Impact HR Digitalization and Analytics Human Resources on Organizational Performance : A Review Literature

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Abstract . This qualitative literature review explores the impact of HR digitalization and human resource analytics on organizational performance. The study highlights how the adoption of human resource information systems (HRIS) enhances operational efficiency and data-driven decision-making. HR analytics significantly contributes to identifying and addressing workforce challenges, thereby improving organizational performance. However, challenges such as data quality, analytical competence, and managerial support must be addressed to maximize the benefits of HR analytics. The review underscores the importance of top management support and a data-driven organizational culture for successful HR analytics implementation. Limitations include reliance on existing literature and potential publication bias. Future research should empirically investigate the causal relationships between HR digitalization, HR analytics, and organizational performance across diverse cultural and economic contexts.

Keywords: HR Digitalization, Human Resource Analytics, Organizational Performance, HRIS, Data-Driven Decision-Making

INTRODUCTION

Digitalization in human resource (HR) management has opened up new opportunities for organizations to improve their performance through the use of human resource analytics (HR analytics). Despite growing interest in HR analytics, the concept remains relatively new in academia and professional practice. Therefore, researchers and practitioners are working to highlight how HR digitalization and increased employee data can impact HR decision-making and organizational outcomes (McCartney & Fu, 2022).

The ongoing digital transformation has prompted many HR departments to start using workforce data in data-driven decision-making in areas such as recruitment and selection, performance measurement, diversity and inclusion, and workforce planning (Harris et al., 2011; Kane, 2015; Rasmussen & Ulrich, 2015; Marler & Boudreau, 2017; Hamilton & Sodeman, 2020; Tursunbayeva et al., 2021). The application of workforce data to improve decision-making is often referred to as HR analytics (Aral et al., 2012; Rasmussen & Ulrich, 2015; Angrave et al., 2016; Marler & Boudreau, 2017; McCartney et al., 2020), people analytics (Kane, 2015; Green, 2017; Nielsen & McCullough, 2018; Tursunbayeva et al., 2018; Peeters et al., 2020), talent analytics (Harris et al., 2011;

Sivathanu & Pillai, 2020), human capital analytics (Andersen, 2017; Boudreau & Cascio, 2017; Levenson & Fink, 2017; Minbaeva, 2018), and workforce analytics (Huselid, 2018; Simón & Ferreiro, 2018). There is a positive relationship between transformational leadership, job satisfaction, and organizational citizenship behavior on human capital (Djap, W. et al., 2022).

Regardless of the terminology used, there is consistency in both academia and practice regarding the strategic importance of HR analytics, as it provides data, information, and insights that enable organizations to make better, data-driven decisions (Huselid, 2018; Minbaeva, 2018). According to van den Heuvel and Bondarouk (2017), HR analytics is the systematic identification and quantification of human drivers of business outcomes to enable better decision-making. Equally important is the notion that these insights can be generated at varying levels of technological sophistication (Margherita, 2020; Sivathanu & Pillai, 2020). Human capital can also serve as a moderator for innovation performance in achieving corporate sustainability (Irawan et al., 2021).

HR analytics follows a linear, three-stage maturity model. At the lowest level, "descriptive," HR analytics focuses on using HR technology to generate reports and dashboards to answer questions about what has happened. Next, the "predictive" stage utilizes statistical techniques, advanced algorithms, and machine learning to anticipate what might happen in the future and why. Finally, the "prescriptive" stage focuses on determining the optimal actions to take in response to the analysis (Margherita, 2020).

This study adopts the definition of HR analytics proposed by Marler and Boudreau (2017), where HR analytics is "an information technology-enabled HR practice that uses descriptive, visual, and statistical analysis of data related to HR processes, human capital, organizational performance, and external economic benchmarks to determine business impact and enable data-driven decision-making" (p. 15). Within the context of this definition, this paper operationalizes HR analytics through the adoption of the human capital analytics framework (Minbaeva, 2018), where HR analytics consists of three dimensions: high-quality data, analytical competence, and strategic ability to act.

According to the human capital analytics framework, the dimensions of high-quality data indicate that the data used for analytics must be accurate, consistent, timely,

and complete. For example, organizations need to ensure that the data used to conduct HR analytics is accurate. Without accurate data, insights gained from analytics will be unreliable and provide no benefit to the organization (Minbaeva, 2018; Wamba et al., 2019; Peeters et al., 2020). Conversely, inaccurate data can lead to the implementation of solutions that do not address real business challenges.

HR analytics also requires a high level of analytical competency, which refers to the analytics team's ability to apply statistical analysis and techniques to workforce data to transform it into valuable insights (McCartney et al., 2020). For example, the analytics team needs to formulate relevant research questions and answer them through developing causal models and conducting sophisticated statistical analyses (Minbaeva, 2018). Furthermore, the team needs to translate the insights gained into compelling analytical narratives or stories (Andersen, 2017; Minbaeva, 2018; McCartney et al., 2020).

Strategic capability to act refers to the managerial support needed to make decisions and implement solutions based on data, information, and insights derived from HR analytics. Furthermore, HR analytics is viewed as a valuable, rare, inimitable, and irreplaceable resource for organizations based on the data, information, and insights it generates. This argument is supported by numerous parallels that can be drawn and indirectly implied by experts when discussing HR analytics as an organizational resource (Marler & Boudreau, 2017). The integration of intellectual and emotional intelligence, technological prowess, and rigor forms a comprehensive framework for achieving informed and accurate decisions, ensuring organizations remain agile and responsive to dynamic environments (Ruslaini & Ekawahyu Kasih, 2024).

For example, researchers and practitioners have discussed the value offered by HR analytics through its ability to enable HR to identify and address workforce challenges (Marler & Boudreau, 2017; Huselid, 2018; Kryscynski et al., 2018; McIver et al., 2018; Minbaeva, 2018). Furthermore, the HR analytics literature also points to the scarcity of high-quality HR analytics programs, suggesting that many organizations struggle to leverage workforce data by offering only basic reporting and descriptive statistics (Angrave et al., 2016; King, 2016; Andersen, 2017; Green, 2017; Levenson & Fink, 2017; Minbaeva, 2018). Thus, effective HR analytics programs are currently rare.

Regarding the imitability of HR analytics, according to Minbaeva (2018), to utilize and implement HR analytics that adds value, organizations need high-quality data, analytical capabilities, and the strategic ability to act. However, it is difficult for HR departments to possess all three elements due to low levels of technology, poor data quality, limited resources, a lack of analytical competency, and a lack of support from senior management (Andersen, 2017). Finally, HR analytics is a stand-alone practice, meaning there are no alternatives or substitutes available that can provide similar insights (Falletta & Combs, 2020). Collectively, HR analytics meets the requirements set by the RBV, demonstrating that HR analytics and the data, information, and insights it generates are valuable resources for organizations with the potential to generate competitive advantage.

LITERATURE REVIEW

Human resource (HR) digitalization and analytics have become crucial elements in improving organizational performance. In recent years, numerous studies have been conducted to understand how HR digitalization and HR analytics can impact organizational outcomes. McCartney and Fu (2022) highlight that despite the increasing adoption of HR analytics, how HR analytics can impact organizational performance remains unclear. Their research found that access to HR technology enables HR analytics, which then facilitates evidence-based management (EBM), ultimately improving organizational performance.

Aloini et al. (2018) emphasize the importance of evidence-based management in improving performance, particularly in the healthcare context. They demonstrate that decision-making based on accurate and relevant data can significantly improve organizational outcomes. This aligns with the findings of Marler and Boudreau (2017), who stated that HR analytics, as an IT-enabled HR practice, can transform data into valuable insights for decision-making. Effective corporate governance and sustainable leadership will help a company perform significantly better (Kusnanto, E., 2022).

Andersen (2017) suggests that human capital analytics is a winding road that organizations must take to achieve competitive advantage. He emphasizes that high-

quality data, analytical competence, and strategic actionability are key elements in effectively utilizing HR analytics. In this context, Margherita (2020) proposes a three-stage maturity model for HR analytics, ranging from descriptive, predictive, to prescriptive, each of which focuses on the use of HR technology to generate reports, predict future outcomes, and determine optimal actions.

Angrave et al. (2016) highlighted the challenges HR faces in addressing the challenges of big data. They argued that many organizations fail to fully utilize workforce data, producing only basic reporting and descriptive statistics. This aligns with Boudreau and Cascio's (2017) findings, which suggest that many organizations have yet to reach the full potential of HR analytics due to a lack of appropriate models and business insights.

In the context of HR technology adoption, Bondarouk and Brewster (2016) highlight that advances in information technology, such as human resource information systems (HRIS), cloud platforms, and applications, have provided HR departments with new capabilities to collect, manage, and analyze large amounts of employee data. This has driven the adoption of HR analytics in many organizations, as demonstrated by Google's use of HR analytics to improve their recruitment and selection processes (Harris et al., 2011; Shrivastava et al., 2018).

Previous research also suggests that HR analytics can be used to address various other HR challenges, such as employee engagement, diversity and inclusion, and turnover (Harris et al., 2011; Andersen, 2017; Buttner & Tullar, 2018; Levenson, 2018; Simón & Ferreiro, 2018). However, while numerous case studies demonstrate that HR analytics can improve organizational performance (Marler & Boudreau, 2017; Fernandez & Gallardo-Gallardo, 2020; Margherita, 2020), research investigating the extent to which HR analytics impact organizational performance is still limited (Huselid, 2018; Minbaeva, 2018).

In this literature review, we seek to understand how and why HR analytics impacts organizational performance by linking access to HR technology, HR analytics, EBM, and organizational performance. This research is based on evidence-based management theory (EBM; Rousseau & Barends, 2011; Baba & Hakem-Zadeh, 2012; Bezzina et al.,

2017), the resource-based view (RBV; Barney, 1991), and dynamic capabilities (Teece et al., 1997; Winter, 2003) as the underlying frameworks for this relationship.

METHODOLOGY

This study uses a qualitative approach with a literature review to explore the impact of HR digitalization and human resource analytics on organizational performance. A literature review is a systematic and structured method that aims to collect, evaluate, and synthesize existing research findings to provide comprehensive insights into the topic under study (Snyder, 2019).

The first step in this research was the identification and selection of relevant literature. We used various academic databases to search for journal articles, books, and other academic publications related to HR digitalization, human resource analytics, and organizational performance. Keywords used in the search included "HR digitalization," "HR analytics," "organizational performance," and "human resource management" (Boell & Cecez-Kecmanovic, 2015).

Once relevant literature was identified, the next step was to critically assess the quality and relevance of each source. We used established inclusion and exclusion criteria to ensure that only high-quality and relevant studies were included in this review. Inclusion criteria included studies published in peer-reviewed journals within the last ten years and studies that directly addressed the relationship between HR digitalization, human resource analytics, and organizational performance (Tranfield, Denyer, & Smart, 2003).

The data analysis process was conducted using a thematic approach, where data from the selected literature was organized into relevant themes. A thematic approach allows researchers to identify patterns and relationships in the data that can provide in-depth insights into the research topic (Braun & Clarke, 2006).

During the analysis process, we identified several key recurring themes in the literature, including the role of information technology in supporting HR analytics, challenges and barriers to HR analytics implementation, and the impact of HR analytics on decision-making and organizational performance. Each theme was analyzed in depth to understand how these elements interact and influence organizational performance.

To ensure the validity and reliability of our findings, we applied triangulation of data sources by comparing and contrasting findings from multiple studies to identify similarities and differences (Patton, 1999). We also conducted peer debriefings, involving fellow researchers to review and provide feedback on the research process and findings.

With this methodological approach, this study seeks to provide a comprehensive and in-depth understanding of the impact of HR digitalization and human resource analytics on organizational performance, as well as provide recommendations for future research and practice.

RESEARCH RESULT

This study aims to explore the impact of HR digitalization and human resource analytics on organizational performance through a literature review. Based on a thematic analysis of various literature, we identified several key findings related to the role of information technology and HR analytics in improving organizational performance.

First, HR digitalization through the use of human resource information systems (HRIS) has significantly contributed to operational efficiency and improved decision-making. According to Bondarouk and Brewster (2016), HRIS enables more effective and efficient employee data management, which in turn supports data-driven decision-making. This aligns with Hendrickson's (2003) findings, which emphasize that HRIS is the technological backbone of contemporary human resource management.

Second, HR analytics has been shown to improve organizations' ability to identify and address workforce challenges. Marler and Boudreau (2017) stated that HR analytics enables organizations to transform data into actionable insights, ultimately improving organizational performance. Research by Minbaeva (2018) also supports this view by showing that HR analytics helps organizations build competitive advantage through deeper and more strategic data analysis.

Third, there are significant challenges in implementing HR analytics, including data quality, analytical competency, and managerial support. According to Angrave et al. (2016), many organizations still struggle with low data quality and a lack of resources for

in-depth analysis. Furthermore, Huselid (2018) highlights the importance of top management support to ensure the success of HR analytics implementation.

Fourth, the positive impact of HR analytics on organizational performance is also evident in improved strategic and operational decision-making. McIver et al. (2018) show that HR analytics enables organizations to be more responsive to market changes and workforce needs, thereby increasing organizational flexibility and adaptability.

Overall, this research shows that HR digitalization and HR analytics have significant potential to significantly improve organizational performance. However, to maximize these benefits, organizations need to address challenges related to data quality, analytical competency, and managerial support.

DISCUSSION

HR digitalization and human resource analytics (HR analytics) have become increasingly important topics in the human resource management literature. This literature review aims to explore the impact of HR digitalization and HR analytics on organizational performance. Based on the results of thematic analysis of various studies, several key themes emerged that demonstrate the relationship between HR technology, HR analytics, and organizational performance.

First, HR digitalization through the implementation of human resource information systems (HRIS) has improved operational efficiency and data-driven decision-making. According to Bondarouk and Brewster (2016), HRIS enables more efficient employee data management, supporting faster and more accurate decision-making. This aligns with Hendrickson's (2003) findings, which emphasize that HRIS plays a crucial role as a technological infrastructure in modern human resource management. Furthermore, research by Johnson et al. (2016) shows that the evolution of HRIS has enhanced organizations' ability to integrate employee data with other business processes, thereby increasing operational efficiency and effectiveness.

Second, HR analytics has been shown to significantly contribute to an organization's ability to identify and address workforce challenges. Marler and Boudreau (2017) stated that HR analytics enables organizations to transform data into actionable

insights, ultimately improving organizational performance. Research by Minbaeva (2018) supports this view by showing that HR analytics helps organizations build competitive advantage through deeper and more strategic data analysis. Furthermore, Huselid (2018) highlighted that HR analytics can improve strategic and operational decision-making, enabling organizations to be more responsive to market changes and workforce needs.

However, the challenges in implementing HR analytics cannot be ignored. Many organizations face difficulties in ensuring data quality, developing analytical competencies, and securing adequate managerial support. Angrave et al. (2016) identified that many organizations still struggle with low data quality and a lack of resources for in-depth analysis. This aligns with King's (2016) findings, which indicate that although many organizations have adopted HR analytics, many are only able to produce basic reporting and descriptive statistics, without the ability to utilize more sophisticated predictive or prescriptive analytics.

Furthermore, support from top management is crucial for the success of HR analytics implementation. According to research by McIver et al. (2018), managerial support is necessary to ensure that insights generated from HR analytics can be translated into concrete, strategic actions. Fernandez and Gallardo-Gallardo (2020) also emphasize that without top management support, HR analytics initiatives tend to fail to reach their full potential.

Furthermore, it is important to consider the role of organizational culture in the adoption and implementation of HR analytics. Jeske and Calvard (2020) argue that an organizational culture that supports innovation and data-driven decision-making can facilitate more effective HR analytics adoption. This is reinforced by findings from research by Peeters et al. (2020), which showed that organizations with a culture that supports learning and innovation are more likely to successfully implement HR analytics.

In comparison with previous research, this study demonstrates consistency with previous findings highlighting the importance of HR digitalization and HR analytics in improving organizational performance. For example, research by Aral et al. (2012) shows that the integration of HR analytics and information technology can improve organizational performance by increasing operational efficiency and effectiveness.

Furthermore, research by Kane (2015) shows that HR analytics can help organizations optimize recruitment and selection processes, ultimately improving workforce quality and organizational performance.

On the other hand, this study also highlights several areas where the findings differ or challenge previous findings. For example, while many studies emphasize the benefits of HR analytics, research by Angrave et al. (2016) and King (2016) suggests that many organizations are not yet reaching the full potential of HR analytics due to challenges with data quality and analytical competency. This suggests the need for further research to understand how organizations can address these challenges and maximize the benefits of HR analytics.

Overall, this study highlights that HR digitalization and HR analytics have significant potential to significantly improve organizational performance. However, to maximize these benefits, organizations need to address challenges related to data quality, analytical competency, managerial support, and organizational culture. Thus, this study makes an important contribution to the literature by offering in-depth insights into the role of HR digitalization and HR analytics in improving organizational performance, as well as providing recommendations for future research and practice.

CONCLUSION

This study explores the impact of HR digitalization and human resource analytics on organizational performance through a qualitative literature review. Based on the existing literature analysis, it can be concluded that HR digitalization, through the adoption of human resource information systems (HRIS), has improved operational efficiency and enabled better data-driven decision-making (Bondarouk & Brewster, 2016; Hendrickson, 2003). Furthermore, HR analytics has been shown to significantly contribute to identifying and addressing workforce challenges, as well as improving overall organizational performance (Marler & Boudreau, 2017; Minbaeva, 2018).

However, to maximize the benefits of HR analytics, organizations need to address challenges related to data quality, analytical competence, and managerial support (Angrave et al., 2016; King, 2016). Support from top management and an organizational

culture that supports innovation and data-driven decision-making are also critical to the successful implementation of HR analytics (McIver et al., 2018; Jeske & Calvard, 2020).

LIMITATION

This study has several limitations that should be considered. First, as a literature review, it relies on previously published studies. This means that the findings and conclusions drawn depend on the availability and quality of the existing literature. Some studies may have publication bias or methodological limitations that could affect the overall results.

Second, this review is limited to literature available in English and may overlook important research published in other languages. Furthermore, although this review covers a wide range of industry contexts, the results may not be fully generalizable to all types of organizations, especially those operating in very different cultural or economic environments.

Third, the main focus of this research is on the digitalization and analytics aspects in HR, so it may ignore other factors that can also affect organizational performance, such as regulatory changes, labor market dynamics, or other technological developments outside of HR.

For future research, it is recommended to conduct more in-depth empirical studies to examine the causal relationship between HR digitalization, HR analytics, and organizational performance, while also considering broader cultural and economic contexts . This could provide more comprehensive and relevant insights for practitioners and researchers in the field of human resource management.

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