Human Resource Intelligence—Enhancing the Quality of Decision Making and Improving Business Performance

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Introduction

Human resource information system (HRIS) software and human resource analytics (HRA) are changing the availability and delivery of human resource (HR) knowledge supporting decision making at every level of an organization (operational, managerial, and strategic). It has been a long journey from the earliest versions of HRIS in the 1960s and 1970s that automated simple employee records and payroll management. In the early 1980s, the first PC software supporting applicant tracking, performance appraisal, and training information offered

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the foundations for management information systems facilitating HR managers' work (Dulebohn and Johnson 2013). Thereafter, the focus was on developing increasingly sophisticated analytical tools to manage human capital and facilitate improved decision making. Today, HRIS spans everything from a simple employee spreadsheet to huge enterprise resource planning systems assimilating employee data to other intra- and inter-organizational data (Dulebohn and Johnson 2013). The most modern HRIS software also provides real-time access to data without geographical limitation, measures impact rather than activity, and attempts to look forward instead of only reporting the past. Thus, HRIS software can enable HR to move closer to becoming a strategic partner (Yeung and Berman 1997).

However, the movement from HR's administrative and transactional role toward that of an integrated strategic partner has been slow and painful, requiring a shift in the mind-set of both HR professionals and managers in the different functions of an organization. The manner in which HR professionals operate and communicate must change in order to transform the way the HR function is perceived (Kavanagh et al. 2011). HR professionals must be able to bring something to the table and communicate knowledge in a way that is both understandable and meaningful, that is, in numerical and financial terms (Higgins 2014) to justify their involvement and contribution to strategic decision making. Ultimately, the real value of an HRIS and HRA can be captured through the developmental activities and interventions that affect how human resources execute business activities and eventually improve the performance of an organization. In other words, managers expect the HR function to show how it can contribute to business success, and that they can measure that contribution (Beatty et al. 2003).

To improve understanding of how HR professionals can add value to decision making and improve business performance, the current chapter complements the discussion on some of the central aspects of HRIS and HRA. We will begin by briefly introducing human resource management (HRM) practices, also known as high-performance work practices (HPWPs), which are not only important in understanding the context but also central to extracting the benefits of HRIS and HR analytics. Thereafter, we discuss the role of an HRIS in decision making, followed

Fig. 1 Chapter structure

by a section concerning HR metrics including a brief introduction to HRA implementation (Fig. 1).

High-performance Work Practices

Human resource management refers to all practices and policies that deal with the personnel in an organization (Beer et al. 1984: 1–2). HRM practices are today seen as critical and valuable assets for the organization, and treating them as such can result in improved business process performance, competitive advantage, and increased organizational performance (Colakoglu et al. 2010: 31; Guest 1997; Huselid 1995). HRM practices designed to improve firm performance are often grouped in a high-performance work system (HPWS) package (Huselid 1995), which on a more practical level includes various HPWPs (Posthuma et al. 2013). Human resources practices exist in every company regardless of its size or nature, even if they are not always formally organized. However, formal recognition of HR practices enables organizations to identify opportunities to improve key business processes and firm performance by developing HPWPs.

In terms of the effectiveness or success of an organization, its people are the key: Huselid (1995) was the first to show the relationship between a HPWS and turnover, profits, and a firm's market value. Rather than directly affecting the financial result indicators of a firm, HR practices tend to have a positive impact on other performance-driving phenomena. For example, HR practices can influence business performance at the collective level by building organizational capabilities, culture, and the social and psychological climate. Further, as the success of business processes undertaken by people is dependent on the success of individuals, the collective performance of individuals eventually determines the success of an organization. At the individual level,

HR practices affect the success of individuals by affecting employee behavior through the so-called AMO model: referring to the abilities (A), motivation (M), and opportunities (O) of an individual. HR practices drive business performance through the impact on knowledge, skills, abilities, and other characteristics relevant for performing a particular job; an individual's willingness to perform; and opportunities to express their talent. For example, HR practices can be designed to foster the development of an appropriate skill set for sales personnel through training and development, encourage the prosecution and steer the execution of certain sales activities through a compensation policy, and ensure appropriate resource sufficiency to execute all the assigned sales activities through job design (see Fig. 2). Thus, in facilitating employment relationships on an individual level, organizations are striving for desired organizational outcomes, such as better performance through HPWPs (Wright et al. 2005).

Since Huselid's (1995) seminal research, researchers have advocated different, though somewhat overlapping, sets of HRM practices that could deliver improved performance. For example, Delery and Doty (1996) have identified seven strategic HR practices that are linked to organizational performance: internal career opportunities, formal training systems, appraisal measures, profit sharing, employment security, voice mechanisms, and job definition. In addition, Pfeffer (1998) categorized seven practices, or best practices: employment security, selective hiring, self-managed teams or team-working, high pay rates contingent on company performance, extensive training, reduction of status differences, and sharing information. One of the most recent categorizations regarding HPWPs has been that of Posthuma et al. (2013), who categorized 61 specific practices identified from previous studies into nine categories: compensation and benefits; job and work design; training and development; recruiting and selection; employee relations; communication; performance management and appraisal; promotions; and turnover, retention, and exit management. The topic of HPWPs and how they are to be categorized continues to engage scholars (see e.g., García-Chas et al. 2014; Patel et al. 2013; Snape and Redman 2010; Zhang and Jia 2010; Kroon et al. 2009; Wu and Chaturvedi 2009).

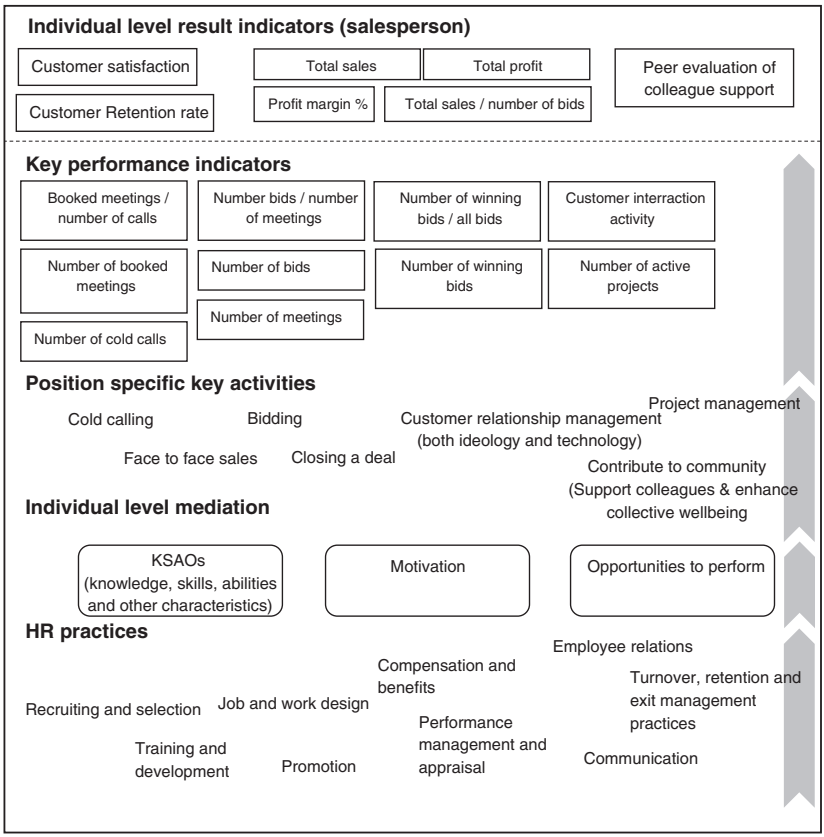

Fig. 2 Example of how HR practices affect result indicators through an AMO model of the position-specific key activities, key performance indicators, and result indicators

Extant research appears to support the importance of undertaking HR-related practices to influence activity at the individual level and thus enhance the performance of the organization. Typically, the aim is to increase productivity and efficiency, but in some cases there might also be other desired output characteristics such as creativity. For example, in research and development or in marketing positions, the preferred outcomes may be innovative, and not necessarily the most cost-efficient option.

The following sections discuss how analytics and metrics could be utilized in the field of HR. Implementing HRIS and utilizing analytics helps organizations to improve their HR practices on an operational level. At the same time, analytics can provide metrics and detailed information on workforce-related issues and thus improve the quality of decision making at the higher levels of an organization.

The HRIS and Decision Making

The primary purpose of HRM is to attract, select, motivate, and retain talented employees in their roles (Katz and Kahn 1978; Stone et al. 2015). Implementation of technologies facilitating the execution of core HR tasks has not only increased the communication between HR practitioners, managers, and employees, increasing the transparency of HR practices and policies (Stone and Deadrick 2015), but also transferred some of the work of HR professionals to managers and employees (Stone-Romero et al. 2003). Thus, it is not only HR professionals or HR managers that contribute to the creation or utilization of HR information, because such information is increasingly deployed at different levels of an organization and accessed by staff in a range of roles.

Technology and technological solutions can have two primary roles in managing human resources. First, they assist in performing HR-related administrative tasks more efficiently (Dewett and Jones 2001). In the best-case scenario, technology can be deployed to improve the user's experience of HR processes in a way that increases employee engagement and retention (Deloitte 2016). Second, information systems can increase the speed and quality of decision making where information on HR is required to improve either HR processes and practices or key business activities. Thus, the role of HRIS and HRA in decision making is dependent on the context in which the decision is made and is defined by the information necessary to make the decision.

One possible way to approach information need is to identify the complexity of the problem (the problem structure) (Dulebohn and Johnson 2013; Gorry and Scott Morton 1971). The level of routinization, the possibility of automating the decision, and the extent of

human judgment required define the structure of a problem (Simon 1960). In general, standard solutions can be applied to the structured problems, whereas highly unstructured problems are not straightforward, do not have standard solutions, and the associated decisions demand human judgment (Niu et al. 2009). The complexity of a problem tends to increase when moving from the operational to the managerial and ultimately to the strategic decision-making level. HRIS can serve different business processes in a rather broad way by providing access to a wide range of HR information, where HR analytics seek to add value to the decision making by providing detailed insight into a specific issue, resource, activity, or process. Although, HRIS and HR analytics can be used directly to solve standard problems and may enable a firm to identify factors requiring attention and even suggest corrective actions, those analytics might not be able to provide a single bespoke solution to nonstandard, highly complex, and unstructured problems. Thus, it appears that at the higher decision-making levels, where the complexity of the problems tends to increase, the role of the information available via HRIS and the insight gained through analytics appears to serve a supportive and advisory function rather than offering a direct solution.

The operational-level decisions ensure that routine tasks transforming inputs into outputs are executed effectively. Operational activities are monitored and steered by management and involve fairly straightforward decisions on generally well-defined tasks and resource allocation. The majority of HR's administrative activities, such as employee record keeping and salary administration, are operational and require no human judgment (Dulebohn and Johnson 2013). HRIS can be applied to enhance HR data accuracy and efficiency, so decreasing the costs of such activities. An HRIS can also support semi-structured problem solving such as a recruitment process; in that, HRIS software can identify a qualified and motivated pool of applicants (Stone et al. 2015). Online applicant tracking systems can be used to standardize part of the recruitment process by encouraging applicants to submit basic information on their skills, education, and experience relevant for the applied position, and which can subsequently be utilized in filtering out the candidates. Afterward, the process may be continued with more unstructured

steps such as the evaluation of a cover letter and personal interviews. Information technology can also facilitate the interview process via recorded video interviews, real-time videoconference interviews, or telephone interviews (Silvester et al. 2000; Straus et al. 2001), but it does not remove the need for human judgment. Thus, HRIS software and information technologies can support semi-structured decisions through effective data entry, storage, and filtering processes, and also communication facilitation, but technology will not overcome the need for some individual judgment. In addition, an HRIS can support unstructured operational decisions by providing accurate and timely data. For example, if several operational line workers are unexpectedly absent, information systems can help identify potential replacements, provide access to their work schedules, the overtime hours they have already committed to, and bring up their contact information (Dulebohn and Johnson 2013). However, human judgment is required to analyze the depth of the resource gap, to identify the need for a solution, the options available, and to implement corrective action.

Decisions taken at the higher levels of management tend to focus on operational unit performance and how efficiently resources are being utilized. Such decisions are usually made by a number of managers, but the extent of their decision-making autonomy tends to be delimited by strategic plans and policies (Dulebohn and Johnson 2013). Decisions concerning strategy implementation, the ongoing evaluation of results, and corrective actions are commonly made at this level. HRIS software can assist in assessing the current performance of employees, identifying high and low performers and providing feedback to both employees and managers (Stone et al. 2015; Fletcher 2001; Spinks et al. 1999). An HRIS package can also address structured managerial-level questions, for example, on the efficiency of a recruitment process, or how successful the organization is at attracting, motivating, and retaining talented employees (Stone et al. 2015). Other metrics in the same category include structured knowledge related to human capital such as profit per employee, or cost per employee in relation to competitors or industry standards. Semi-structured problem solving may be supported by efficiency and impact metrics (see Table 1). At this level, HR analytics are utilized to enhance the knowledge of specific managerial issues

Table 1 Types of metrics

Type of metrics		Example metrics
Descriptive	Human capital measures (size, quantity, quality, efficiency, and effect)	• Number of employees: Total Full-time Equivalent (FTE) • Expense factor: (Operating Expense/Total FTE) • Profit per employee: (Revenue—Operating Expense/Total FTE) • Labor cost factor: (Compensation + Benefit Costs)/FTE • Revenues per employee: (Turnover/FTE) • Level of education • Employee satisfaction • Intention to leave • Employee/talent retention rate • Salary at risk ratio (salary at risk/total amount of salaries)
	HR practice measures (quantity, quality, and efficiency)	• Total costs of training activities • Number of training programs • Number of participants to a specific training program • Perceived quality of a specific training program • Salary per employee/industry average salary per employee • Cost per recruitment • Number of cross-functional teams • Number of promotions
	Key activity measures (e.g., at the sales position) (quantity, quality, and efficiency)	Measures, e.g., at the individual sales person level • Number of booked sales meetings/Number of cold calls • Number of bids/Number of customer sales meetings • Number of closed deals/Number of bids • Total sales • Total sales/Number of closed deals • Total profit • Average profit margin
	Impact ratios (change, ROI)	• Different impact ratios can indicate the effect gained through different actions or investments, e.g., change in booked meetings per number of cold calls/investments in cold call training

(continued)

Table 1 (continued)

Type of metrics		Example metrics
Predictive and prescriptive	Analytics providing predictions and suggestions for improvement	Correlations • Correlations can reveal the existing positive and negative relationships between different measures; e.g., relationship between the quality of safety training and the number of occupational accidents Regressions • The linearity and possible nonlinearity can be tested and visualized between two variables. Also possible positive and negative effects of additional variables may be tested by investigating interaction effects, e.g., relationship between safety training and the number of occupational accidents and possible positive interaction effects of safety signs Structural equation modeling (SEM) • The causal impact of multiple variables on explaining key activity performance may be tested through SEM; for example, leadership skills possessed by a supervisor can affect not only the motivation and skills of the supervisor but also the motivation of the subordinates affecting team performance. The results can suggest a need for leadership training for supervisors with low level of leadership skills

requiring great amounts of human judgment and the analytics thus improve the quality of the decision. In addition, impact metrics can signal if HR activities have had the desired effect on those metrics central to the execution of the chosen strategy. For example, if there are areas of technology and related competencies that are scarce in the market and the firm strategy builds on them, there may be an HR run program for securing the retention and development of key human resources. In that case, multiple metrics such as cost per employee in relation to competitors, retention rate, participation in development programs, flight risk, and the progression of personal employee development plans could be applied to evaluate the success of the program. Monetizing the impact of such programs has been found to affect the way HR work is perceived by top management in the organization (Sullivan 2014). Finally, unstructured decisions at managerial level involve novel situations where human judgment plays a central role, and an analysis of issue-related knowledge can offer no direct support. For example, a large project such as the implementation of HRIS or HRA packages could require a vast amount of individual judgment on questions such as what features and modules should be included, what technology to deploy, which vendors to approach, and how to run the implementation process (Dulebohn and Johnson 2013). The existing information systems such as project management tools can support the process and thus add value to unstructured decision making, but actual data analytics offer only limited value.

Strategic-level decisions are decisions made at the highest level in the organization and tend to be externally oriented and forward-looking in nature. They often involve complex and non-routine problem-solving activities deploying internal and external data. Strategic decisions are most commonly made by a small group of people, and the decisions may evolve over time (Dulebohn and Johnson 2013). According to Lawler and Mohrman (2003), there are four possible roles that HR can adopt in strategic decision making: (1) no role, (2) implementation only, (3) input and implementation, and (4) a full partnership role. *Implementation only* refers to HR being solely reactive in terms of strategic decisions and just supporting the implementation of strategic activities. The *input and implementation* role contributes to strategic

decision making by providing some HR-related knowledge and thereafter assisting in the implementation process. The most strategic role of HR is *full partnership* where HR is responsible for informing and directing the acquisition, development, and allocation of organization talent and human capital. HR can assist strategic-level decision making by providing data related to human capital and setting HR-related priorities and objectives. Analysis of resource gaps and business performance can be used to drive factor identification with advanced data modeling, and thus improve the quality of strategic decisions. However, even huge amounts of data and rigorously executed analysis offer little practical value if the objectives are not clear and relevant in terms of the current strategic business issues. Real business problems should be contributed from outside of the HR function (Rasmussen and Ulrich 2015). At the strategic level, questions can rarely be answered by a singular analysis, and instead solutions tend to combine snippets of information collated from various sources. Thus, HR's participation at the highest level of decision making can enhance the ability to formulate the right questions, for example, in the evaluation of possible options related to a specific strategic decision, to evaluate the readiness of the organization's human resources, and the level at which required actions can be facilitated through a holistic understanding of the human capital available and the existing system of HR practices.

Human Resource Metrics and Analytics

Human resource metrics and analytics can be deployed not only to illustrate the status quo and the evolution of human capital, but also, and perhaps even more importantly, to show how developmental efforts, HR practices, and changes in HR practices affect business performance through different activities and processes. The essence of utilizing HR metrics lies in the attempts to support decision-making processes and provide not only required information—but also insight beyond imagination—to better describe and understand human-related processes, both input and output, that in turn lead to thoughtful and well-established decisions (Carlson and Kavanagh 2012). In addition, it

has been claimed that HR measures should be impact-oriented rather than activity-oriented, forward-looking instead of backward-looking, and take into consideration the entire HR system instead of single HR practices (Yeung and Berman 1997).

Analytics can be divided into three types: (1) *descriptive* reporting of the past, (2) *predictive* using models based on historical information, and (3) *prescriptive* deploying data models to specify optimal behaviors and actions (Davenport 2013). Where human capital metrics, like the majority of other business analytics currently utilized by companies, tend to be rather descriptive in indicating size, quantity, quality, and efficiency in utilizing human resources, metrics describing the behavior of human resources can also be deployed to analyze the impact of HR practices and policies on key business activities performed by people. Predictive analytics can provide an estimate of the future level of a certain outcome variable, such as the talent retention rate, based on past data, and prescriptive analytics enable modeling of what would happen to the levels of that outcome variable if the level of some related variable changed. Thus, metrics and analytics can provide valuable insight into the causalities connecting actions and outcomes and can be utilized to determine the actions necessary to improve performance-driving activities (see Fig. 2).

The most commonly used human capital measures, such as number of employees, cost per employee, revenue per employee, profit per employee, and average level of education are seen as descriptive metrics (see Table 1). Some indicators such as employee satisfaction, intention to leave, employee retention rate, and salary at risk may be used to reflect the effectiveness of HR practices. However, without more fine-grained measures and analysis of HR practices and key activities performed by different functions, human capital-related result indicators can reveal little about the actual factors causing the results. Thus, understanding the mechanisms affecting the outcome measures and the role of different HR interventions and practices in performing the key activities can enhance the value of decision making and the ability to manage human capital. Therefore, analyzing impact can produce findings that can contribute to improved firm performance.

The impact analysis builds on the deployment of descriptive metrics of both HR practices and the phenomena considered as a result, for

example, the performance of a key activity. The easiest way to investigate impact is to analyze how investments in a particular HR practice influence the key activities enabling the organization to investigate the return on investment. Ulrich and Dulebohn (2015) recommend splitting the ultimate goal into smaller targets to deliver an early impact of HR investments; the key message is to show the relation between the HR investments made, the HR outcomes, and the business outcomes. An example in the context of sales might work from the fact that sales activities affect the annual revenues of the firm and accordingly investigate how sales activity performance (e.g., the number of customer sales meetings booked divided by the number of cold calls) changes due to investments in cold call training. The HR function as the function responsible for organizing training and measuring the impact can provide information on the success of training investments. Existing scientific (and also more practical) research has provided evidence on the positive effects of different HR practices on performance-driving key activities and firm performance (Posthuma et al. 2013). Accordingly, firms might undertake improvement initiatives based on expected causalities without actual correlation or causation investigations. Actually, for many companies, this may be simple enough and the most appropriate level of analytics, as they might lack the competencies to conduct more advanced analysis.

Whereas descriptive dashboards and scorecards are able to handle the enormous load of statistical information on what has happened, show what has been the direction of the indicators, and as such can provide valuable information, only predictive analytics, such as correlations and regression, are able to explain which factors affect a particular phenomenon (Ulrich and Dulebohn 2015). To increase the level of investigation, analytics could be deployed to identify correlations between different human factors or HR practices and the business activity undertaken. Correlations indicate whether there is a positive or negative relationship between two variables, such as the quality of the safety training program and the number of occupational accidents. This means that the correlation envisaged here can indicate whether an increase in the quality of safety training is related to the increase or decrease in the number of accidents. However, correlations do not directly indicate the causalities,

meaning that one cannot say whether one variable is an antecedent or an outcome of another variable. Furthermore, correlations do not indicate what sort of relationship, linear or perhaps curvilinear, exists between the two variables. In addition, correlations can exist by chance. The larger the volume of data used to run the analysis, the better the chance that even weak results indicate statistically significant correlations. A good example of the worth of correlation investigations and HR analytics is explained by Garvin (2013) in his Harvard Business Review article describing how Google used data analytics to prove to its employees the importance of managerial skills for supervisors. The initiative led to Google's Oxygen program to increase the leadership skills among its managers becoming an established tool to improve talent retention in the firm and its performance.

To better understand the type of relationship between two variables, regression analysis can be deployed. For example, such analysis could reveal how safety training in the construction business reduces the incidence of workplace accidents and the time lag between the safety training and accidents could help to predict the optimal frequency of running safety training. To further increase the sophistication of the analysis, more variables can be added into the regression analysis to investigate whether other variables interact with the dependent variable, that is, occupational accidents, and change the shape of the curve, indicating a more complex structure for the issue. For example, the positive effect of safety training could possibly be maintained for longer if safety signs are installed on a construction site, and thus, the number of the installed signs might have a positive interaction effect on the number of workplace accidents.

Possibly one of the most advanced analysis methods currently available to address well-specified business problems is to build a structural equation model of several different variables and try to explain a certain result indicator. For example, Rasmussen and Ulrich (2015) demonstrate how data models can help explain the differences in performance between oil rigs operating under similar circumstances and enable the operating firm to identify activities likely to improve performance. They deployed both quantitative and qualitative methods and advanced analytics to identify customer satisfaction driving factors such

as operational performance, employee competences, employee safety, and leadership quality, and to then develop a change plan and a process to improve the performance of poorly performing oil rigs. By being able to increase knowledge of a particular business problem, showing options for corrective actions and facilitating the implementation of the selected interventions, HR may be able to offer more value than might be expected. However, due to the requirements for highly specialized skills in advanced analytics, the most sophisticated methods may be currently available to only a few companies. Therefore, as predictive and prescriptive analysis also builds on descriptive metrics, a safe starting point for the analytics journey would be to deploy descriptive metrics and scorecards to monitor the status quo and changes in factors driving business success.

Implementation of Human Resource Analytics in a Nutshell

Identifying a key business problem should be considered the starting point for implementing human resource analytics (Rasmussen and Ulrich 2015). Firms should not concentrate on what is easy or convenient to measure, but rather on measuring what is essential and important (Ulrich and Dulebohn 2015). This is thought process shared by Sheri Feinzig, Director of IBM, who argues that the current data is not the ideal starting point for analytics; that would be identifying the key issues driven by business needs and thereafter choosing the methods required to solve the problem. The HR-related questions CEOs frequently ask include: "How do we know we have the right size of workforce and at an appropriate cost? What is our workforce productivity and is it improving? Are we hiring, promoting, and retaining the best talent?" (Higgins 2014: 13). Rasmussen and Ulrich (2015) call this the pull phenomenon because it starts from the business case.

After identifying the business problem, HR should assemble the appropriate set of skills to start adopting the analytics (Rasmussen and Ulrich 2015). Partnering with the IT department and bringing a data

expert into HR can help in adopting the right tools and capabilities (Deloitte 2016). Then, HR should carefully identify the key causalities, metrics, key performance, and key result indicators based on the chosen business problem (Tootell et al. 2009). If those factors are correctly identified, management will be able to monitor the input to these causalities. Next HR management should adopt an appropriate process for data gathering and analytics to monitor the chosen indicators. Once these elements are in place, the actual analysis and the communication of the results can start.

Thereafter, a change plan and concrete actions for changing business processes and HR practices affecting the critical processes should be developed and initiated. Finally, the last stage in the implementation path is the evaluation of the progress delivered by the actions implemented. Jeremy Shapiro from Morgan Stanley summarized the implementation of HRA in an IBM (2015) report and noted how the analytics journey must focus on business priorities, results should be communicated through storytelling, analytics should be understood as a tool for decision making, analysis does not require perfect data, and finally, one should be able to understand the past, view the present, and attempt to predict the future to get the valuable insights to support the decision making leading to concrete improvement efforts. In addition, Ulrich and Dulebohn (2015) emphasize the importance of gaining the line managers' support and suggest that they should be involved throughout the analytics process from the goal setting and HR metric selection as they will usually be the ones utilizing the analytics in decision making and implementing the development initiatives.

Although the competencies required of today's HR professionals are discussed more specifically elsewhere (see Cohen 2015), we can conclude that practitioners implementing analytics are not only required to understand the core business, the underlying organizational structures, the interrelation of processes, the role of human resources in performing key business activities, and the influence of HR practices and policies, but also be able to perform the actual analysis from the technical point of view (Carlson and Kavanagh 2012). The required set of competencies appears rather extensive and could be challenging to assemble in organizations where the role of HR is not only to serve other business

functions through the execution of administrative HR tasks, to provide support to line managers in managing their human resources, and to professionally design HR practices and HR interventions, but also to actively participate in strategy development and execution. A more evidential or fact-based approach to evaluating the added value of the HR function would increase its credibility as a strategic business partner. As reported in the Deloitte Global Human Capital Trends 2015 survey, 75% of 3300 HR and business leaders considered HR analytics important, but only 8% of them considered themselves strong in the area (Deloitte 2015). Ulrich and Dulebohn (2015) argue that one of the reasons why HR analytics has lagged behind the implementation of analytics in other business functions is the fact that the majority of HR professionals are not interested in business statistics, although statistics cannot be longer neglected even by the HR professionals. Even for junior positions in the HR profession, analytical and critical thinking skills and knowledge of strategic management equipped with technological capabilities are becoming increasingly important to the ability to successfully apply HR principles and practices affecting the success of the organization (Cohen 2015).

Conclusion

This article set out to contribute to the discussion on how human resource management facilitated by an HRIS and HRA can improve business performance not only by supporting the execution of HR practices, but also by improving the speed and quality of workforce-related decision making. Where HRIS software can improve the availability and accessibility of workforce-related information, HRA can support improvement efforts by providing advanced knowledge of human resources, practices related to human resources, processes performed by human resources, and the impact on those processes by developing and executing interventions under different categories of HR practice. Analytics provide an organization with a quantifiable insight into its current status and into the changes in the selected HR-related phenomena. As analytics builds on understanding the causal relationships of

HR inputs and outputs, the formal recognition of existing HR practices already enables a firm to make HR practices more tangible and identify opportunities to affect the performance of different business activities through HR interventions and changes to HR practice. Numerical metrics can be used by a broad range of decision makers at every level of an organization to identify, plan, and execute corrective actions, through which the real value of analytics is ultimately realized. At the strategic decision-making level, analytics can offer a deeper insight into specified business problems and is commonly perceived as a tool enhancing decision quality, not as a bespoke solution. Therefore, HR metrics, including all descriptive, predictive, and prescriptive metrics, have the potential to equip HR practitioners to add value and contribute to decision making and business success. However, as only a few companies currently possess sufficient competencies to capture the full potential value of analytics, the future role of HR appears to be dependent on the ability to adopt the competencies required to understand and solve critical business problems with the help of technology.

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