden the scope of HRM applications. More strategic applications, such as talent acquisition services form a leitmotif on the digital HRM stage.

In parallel with the digitalization of HRM, the door was opened for opportunities for HR professionals to use the data generated by technologies to support HRM and business solutions, in particular to support decision making. Already in 2005 Boudreau and Ramstad advocated that “the traditional service-oriented HR focus must be extended to a ‘decision science’ that enhances decisions about human capital” (Boudreau & Ramstad, 2005: 129). They argued that with such a paradigm shift – which in fact is comparable to the earlier evolutions of more mature strategic functions such as finance and marketing – the HR function could actually find out what it means to be ‘strategic’. The HR decision science could enhance decisions about people, just as “the marketing decision science enhances decisions about customers, and the finance decision science enhances decisions about money” (Boudreau & Ramstad, 2005: 131). Only now, more than a decade later, it seems that the paradigm shift has finally set in. Businesses have opted for more popular language though, using the terms HR analytics, workforce analytics or people analytics. Inspired by success stories of organizations generating up to \$100 million in savings, while at the same time improving the engagement and productivity of employees, advanced HR analytics is becoming mainstream (Fechey-Lippens, Schaninger, & Tanner, 2015) and is increasingly considered to be an indispensable tool for HR (Boston Consulting Group, 2014).

But what is HR analytics actually? We define it as the systematic identification and quantification of the people drivers of business outcomes, with the purpose to make better decisions. As mentioned before, the terms HR analytics, workforce analytics and people analytics coexist and are often used interchangeably. However, we believe that the difference in labelling does go beyond simple semantics. HR Analytics could for example suggest that the responsibility of identifying and quantifying people drivers of business outcomes lies at the HR function or department. However, from a business point of view, it doesn’t matter at all which team or department conducts the analytics. Moreover, as Ulrich (1997) states, strategic HR is owned,

directed and used by line managers. Therefore the business bears the responsibility for employee related analytics of any kind. The label workforce analytics is actually detached from the HR function, but may have an exploitative association. Still, some leading software vendors such as Workday and SAP's SuccessFactors use the term workforce analytics for their products. People analytics may be the most neutral and employee friendly label, and is for example consistently used by Google, who in general avoids the term human resources and therefore named the HR department 'People Operations'. Usage of any specific label will therefore mostly be a matter of consistency in specific product or business language and/or philosophy. The present study adopts the label HR Analytics, since the study was conducted in a Dutch context, where the dominant label is HR Analytics.

Many HR minded people predict a promising future for HR analytics. However, organizations are struggling to let HR Analytics become an organizational reality, where some even suggest that 'HR and People Analytics' represents one of the major capability gaps in today's HR practice (Deloitte, 2015) and most organizations, even large multinationals, lack a clear vision of the future of HR Analytics within their company. Insight from academia may be expected, but empirical research on HR analytics and its development is basically non-existent (see, for an exception, Boudreau & Ramstad, 2005). A quick search in the Web of Science database with the search term "HR analytics" yielded only three results (see, for example, Aral, Brynjolfsson, & Wu, 2012; Ulrich & Dulebohn, 2015), and the terms "workforce analytics" and "people analytics" weren't more successful. An explanation for the lack of scholarly attention for HR Analytics may be that HR Analytics is considered to be just a new tool for HRM. Or perhaps, the struggle of organizations to get HR Analytics implemented is perceived to be comparable to regular change management challenges, and therefore does not attract a preferential treatment among scholars. However, in our view, such perspectives underestimate the transformational

potential of HR analytics. Differently put, the emergence of HR Analytics may very well cause existential changes in the Human Resource Management function, and perhaps organizations as a whole.

What we observe is an extremely accelerating pace of technologically-enabled developments within HRM, allowing for an HRM decision science, and as a result – an extreme infiltration of HR Analytics into the research and business agenda. In this paper we argue that we – scholars – therefore do not have time to think and doubt about the usefulness, applicability and/or complexity of HR Analytics, but we must come up with the empirical evidence on its development and its relevance for science and business. Particularly, in this paper we encourage scholars to leap into the future developments of HR Analytics, that in our view will bring real value to the knowledge development and businesses. As described above, looking at the swift developments within e-HRM/HRIS, we may miss crucial and rapid developments if we do not undertake a joint research action to make an attempt to explore the future of HR Analytics. Because researchers and the business world are witnessing the future of HR Analytics already today, the demand is growing to understand it now in order to inform knowledge and practice community about scenarios, values and structures of nearing new developments in HR Analytics .

Overall, the future studies within the field of HRM have not received scholarly inquiry compared to other fields. For example, De Meyrick (2003) identified eleven future studies during 1995-2002 concerning the future developments of information technology and zero concerning HRM. Future studies have been conducted on practical business challenges concerning for example e-commerce (Addison, 2003) and future tourism potential (Kaynak, Bloom, & Leibold, 1994), as well as in management studies focusing on future of management (Schwarz, 2008) as well as the future of knowledge management systems (Nevo & Chan, 2007). The scattered evidence concerning HRM future studies varies from the field of strategic HRM (Lepak & Shaw, 2008)

towards the developing of future HRM practices (Robinson, Sparrow, Clegg, & Birdi, 2007) and a survey predicting future HR trends (Hayes & Kearney, 2001). Moreover, future studies in HRM include human resource development (McGuire & Cseh, 2008; Hatcher & Colton, 2007), country specific studies (Lin, 1997), a workplace stress study among HR professionals (Loo, 1996) and also suggestions for the focus in future HRM research (Huselid, 2011). However, according to our search from scholarly databases, published books, various conference proceedings, latest e-HRM and HRIS reviews (Bondarouk & Furtmueller, 2012; Marler & Fisher, 2013; Van Geffen, Ruël, & Bondarouk, 2013; Ruël & Bondarouk, 2014) and reviews on future studies (Meyrick, 2003), future studies in the field of HR Analytics are non-existent.

The present study therefore aims to contribution to the development of HR Analytics as a field of research to inform business, by exploring what the future of HR Analytics will look like. More specifically, this study examines how HR analytics practitioners of major Dutch organizations think that HR Analytics will look like in 2025. The central research question addressed in this study therefore is: *What does HR Analytics look like in 2025?*

By providing a point of reference in the development of HR Analytics, we facilitate business and HR leaders to take informed decisions on investments in the further development of the HR Analytics discipline. Such investments may subsequently lead to stronger HR Analytics capability within organizations, and cultivate a fact-based and data-driven culture which so many organizations and leaders pursue.

Furthermore, based on the insights obtained from the study, we will suggest a form of a research agenda which seeks to improve the scientific robustness of debates concerning HR Analytics. Moreover we will advocate a new wave of scholarly research focusing on the development of the business discipline HR Analytics, including its impact on the HRM function and on organizations as a whole.

The future evolution of HR Analytics

Discussions about the future evolution of HR Analytics are dominated by models that primarily focus on the evolution of the analytical component itself. In his book 'The new HR analytics', Jac Fitz-enz (2010) for example discusses the 5-step value ladder of measurement. Starting at the first step 'Recording', which according to Fitz-enz marks the beginning of human resources measurement in 1978, you can (via the steps Relating, Comparing, and Understanding) move all the way up to the fifth step 'Predicting' at which you will be "able to predict organizational outcomes for a given human capital investment" (Fitz-enz, 2010: 10). Other classification ascend from descriptive analytics, via correlation analytic, to predictive / prescriptive analytics (Sesil, 2014), or from operational reporting, via advanced reporting and advanced analytics, to predictive analytics (Bersin by Deloitte, 2013). Whatever classification is applied, it only tells one small part of the story; that organizations aim to move towards what they consider to be the holy grail of HR Analytics: predictive analytics (Harvard Business Review, 2013). However, there is much more to HR analytics than only measurements and statistics. Cascio and Boudreau (2011) for example emphasize the necessity of developing 'logic models' in order to actually understand relationships between variables or numbers. Without logic models, they say, it is impossible to know where to look for insights. HR Analytics is therefore "first a mental framework, a logistical progression, and second a set of statistical operations" (Fitz-enz & Mattox II, 2014: 2). Consequently, the positioning of HR Analytics in the organizational structure, for example within the HR department or within a general business intelligence department, may considerably influence the logic models that are developed. This in turn will influence the insights that are generated and the added value that is created.

That there is much more to HR analytics than only measurements, statistics, and some logical reasoning, was illustrated by Coolen and IJselstein (2015). In their article ‘A practitioner’s view on HR analytics’ they introduce the HR analytics capability wheel and argue that “only those organizations that manage to create and maintain a balanced blend of different relevant capabilities will be successful in HR analytics”. These ‘relevant capabilities’ were described as perspectives and include the business perspective (e.g. proper understanding of business challenges and strategy) , the human resources perspective (e.g. knowing about HR processes, available HR data, and ethics of analyzing employee data), the consultant perspective (e.g. ‘selling HR analytics to business’ and presenting results in a convincing manner), the data scientist perspective (e.g. conducting statistical analyses, but also being able to work with more cutting edge development, such as machine learning algorithms), the IT architect perspective (e.g. understanding of the HR IT landscape and data warehousing) and the software perspective (e.g. in-depth knowledge of working with analytical software, depending on whether are outsourced or conducted in-house) (Coolen & IJselstein, 2015). The last two perspectives demonstrate the relevance of technologically-enabled developments within HRM in general, and HR analytics in specific. After all, information technology in HR analytics does not only have the purpose to collect and store data, but also to link and analyze data, as well as to facilitate the convincing visualization and presentation of the results and insights. Coolen (2015) even foresees that “the next big thing in HR analytics is the use of business-user-friendly self-service analytical software”.

The former at least learns us, that a unidimensional perspective, focusing exclusively on for example the statistical or Information Technology element of HR analytics, provides an incomplete and most likely a distorted and unreliable picture. We therefore opt here for adopting a multi-dimensional perspective I studying HR analytics. Inspired by a study on ‘State of HR

Analytics' conducted by the Center for Advanced Human Resource Studies at Cornell University (CAHRS, 2010), we will explore the future of HR analytics on four central topics, being:

- Application (goals, organizational themes, problems, and challenges for application)
- Value (added value as perceived by organization, and influence on decision making)
- Structure (positioning, organization, and involved actors)
- System support (support from Information Technology)

Based on these central topics, we can refine our central research question into: *What does HR Analytics look like in 2025 with regard to applications, value, structure and system support?*

METHODS

Sample

We collected the data of this study among members of a Dutch HR analytics practitioners group (or people suggested by these members). The HR analytics practitioners group was formed in 2014 by HR analytics professionals of some of the Netherlands' largest organizations who now meet on a quarterly basis with the main purpose to exchange knowledge and experiences. Initially, 41 people were contacted by e-mail or telephone to ask whether they were willing to participate in the research. The survey was sent out to the 29 people who had agreed to participate. An eventually, a total of 20 people returned the survey¹. Most of the respondents had job titles such as 'manager HR metrics and analytics', 'program manager HR analytics', 'consultant HR analytics', and 'advisor HR analytics'. However, the sample also included, for example, a 'manager HR reporting', 'manager HR operations', and 'HR account manager' who were responsible for (aspects of) HR analytics within their company. Furthermore, two PhD

¹ In two cases, multiple respondents had jointly filled in the questionnaire, which resulted in a total of 17 returned questionnaires.

candidates who were employed by a company and were focusing exclusively on HR analytics, participated in the survey. The 20 respondents were employed by in total 11 different large Dutch organizations, active in banking, insurances, utilities, pensions, biotechnology, petrochemicals, research and consultancy, with each company employing between 4000 and 90.000 employees.

Data Collection

Qualitative data were collected from open-ended questions in a survey, that was send out by e-mail. The survey comprised seven questions covering the four central topics application. For the topic of Application, the questions ‘*What will be the main goals for applying HR Analytics in 2025?*’ and ‘*On what organizational themes / problems / challenges will HR Analytics be focused in 2025?*’ were asked. For Value, the questions ‘*To what extent do organizations value HR analytics in 2025?*’ and ‘*To what extent will HR Analytics influence decision making in 2025?*’. For Structure, the questions ‘*Which internal and external actors are involved in conducting HR Analytics in 2025 and what are their roles and responsibilities?*’ and ‘*How is HR Analytics positioned / organized within organizations in 2025?*’. And for the topic of Systems, the question ‘*How does information technology support HR Analytics in 2025?*’ was asked. Each of the seven questions was followed up by the question ‘*And how does this differ from the current situation?*’.

Data Analysis

To analyze the data, the *analytical hierarchy* described by Spencer, Ritchie, & O’Connor (2003a) has been applied. Although this analytical structure can generally be applied in analyzing qualitative data, it is especially suitable for thematic, largely cross-sectional analyses based on the interpretations of meaning (Spencer et al., 2003a). The structure comprises three phases, which are data management (phase 1), descriptive accounts (phase 2) and explanatory accounts (phase

3). The aim of these three phases is to gradually move up the ‘ladder of analytical abstraction’ (Carley, 1990), while progressing from describing to explaining (Miles & Huberman, 1994).

Phase 1: data management

In the data management phase, data are supposed to be labelled, sorted and synthesized, based on the generation of a set of themes and concepts (Spencer, Ritchie, & O’Connor, 2003b). In the present study an index with an a priori set of themes was created. The index comprised four main themes, based on the four central topics of the study (i.e. 1. Application; 2. Value; 3. Structure; 4. Systems). Since in all questions, respondents were asked to describe how the 2025 situation differed from the current situation, each main theme was divided into a subtheme ‘current’ and ‘future’ (e.g. 1.1 Application – Current; 1.2 Application – Future). Finally, these subthemes were divided, based on specific elements addressed in the questions (e.g. 1.1.1 Application – Current – Goals; 1.2.4 Application – Future – Challenges).

The actual indexing of the raw data implied labelling a particular section of the data with the number of the theme as mentioned in the index (e.g. 1.1.1 or 1.2.4). Indexing was conducted in Atlas.ti software and resulted in a total of 320 fragments being labelled. During the process of indexing, two new themes were added to the index: ‘data’ and ‘definition’. The next step in the process was to create a thematic chart. Thematic charting is a process referring to “summarizing of the key point of each piece of data – retaining its context and the language in which it was expressed – and placing it in the thematic matrix” (Spencer et al., 2003b: 231). In the matrix, each of the respondents was allocated a row, while each subtheme was allocated a column. After that, the indexed sections were then copied into the chart and synthesized in newly added columns in order to reduce the data to a more manageable amount. In line with the prescription of Spencer et al. (2003b) we aimed to retain as much as possible the original wording of the respondents, to

keep interpretation to a minimum and to keep materials of which its relevance was not immediately clear.

Phase 2: Descriptive accounts

During the second phase of the data analyses, descriptive accounts were created. This basically came down to the identification of key dimensions and refined categories (Spencer et al., 2003a). The process involved looking for similarities between the synthesized fragments within a theme, but across all cases (i.e. respondents). Subsequently, the fragments were sorted to distil the key dimensions within the range of sorted data fragments, and to formulate categories. This process was rather iterative and involved moving from the document in which the synthesized fragments were sorted, to the thematic chart, the original survey data, and back again. The categories and key dimensions that were identified, are presented in Figure 1.

Phase 3: Explanatory accounts

During the third phase of the analyses, explanatory accounts were developed. During this phase we tried to find patterns of associations within the data and then attempted to account for why those patterns occur. As described by Spencer et al. (2013b: 252) this phase involves “a mix of reading through synthesized data, following leads as they are discovered, studying patterns, sometimes re-reading full transcripts, and generally thinking around the data”. For example, during the descriptive accounts phase it became clear that respondents predicted a general trend of decision making becoming more evidence based, regardless of the discipline in which decision making took place. Deeper exploration during the explorative accounts phase, made clear that the entry of a new generation in management was one of the drivers of this trend. The explanatory accounts are included in the description of the results.

RESULTS

In this section we will successively present the result of the analyses per central topic of the study (i.e. applications, value, structure, and system support). Per topic, we will first discuss the situation in 2015, followed by the situation in 2025. An overview of the key findings is presented in Table 1.

Insert Table 1 about here

Application of HR Analytics in 2015

The first central topic of this study is the application of HR analytics. Results concerning the current situation can be grouped into three categories: the goals of HR analytics, its current analytical focus and the substantive themes on which HR Analytics is focused. Looking at the current goals of HR analytics, respondents indicated that the primary concern currently was to actually get HR analytics established. Several underlying elements were mentioned. Firstly, it involves proving itself and thus proving its added value to the business by demonstrating that HR analytics driven interventions realize measurable business improvements. Secondly, it implies exploring how and under what circumstances HR analytics can be applied within the organization, and be implemented in the daily business routines of the organization. In also involves assessing what capabilities are needed to execute HR analytics and what the composition of an HR analytics department may look like in terms of amount of FTEs, required job profiles and responsibilities. Organization's legal department and consultancy companies are involved here to advice. The third element of establishing HR analytics is creating awareness.

Respondents indicated that HR Analytics is often rather unknown within organizations. And when known, it is often considered an experimental platform within HR, which cannot count on much attention from business management, nor on their willingness to apply it. One respondent indicated that the majority of managers would just be happy if HR was able to provide standard metrics. Attempts are therefore made to create awareness among HR business partners on what the purpose of HR Analytics is, and to explain that HR analytics is a tool for both HR and the business. A fourth aspect mentioned by the respondents was the necessity to start building alliances, both within and outside of HR. Within HR the aim is to deepen the collaboration with its disciplines (e.g. training & development, and compensation & benefits), while outside of the HR domain explicit and transparent collaborations are needed with adjacent departments, such as control and compliance. The final element concerning the establishment of HR analytics, was to lay a foundation for conducting analyses. This involves for example gathering business cases that could be analyzed, obtaining access to data sources, and acquiring the proper analytical tooling.

The second category that emerged from responses, concerns the current analytical focus in the application of HR Analytics. People involved in HR analytics currently spend the majority of their time on the basic reporting and the calculation of metrics. Actual analytics, where variables are compared to each other, are conducted to a limited extent. Such analytics mostly involve simple statistics like cross tabulations. Furthermore, the primary focus is on historical insights, rather than on prospective insights obtained from predictive analytics. Also, it was indicated that the analytical focus is targeted at data that is already available within the boundaries of the organization, rather than on data that may still need to be gathered, or that is available outside of the organization, such as social media data or data from personal devices.

The third category includes the substantive themes on which HR analytics is focused. Although there seems to be consensus that HR analytics aims to contribute to business outcomes,

various respondent indicated that HR analytics is still often exclusively focused on HR themes, meaning that HR data are combined with HR data, without relating them to business outcomes. Explanations provided by respondents included that HR is primarily focused on its own HR organization and thus on solving HR specific issues, rather than business issues, but also that business data is either harder to gather or impossible to directly link to HR data. Furthermore, besides the fact that several concrete areas were mentioned on which HR Analytics was conducted (e.g. management development, employee value proposition, strategic resource planning, talent management and performance management) it was also noted that the primary focus of HR analytics is traditional KPI's, such are absenteeism and the percentage of women in management jobs. The focus on such themes may be explained by the continued focus on reporting and metric, rather than on true analytics.

Application of HR Analytics in 2025

The results concerning the future application of HR analytics showed a very different picture. First al all, the central goal in 2025 would be to foster fact-based organizational decision making, referring to evidence-based ways of working and decision making in general. This implies, for example, being information driven, rather than relying on gut feeling. As a second goal, in the same vein, respondents mentioned the development of an evidence-based mindset, but then specifically within HR. It was mentioned that HR is often considered as a somewhat soft profession, that relies on hunched, experience and the course of history. HR should become able to build strong argumentation based on models and numbers, in order for more quantitative oriented business disciplines to take them seriously. The third central goal mentioned, referred to determining the HR drivers of business outcomes. HR drivers could in this respect be focused on any HR domain, and should be considered in the broadest sense possible. One respondent also

indicated that the scope of HR Analytics, which currently lies at an organization's own employees, should be expanded to the flexible workforce. Business outcomes on the other hand, were mainly referred to in general terms, such as improving the performance, efficiency or effectiveness of the organization, optimizing operational costs, or increasing the organization's impact on its clients. The fourth goals concerned proving that HR analytics driven interventions realized measurable improvement. In more general terms, it was mentioned that the aim would be to make HR analytics mature enough to complete the full HR analytics cycle, which starts with conducting HR analytics on a business case, followed by producing insights from these analytics, implementing an intervention, executing a follow-up measurement, and determining the costs and benefits of the intervention compared to its results. The fifth goal of HR Analytics concerned the transformation of established organizational models. According to several respondents HR Analytics could ensure lean and agile organizational structures which can be drawn based on an optimal combination of people characteristics and skills on the one hand, and strategic business targets on the other hand. Working positions would then be tailored around human capabilities and characteristics, instead of the other way around. The final goal, which perhaps is more of a challenge, is to manage data privacy as well as the growth data volumes. As a respondent stated, we can rest assured that more data will be available in 2025, new forms of data will be collected and be accessible to provide new information and new insights. Challenges in this respect would be: determining which data to use, how to structure the data, how to protect them and in the end how to best utilize them. As the respondent stated, at the moment, the majority of companies is hardly able to maintain one separate database storing people's data, not to mention ten in 2025. Maintaining one's compliance to any data privacy legislation, and keeping the trust of the people, would be additional challenges. Especially since there is a thin line between privacy intrusion and

business progression. Data privacy will therefore be an influential factor in shaping the future of HR Analytics.

In the second category, the analytical focus, the central element mentioned by the respondents was the focus on predictive analytics, or predictive modelling. Such analytics could for example be focused on predicting peaks in employee turnover or changes in levels of engagement. In more general terms, the purpose of predictive analytics is to be less reactive. The second element within the category was the emphasis on data integration. Data beyond the HR domain (e.g. financial and marketing data), but also data from outside of the organizational boundaries (e.g. data from personal gadgets), should be combined. With regard to data analyses, these fields are now operating as silo's, separate worlds. The benefits of integration are that it simplifies the analytical process, and enables the analysis of more advanced, complex and overarching strategic issues which cover multiple businesses and staff functions. The third element with regard to the future analytical focus, concerns the standardization of measurements. On the one hand standardization implies clearly defining and conceptualizing concepts such as performance, in order to (be able to) clarify what they mean and entail. On the other hand, it implies the development of reliable and valid measurements for such concepts, with the purpose of facilitating organizations to conduct cross-country and cross-cultural HR analytics. A fourth aspect coming forward from the analyses was the standardization of the analytical approach and tools. It was perceived that HR analytics would reach a level of maturation by 2025, which would imply higher levels of standardization, resulting in for example automated calculations and dashboards automatically reporting effect-sizes of relationships. But this maturation would also bring forward a proven and optimized HR analytics toolkit to facilitate data preparation, data blending, analyses, and storytelling. One respondent indicated that standardization would also

support further education and knowledge management on HR Analytics, which would be crucial in order to ramp up future HR analytics capacity.

Concerning specific themes on which HR Analytics would be focused in 2025, a great variety of HR themes and practices were mentioned, including leadership, recruitment, succession planning, strategic workforce planning, retention management, flexibilization, virtual and self-steering teams, e-HRM, talent management, employability, employee health, compensation and benefits, diversity and engagement. It was indicated several times, that the themes studied in 2025 would not be that different from the current situation. However, the complexity of the cases will increase, the themes will concentrate more on overarching organizational challenges and HR themes will increasingly be studied in conjunction with business data and data from other disciplines. Also, the course of developments in big data, such as the accessibility of social media data, will influence the actual themes being studied in 2025. Furthermore, understandably, it was stressed that the themes, just as the related challenges, would differ per organization. Retail organization may for example be more focused on performance in terms of profit and business revenue, while non-profit organizations such as many hospitals may be more interested in optimizing efficiency or patient satisfaction. Some examples of future themes of HR Analytics mentioned by the respondents are: the relationship between strategic personnel planning and sales or productivity; finding the right balance between different types of contracts, such as permanent contracts, fixed-term contracts, and contracts with self-employed workers; the impact of new ways of working, such as flexible workplaces instead of fixed workplaces, on employee productivity; performance in virtual teams versus performance in a more traditional setting; effects of self-service e-HRM tooling compared to shared service centers; smart health, for example to adjust work pressure for people vulnerable to burnout.

Value of HR analytics in 2015

The second central topic of this study was value, focusing on the added value of HR analytics as perceived by the organization, and the influence of HR analytics on decision making. First of all, HR analytics is currently still a relatively unknown practice in organizations, both within HR and business. In general, analytics projects are often considered to be something additional, instead of something elementary. A main current challenge is to explaining what HR analytics actually is, and what its purpose is. Currently, early-adapters of HR analytics are trying to convince the organization. However, as stressed by the respondents, HR analytics still has to prove its added value. It was stated that in the current situation, HR Analytics creates large expectations, but did not manage to produce concrete results up to now. Organizations do see HR Analytics as a boat they can't miss, but not as an activity that already adds significant business value. HR analytics is not yet embraced by the business, not prioritized and therefore generally not influencing business decision making. Several related causes were mentioned. One is that HR is generally not involved, or taken seriously in business decision making. This may restrict the influence of HR analytics, which has most often originated from the HR function. Secondly, it was mentioned that the HR business partners were not ready yet for applying a more statistical and analytical approach in their collaboration with the business. Moreover, one respondent stated that findings coming from analytics are often hard to grasp for the less data-savvy individuals, which are actually often found within HR. A third explanation was that the extensive use of data and analytics to base decisions on, is in general something new for many business managers. Consequently, there is currently still plenty of room to rely on gut feeling. All in all, business manager often find the application of analytics in decision making hard to understand, accept, and adopt.

Value of HR analytics in 2025

With regard to the future value of HR analytics, the general perception among respondents was that by 2025, HR analytics is an established practice within organizations. It has proven its added value, and even necessity, in tackling business problems. Consequently, many comment were made arguing that HR analytics will be a major influencer of future decision making in both the HR and the business domain. Some illustrative comments were: ‘managers consider HR analytics an unmistakable link in underpinning and making strategic choices’, ‘In ten years, no single decision within the HR domain will be made without a clear business case supported by statistical data’, and ‘HR analytics will be seen as a viable addition to existing decision making tools’. At the time, however, some nuances were made with regard to the increasing relevance of HR analytics. The main one was that the development of HR analytics will benefit from the general trend of evidence-based decision making. Analytics will become an inevitable part of decision making and organizational improvement. One respondents for example predicted that around 2025 there will be a movement quite similar to lean six sigma, where interventions and rewards will be tracked accurately and their contribution to business results will be measured. One of the drivers for the general development of evidence based decision making, was said to be entry of newer generations in management positions. Of course, as indicated by another respondent, there will still be a core of decision makers – born around or before 1970 – who will remain to rely on gut feeling. In some final nuances, it was argued that the rise of HR analytics was dependent on the extent to which HR would actually be able to build a track record in HR analytics, and the extent to which data sources can be combined. However, HR analytics is expected to be of considerable value for organizations in 2025.

Structure of HR analytics in 2015

The third central topic of this study was structure, focusing on the positioning and organization of HR analytics, as well as the actors that are involved. In most cases, HR analytics is currently organized as a specialized team and positioned within the HR function. Most teams or departments, often called 'HR Analytics' or 'HR Metric and Analytics', are quite recently established, and still exploring its ideal composition, role and responsibilities. In the cases where organizations have an HR analytics team in place, this team has a size of about 5 FTE. As mentioned before, HR analytics mostly originate from within the HR function, which was heavily criticized by one respondent, stating that it is easier to teach a statistical programmer HR than an HR professional statistical programming. Nevertheless, the primary actor currently involved in HR Analytics is HR itself. A few respondents mentioned the role of the HR business partner, being the liaison to management. Advises based on HR analytics, and desires concerning reporting and analytics are discussed between the HR analytics experts and this HR business partner. Connections between the HR analytics team and the other HR disciplines, and especially other disciplines outside of the HR domain, are limited. In some cases it was mentioned that finance was involved in a traditional reporting manner, 'internal departments' were involved because of data-privacy aspects, or some early adopters among management played their part. It was stated that only a few progressive organizations are internally collaborating with legal, finance, marketing and the works councils, and have well-established ties with labor unions, specialized consultancy companies and universities. However, these are still largely exceptions. One respondent explained that in his organization, the marketing and sales disciplines were actually collaborating in a big-data team, but HR was involved yet. In the same vein, several respondents stated that there were multiple analytics teams within their organization, mainly

positioned within a specific function such as marketing or finance. And one respondent indicated that business units themselves initiated HR analytics projects.

Structure of HR analytics in 2025

The results with regard to the future structure of HR Analytics can be grouped into three categories: the positioning of HR analytics in organizations, the internal actors involved and the external actors involved. First, the results concerning the future positioning of HR analytics. Many comments were made on where HR analytics would be positioned in 2025. Basically there were three groups of responses. Therefore were a few respondents (3) who were not sure whether HR analytics would be positioned within a company-wide big-data team, or as a separate team within the central HR function. Or that an HR Analytics team can reside within any part of the organization, as long as the link to the decision-makers is short. A second group of respondents (7) argued that HR analytics remains to be positioned within HR, and will become an integral part of each center of excellence, such as training, performance management, and compensations & benefits. In this scenario an intensive collaboration with the HR business partner, who would need to become more analytical, is foreseen. However, it was argued multiple times that the HR function as we know it now, will disappear, or at least change fundamentally. The HR function will be become more quantitatively oriented and there will be much less opportunity for HR advisors to rely on gut feeling. This bring us to the third group of responses. Half of the respondents (10) indicated that HR analytics will be integrated in an organization-wide analytical team or function. This will be a team that independently from disciplines and focus areas identifies valuable business cases and spots opportunities to improve business performance. Such a team will cover all functional areas that may be of relevance, thus also human resources. Various labels for such a team came across in the responses, including enterprise analytics, big

data team, central analytics center and business intelligence team. And it was argued that such a team could be positioned in for example an operations or a strategy department. Anyhow, bottom-line is that in this scenario HR analytics ceases to exist as a separate discipline within the HR domain.

The second category concerning the future structure of HR analytics concerns the internal actors that are involved. As may be expected, the analysts will play a central role. Some referred specifically to HR analysts, others to general analysts and stated that the analytical role could be fulfilled by, for example, statisticians, econometricians, mathematicians, and data scientist 'type of people'. Responsibilities for this group were not only to execute analyses, but also to continue propagate the added value of HR analytics and to speak up when research results are not to be advised upon, for example when results are significant, but not robust enough. Furthermore, these analyst will not work isolated, but have to cooperate closely with people in HR, finance, IT, marketing, and the board, in order to acquire the necessary information and data to obtain useful insights and influence decision-making.

A second major internal actor will be the business, more specifically board members, directors, and line-managers. Their role in HR analytics involves formulating relevant business questions, assuring the relevant business data is made available and supporting interventions that are based on the insights from analytics. But also interpreting the results from analytics, to explain the limitations and nuances are. A few respondents mentioned the supportive role the HR business partner may have here, as well as the role the HR management may play in claiming HR analytics' position in the organization. However, these comments were made from the perspective, that HR analytics would still be part of HR in 2025. Some respondents who foresaw a general analytics function, considered the (either internal or external) consultant as an important actor. These consultants would need to be able to translate business challenges into research

questions and have some understanding of statistics, in order to properly instruct the analysts. Also, they would need to have the capability to advise on the outcomes in such a way that is appealing to management, which implies they should also be able to link the outcomes to the business strategy and challenges management is faced with. A final actor that came forward from the analyses, although only mentioned by one respondent, is the employee him- or herself. The development of HR analytics is, according to this respondent, largely dependent on where the employee draws a line of using employee data to base decisions on. In the light of the growing importance of data privacy, as discussed before, the employee can be considered a very relevant actor, as well as a potentially constraining factor.

Within the third category regarding the future structure of HR analytics, several groups of external actors could be identified. The first group concerns educators, comprising universities and research centers. Respondents argued that by 2025 universities will have created HR analytics curricula and the first graduates from a fully focused data analytics curriculum will have entered the labor market. According to one respondent, the time is mature to officially establish a bunch of studies that would not only deliver good candidates for HR analytics jobs, but would also nurture research in this field. This brings us to the second group, knowledge partners, which can consist of universities or consultancies which help to broaden our knowledge. The third group mentioned are data providers. It is predicted that in the future, there will be more data sources and parties that have additional external data available, which needs to be integrated for the purpose of HR analytics. Fourthly, external data analysts will be involved for the purpose of data management, statistical analysis, and benchmarking. The final group concerns parties involved in data security. As one respondent stressed, there is a thin line between privacy intrusion and business progression. Therefore, actors such as the government and data protection

authorities will play an increasingly active role to prevent HR analytics is becoming a 'big brother watching you'.

System support of HR analytics in 2015

The fourth and last central topic of this study was system support, focusing on the support of Information Technology for HR analytics. The current system support for HR analytics is characterized by fragmented and outdated IT landscapes. Respondents mentioned that multiple systems are used to store data, and multiple tools and platforms are in use to execute analyses and visualize results. Generally, the IT support for conducting HR analytics is considered to be limited. One respondent indicated that in most organizations legacy systems are hindering the progression of HR analytics and can be considered the main obstacle of the moment. Examples of systems that are currently used to support HR analytics are outdated versions of Business Objects and Excel, while e-mail or SharePoint are mainly used for the distribution of reports.

It was also mentioned that even when data warehouses for HR analytics are in place, their usefulness is limited, because they primarily contain HR data. Business data is then not available, or is provided ad hoc. There is still little visionary thinking on how to develop a system architecture that facilitates the execution of proper HR analytics. Perhaps because, as one respondent indicated, there is not enough contact between HR analytic people and IT. The relationship can be classified as distant, and both speak a 'different language'.

The main disadvantage of this lack of system support for conducting HR analytics, is considered to be the time wasted on data retrieval, data cleaning, restructuring and organizing data, and thus on preparing the data for analyses. These activities can now be automated to a certain level, but a great deal of the HR analytics remains 'manual labor' for the moment.

System support of HR analytics in 2015

In general Information technology in 2025 is considered to be the main driver for HR analytics. It was said that without good tooling it is impossible to make solid analyses. And the more organization internalize HR analytics, the more there will be a need to develop supporting information technologies. Nevertheless, as one respondent stressed, there are more drivers of HR analytics' success, and IT is therefore a mean to an end, not a goal in itself.

By far the most comments on the future IT support for HR Analytics, concerned the integration of systems. Respondents referred to organization-wide systems, data in one single place, data from all disciplines centralized in one database, and infrastructure of analytics in one spot. All comments basically came down to that information technology would (need to) provide an infrastructure in which HR data are combined with financial data and other business and performance related data.

Furthermore, one of the main developments foreseen by the respondents concerned the automation of HR analytics. This includes, for example, the automation of data collection, by constantly running queries on the databases and thus automatically reporting on metrics, and making additional calculations. For sure, data will always have to be cleaned and judged to a certain extent, and manual actions will therefore remain a good part of the process. But at the same time, software is becoming increasingly smart, and Artificial Intelligence (AI) becomes more advanced. Consequently, less human capacity may be needed in the future for the purpose of data management.

Another related element brought forward by several respondents was the development of analytics as a self-service for managers. This implies HR analytics at any time, any place, and on any device, or as one respondent noted, doing HR analytics 'on the fly'. The device-independent

execution of HR analytics will be facilitated by the use of a data warehouse in which HR and business data are combined.

Furthermore, respondents indicated that the focus of information technology supporting HR analytics will shift from reporting to analyzing. Current software is still often focused on dashboarding and displaying metrics, and progress is mainly made in terms of more advanced reporting solutions. But respondents predict that this focus will shift to analytical solutions with visualization capabilities and statistical power to, for example, develop predictive models.

DISCUSSION

The central question addressed in this study was: *what does HR Analytics look like in 2025 with regard to applications, value, structure and system support?* Based on the ideas of a sample of 20 Dutch HR analytics practitioners, we found that the development of HR analytics will be driven by an emphasis on integration. First of all, an integration of data is foreseen. While HR analytics is currently largely focused on HR challenges, and thus primarily using HR data, the future emphasis will be increasingly on overarching organizational challenges by which data beyond the boundaries of the HR domain and even the organization are used. Integration of employee data with data from finance, sales, marketing, social media and personal devices is expected. Secondly, the integration of IT infrastructure is needed to facilitate the usage of multi-source data for the purpose of analyses. Regardless whether integration in this respect refers to, for example, the implementing of organization-wide systems or data warehouses, the data from all disciplines should be centralized in one database to facilitate its combined analyses. Thirdly, an integration of the governance of the various existing analytics functions is foreseen. Analytics teams in various disciplines are now still operating rather independently from each other. However, by 2025 a centralized analytics function is expected to be established. This function

will focus on identifying opportunities for improving business performance, while covering all functional areas that may be of relevance, including human resources. Consequently, HR analytics as a separate team, function, discipline or practice may very well cease to exist.

Technology came forward as the main driver of the development of HR analytics. Not only by means of integrating the currently fragmented IT landscape, but also by automating data collection and data preparation activities, which now take up (too) much of the time of HR analytics professionals. Furthermore, the offering of self-service application for line-management to facilitate analyses, has the potential to speed up the development of HR analytics considerably. Is the 'technological sky' then the limit? No, probably not. As strikingly mentioned by one of the respondents, there is a thin line between privacy intrusion and business progression. Conducting analytics on employee data can probably go as far, and develop as fast, as employees approve. Of course, there is the need for organizations to remain compliant to data privacy legislations, but they may be most dependent on the trust they have from these employees to use 'their' data for the greater good of the business.

Limitations and future research

One of the strengths of this research may also be its key limitation. The sample of this study consisted of practitioners active in HR analytics, either as a manager, an advisor or a PhD candidate. We can of course argue that such a group knows best where HR analytics came from, where it currently stands and where it is heading to. Perhaps so, because of their own experiences within their organization, or because they are involved in professional networks with other HR analytics adepts, or because they are influenced by readings on the 'datafication' of society, organizations and HR. But this may also imply that the sample may be biased to a certain degree. It would be interesting for future research to include business managers which are supposed to

be served with HR analytics. Or IT specialists who may be better informed about the current state of IT in supporting business analytics and who may also be better able to predict how technology will facilitate the development of HR analytics in the next years.

Another limitation concerns the inclusions of organizations active in different industries. In this rather pre-mature stage of HR analytics research, such a broad sample of organizations surely helps to get a general impression of the state of HR analytics and its likely development in the next decade. However, a sector- or industry-focused approach may provide more in-depth insights. For example, the extent to which an organization already has an analytics culture, or houses analytical capabilities in its operating core, may very well influence the degree of support that can be expected from the business when introducing and promoting HR analytics. It may very well be that within, for example, petrochemical companies that generally have to forecast decades ahead, there is a more analytical corporate culture, than within utility companies that were not so long ago still state-owned. Another aspect that may influence the development of HR analytics within companies is the perceived quality and image of the HR function. Is HR represented at C-level and involved in strategic decision making? Is HR perceived to be a true business partner, or is it considered to be a group of people just organizing the recruitment process and reimbursements of travel costs? It would be valuable if qualitative research on the development and future state of HR analytics could be strengthened, deepened or nuanced by incorporating classifications of organizations in terms of their HRM maturity and degree of analytical culture.

As mentioned in the beginning of this paper, we advocate a new wave of scholarly research focusing on the development of the business discipline HR Analytics, including its impact on the HRM function and on organizations as a whole. In the results of the study, we saw that universities are considered to be one of the external actors involved in HR analytics: on the

one hand as an educator of future (HR) analysts, and on the other hand as a knowledge partner. The extreme infiltration of HR analytics into the HRM agenda, and increasingly into the business agenda, provides us as scholars with the opportunity to help steering the development of HR analytics. However, our contribution starts with asking relevant questions. Based on the insights of our study, we believe that examples of relevant questions are: ‘How and to what extent does the influence of centrally positioned analytics teams on decision making differ from analytics teams positioned in individual disciplines?’, ‘What are the drivers behind the development of an evidence-based organizational culture?’, ‘What are the preconditions for employees to let organizations use “their data” for HR analytics purposes? And what are the boundaries?’, ‘To what extent are organization compliant with legislation when conducting HR analytics projects?’, ‘To what extent does the availability of self-service technologies for conducting HR analytics influence decision making? And to what extent are such technologies already developed, implemented and used?’, ‘What are the requirements of analytical software to facilitate self-service HR analytics that goes beyond advanced reporting on metrics?’, ‘In what way and to what extent does the involvement of external knowledge partners and data analysts pay off? How are external partners selected? And what are downsides of external involvement?’, and ‘What can HR learn from the earlier transformation of the marketing and finance functions into a decision science?’. Furthermore, basic descriptive research providing insight in the state of HR analytics would be of value. Such research, would provide us for example with insights on what HR analytics teams look like in terms of their size and roles and responsibilities, the extent to which they actually focus on conducting HR analytics as opposed to reporting on metrics, and where such teams are positioned within organizations, who supervises them, and how they are connected with other disciplines.

Managerial implications

The results of the study demonstrate the necessity to build a solid IT infrastructure to support evidence-based decision making, especially since many organizations are in the middle of making major IT investment decisions. Since the beginning of the global economic crisis around 2008, many investments in IT were put on hold. The rapid technological advances may have also postponed or prolonged decision making processes, simply because investments became too risky. After all, new technologies may very well be outdated by the time they are implemented. However, in many organizations a fragmented and outdated IT landscape needs to be replaced. On-premise Enterprise Resource Planning (ERP) systems are for example increasingly replaced by off-premise cloud solutions. Based on the results of this study, business leaders may put some additional items on the list of requirements for new (HR) technologies. These items may include the ability to offer self-service capabilities for conducting analyses, the user-friendly automation of data cleaning and data collection, the possibility to conduct true predictive analytics, and the possibility to report the results in such a visually attractive manner, that the presentation of results helps to convince business leaders.

Furthermore, our study may help (HR) managers to decide where in the organization to position HR analytics capabilities. Many HR directors and managers, and for sure a gradually growing amount of business managers, consider HR analytics as a boat they cannot miss. However, establishing an HR analytics team, appointing only HR people to staff that team, and positioning the team within the HR function, may not be the recipe for success. As this study shows, it may cause difficulties in getting commitment from the business, receiving data from other disciplines, and more important, it may be dismantled before even reaching maturity. Many respondents predicted a centrally positioned analytics team transcending the individual disciplines. Driven by the general tendency to base decisions increasingly of analytics, other

disciplines may very well established analytics teams. It may therefore very well be more effective and cost-efficient to establish a central analytics team right away instead of after waiting three or five years.

Concluding thoughts

Our research suggests that HR analytics will have a major influence on decision making in organizations in the coming years. Also, HR analytics is likely to influence the composition and role of HRM as a function. And it can help to ensure lean and agile organizational structures that are based on an optimal combination of people characteristics and skills on the one hand, and strategic business targets on the other hand. By doing so, HR analytics may therefore have the potential to transform organizational models. This study aimed to make a modest contribution to our understanding of HR analytics, by provided a glimpse into its future. As Ulrich stated, '*no one can predict the future course of the HR profession*', and thus neither of HR analytics. But we as scholars better be part of it.

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TABLE 1
HR Analytics, 2015 situation versus 2025 situation

2015 situation	2025 situation
<i>Application</i>	
<p>Goals</p> <ul style="list-style-type: none"> - Establishing HR analytics - Proving added value - Exploring how to get started - Creating awareness - Building alliances - Laying foundation for analyses 	<p>Goals</p> <ul style="list-style-type: none"> - Fostering fact-based organizational decision making - Developing evidence-based mindset within HR - Determining HR drivers for business outcomes - Proving effectiveness of HR Analytics cycle - Transforming organizational models - Managing data privacy and increasing volumes
<p>Analytical focus</p> <ul style="list-style-type: none"> - Metrics and reporting - Historical and current situation - Simple statistics like cross tabulations 	<p>Analytical focus</p> <ul style="list-style-type: none"> - Predictive analytics - Data integration - Standardization of measurements - Standardization of analytical approach and tools
<p>Themes</p> <ul style="list-style-type: none"> - Mainly driven by HR challenges - Often independent from business issues - Traditional KPI related 	<p>Themes</p> <ul style="list-style-type: none"> - More overarching organizational themes - Largely same HR elements in themes - Increased complexity of themes - Influenced by developments in data availability
<i>Value</i>	
<ul style="list-style-type: none"> - Relatively unknown - Added value largely unproven - Limited influence on decision making (<i>due to current general image and involvement of HR, lack of readiness among HR business partners, and general unfamiliarity with fact-based decision making among business managers</i>) 	<ul style="list-style-type: none"> - Established and valued discipline with proven impact - Strong influence on operational and strategic decision making - Benefiting from general ‘evidence-based decision making’ trend
<i>Structure</i>	
<ul style="list-style-type: none"> - Positioned within the HR function - Limited ties with other disciplines 	<p>Positioning</p> <ul style="list-style-type: none"> - Scenario A: positioned within central HR function - Scenario B: positioned within central analytical function (dominant scenario) <p>Internal actors involved</p> <ul style="list-style-type: none"> - Analysts (<i>executing analyses, securing quality of insights</i>) - Business (<i>posing relevant questions, making data available, interpreting results, supporting interventions</i>) - Consultants (<i>translating business challenges into research questions, advising on outcomes in appealing manner</i>)

- Employees (*how far does employee want to go?*)

External actors involved

- Educators (*universities, research centers*)
- Knowledge partners (*universities, consultancies*)
- Data providers
- External data analysts
- Data security parties (*government, data protection authorities*)

System support

- Fragmented and outdated IT landscape
 - Data warehousing lacks usefulness
 - Time-consuming data retrieval and preparation
 - Technology as main driver for HR Analytics
 - System integration
 - From automation to artificial intelligence
 - Analytics as self service
 - From reporting to analyzing
-