HR ANALYTICS READINESS IN SMEs: BARRIERS, ENABLERS, AND STRATEGIC IMPACT

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Abstract

This study aims to assess the readiness of Small and Medium Enterprises (SMEs) to adopt Human Resource (HR) Analytics, focusing on barriers, enablers, and the resulting strategic impact. Using a literature review method, this study examines various academic sources, industry reports, and practical publications to identify common patterns and key findings related to the implementation of HR Analytics in the SME sector. The study results indicate that the main barriers include limited technological resources, low data literacy, and resistance to organizational culture change. Conversely, enabling factors include visionary leadership, the availability of analytics training, and government policy support. The literature findings also indicate that effective implementation of HR Analytics can have strategic impacts in the form of improved data-driven decision-making, optimized employee performance, and strengthened long-term competitiveness. This study provides practical implications for SME owners and policymakers to develop more structured and sustainable HR Analytics readiness strategies.

Keywords: HR Analytics, organizational readiness, SMEs, barriers, enablers, strategic impact

INTRODUCTION

In the rapidly evolving digital economy, data-driven business transformation has become a strategic necessity for organizations across various sectors. One important manifestation of this transformation is the adoption of Human Resource (HR) Analytics, which enables organizations to

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leverage employee data and related information for more accurate, predictive, and evidence-based decision-making (Ilyas et al., 2025). HR Analytics encompasses the process of collecting, processing, and analyzing HR data to understand trends, predict workforce behavior, identify risks, and optimize organizational performance. In the context of large companies, the use of HR Analytics has been proven to be helpful in identifying absenteeism patterns, measuring training effectiveness, and supporting employee retention strategies (Schmid et al., 2024a). However, in small and medium enterprises (SMEs), the level of readiness and implementation of HR Analytics is often limited due to limited resources, technological infrastructure, and a less than fully data-driven organizational culture.

SMEs have unique characteristics that differentiate them from large companies. They tend to have simpler organizational structures, limited financial and human resources, and less formal management processes than larger companies. Nevertheless, SMEs play a vital role in the global economy, including in Indonesia, as the largest labor absorber and a driving force of economic growth (Kinange, 2023). Therefore, SMEs' readiness to adopt HR analytics is an important topic to study, given that implementing analytics can help them improve operational efficiency, reduce costs, and optimize employee potential. This readiness encompasses not only technical aspects such as software and hardware availability, but also the readiness of people, processes, and organizational culture to accept and utilize data as a basis for strategic decision-making.

Barriers to implementing HR analytics in SMEs can arise from various factors. First, limited knowledge and skills in data analysis are often a fundamental challenge. Many businesses in this sector lack dedicated staff with expertise in data science or HR analytics. Second, limited technological infrastructure, including software and HR information management systems, can hinder effective data collection and processing. Third, resistance to change is also a hindering factor, with some owners or managers tending to rely on intuition or personal experience in decision-making rather than using data-driven analysis. Fourth, low data quality issues, such as incomplete or unintegrated data, can reduce the accuracy and reliability of analytical results. These challenges, if left unaddressed, have the potential to leave SMEs behind in an increasingly technology-dependent market (Fernandez & Gallardo-Gallardo, 2020a).

On the other hand, there are also driving factors that can increase SMEs' readiness to adopt HR analytics (Kee et al., 2023). The development of cloud

computing technology, for example, has opened up opportunities for SMEs to access analytics solutions at relatively lower costs and with greater flexibility. The availability of Software as a Service (SaaS) platforms allows small companies to utilize HR management systems and analytics tools without a large initial investment. Furthermore, growing awareness of the importance of evidence-based decision-making among business owners can be a positive starting point in encouraging analytics adoption. Support from external parties such as consultants, training institutions, or government programs can also accelerate the digital transformation process in HR management. Equally important is the role of visionary leadership capable of guiding organizational culture change toward strategic data utilization.

The strategic impact of implementing HR Analytics in SMEs can be seen in various aspects. From an operational perspective, analytics can help predict workforce needs, identify the causes of turnover, and design more targeted training programs (Abdul Basit et al., 2024). From a strategic perspective, HR Analytics can provide in-depth insights for decision-making related to career development, performance management, and succession planning (Sonar et al., 2025). This, in turn, can improve employee retention, productivity, and company competitiveness in the market. Furthermore, the use of HR Analytics can strengthen HR management accountability, as every policy or intervention taken can be supported by objective data and analysis. In the long term, companies that are ready and able to utilize HR Analytics will have a sustainable competitive advantage (Subramanian et al., 2024).

Research on HR Analytics readiness in SMEs is becoming increasingly relevant given the rapid and complex changes in the business environment, such as the impact of the industrial revolution 4.0 and the shift towards a knowledge-based economy. Amidst increasingly fierce competition, SMEs are required to make quick yet accurate decisions. Readiness in terms of technology, human resources, and business processes is key to optimally leveraging HR analytics. This research is crucial for thoroughly identifying the inhibiting and enabling factors that influence this readiness, while also understanding the potential strategic impact. With this understanding, appropriate strategies can be formulated to help SMEs harness the power of data to effectively manage their human resources.

Therefore, the background of this research rests on the knowledge gap regarding how SMEs prepare for the analytics era, particularly in HR management. While HR analytics has been widely studied in large companies, studies focusing on SMEs are still limited, despite the vastly different context,

challenges, and opportunities. This research is expected to provide theoretical contributions by developing a conceptual framework for HR analytics readiness in SMEs, while also providing practical insights for business owners, policymakers, and HR management practitioners in designing effective interventions to accelerate analytics adoption in this sector. With a comprehensive understanding of the barriers, drivers, and strategic impact, SMEs will be better prepared to leverage HR analytics as a tool that not only supports day-to-day operations but also becomes a key driver of business sustainability and growth.

RESEARCH METHOD

The research method used in this study is a literature review, which focuses on exploring, evaluating, and synthesizing findings from various previous studies relevant to the topic of HR analytics readiness in Small and Medium Enterprises (SMEs). This approach was chosen because it provides a strong conceptual foundation for understanding the phenomenon under study, while also enabling the identification of patterns, gaps, and relationships between variables revealed by previous research. The literature collection process was conducted through a structured search in leading academic databases such as Scopus, Web of Science, Google Scholar, and ProQuest, using keywords including "HR analytics readiness," "SMEs," "barriers," "enablers," and "strategic impact." The search was limited to publications from the last fifteen years to ensure relevance to current technological developments and business dynamics.

After the literature collection, a selection process was conducted based on predetermined inclusion and exclusion criteria. Inclusion criteria included publications that focused on the implementation of HR analytics in the SME sector or discussed organizational readiness to adopt human resource analytics, both from the perspective of barriers and enabling factors. Conversely, literature that only touched on HR analytics in general without relevance to the SME context, or that did not contain empirical data or in-depth conceptual analysis, was eliminated. A thematic analysis of the literature was conducted to identify the main categories of barriers, enabling factors, and strategic impacts arising from HR analytics implementation in SMEs, as well as the relationships between these elements.

In the synthesis stage, each finding from the relevant literature was compared and contrasted to identify consistencies and differences in perspectives among researchers. These findings were then integrated into a

conceptual framework explaining how barriers and enabling factors influence SME readiness to adopt HR analytics and its strategic implications for organizational performance. This process ensured that the research findings were theoretically sound, comprehensive, and could serve as a foundation for future empirical research. This literature review approach also enabled the research to present perspectives across industry and geographic contexts, increasing the generalizability and relevance of the findings for decision-makers in the SME sector.

RESULT AND DISCUSSION
Readiness Framework for HR Analytics

The readiness framework for HR Analytics in Small and Medium Enterprises (SMEs) is a conceptual foundation that aims to measure the extent to which an organization is ready to adopt and implement human resource analytics effectively. This framework views readiness as a multidimensional condition encompassing aspects of technology, data, human resources, organizational culture, and leadership (Dhankhar & Singh, 2022). Each dimension plays an interrelated role in ensuring that the HR Analytics adoption process is sustainable, delivers strategic value, and supports data-driven decision-making in talent management. In the context of SMEs, which often have limited capital, resources, and infrastructure, this framework must also consider adaptability to a dynamic business environment and the organization's capacity to learn and transform.

The technology dimension is the initial foundation that determines the readiness of SMEs to adopt HR Analytics. Technology readiness relates not only to the availability of hardware and software but also includes system integration, infrastructure scalability, data security, and ease of access (Rigamonti et al., 2024). In SMEs, information technology systems are often rudimentary, fragmented, or even poorly integrated between HR and other business functions. Therefore, technology readiness can be measured through indicators such as the level of modernization of existing HR systems, the system's ability to connect with analytics platforms, the degree of HR process automation, and the level of cybersecurity implemented. The higher the quality of the infrastructure and the more flexible the system, the greater the chance of successful HR analytics implementation in SMEs.

The data dimension is central to HR analytics, as the quality of analysis depends heavily on the quality, completeness, and consistency of the organization's data. In SMEs, common challenges include limited historical

data, inconsistent storage formats, and a lack of standardization in employee information recording processes. A readiness framework within this dimension can measure indicators such as the completeness of employee data, data accuracy and validity, the regularity of data update processes, cross-functional data integration capabilities, and the availability of data in formats that can be automatically analyzed (Chhetri et al., 2024). Furthermore, data readiness also involves clear data governance, including regulatory compliance with privacy and data security policies. If these indicators are met properly, HR Analytics can provide more reliable insights for decision-making.

The human resources dimension highlights the internal competency capacity required to manage, analyze, and utilize HR Analytics. Readiness in this dimension encompasses technical knowledge, analytical skills, data interpretation capabilities, and expertise in using analytical software (Gupta et al., 2021). In the reality of SMEs, HR roles often involve extensive administrative tasks, so HR staff rarely have the time or specialized skills for in-depth data analysis. Therefore, indicators of readiness in this dimension can include the level of data literacy among HR staff, the number of personnel with analytical skills, the availability of training related to data and technology, and the willingness to learn and adapt to new tools. High levels of HR readiness will facilitate the transition from intuition-based HR management to evidence-based HR.

The organizational culture dimension refers to the values, norms, and attitudes that support the use of data in HR decision-making. A culture open to innovation, transparency, cross-departmental collaboration, and the use of data as a basis for strategy are critical factors determining the success of HR Analytics implementation (Elugbaju et al., n.d.). In SMEs, organizational culture often relies on informal approaches and personal relationships in employee management, so adopting HR analytics requires a paradigm shift. Indicators of cultural readiness can include employee acceptance of technology-driven change, the existence of policies that support data use, cross-functional participation in analytics initiatives, and the willingness of leaders and employees to leverage data for strategic discussions. A culture that encourages experimentation and learning will accelerate the integration of HR analytics into daily business processes.

The leadership dimension is the primary catalyst connecting all elements of readiness. Support from SME leaders is crucial for determining whether investments in HR analytics will be prioritized and sustained. Visionary leadership will view HR analytics as a strategic tool for improving organizational

performance, identifying top talent, reducing turnover, and designing more adaptive HR policies. Leadership readiness indicators can be measured through leadership commitment to analytics projects, clarity of strategic vision regarding data use, resource allocation for infrastructure and training, and the leader's ability to inspire cultural change. Furthermore, leaders ready to adopt HR analytics typically demonstrate awareness of global trends in talent management and drive the organization to remain competitive through data-driven innovation.

This readiness framework serves not only as an assessment tool but also as a guide for developing HR analytics implementation strategies in SMEs (Hossain et al., 2025). By measuring readiness across these five dimensions using relevant indicators, organizations can identify gaps, formulate improvement priorities, and allocate resources appropriately. This assessment process can also serve as the basis for developing a realistic HR analytics implementation roadmap aligned with the organization's capacity. In practice, readiness across one dimension alone is insufficient; Successful implementation requires synergy across all dimensions so that the adoption of HR Analytics can provide optimal benefits, both in operational efficiency and in data-based strategic decision-making.

Barriers to HR Analytics Implementation in SMEs

Barriers to HR analytics implementation in small and medium-sized enterprises (SMEs) are complex, given that the success of implementing human resource analytics technology is influenced not only by technology availability but also by the organization's overall readiness (Schmid et al., 2024b). One of the most fundamental barriers is the limited technology and digital infrastructure available to many SMEs. Unlike large companies that have integrated HR management systems and robust databases, SMEs often rely on manual methods or simple software not designed for advanced data analysis. These limitations make data collection, storage, and processing inefficient and hinder the company's ability to obtain accurate, real-time insights. Lack of investment in adequate HR information systems leads to slow, error-prone, and inconsistent data processing, ultimately impacting the quality of data-driven decision-making.

Furthermore, the quality and availability of HR data are crucial barriers frequently encountered. Many SMEs lack a structured employee data collection mechanism, resulting in fragmented, unstandardized, and even routinely unupdated data. For example, data related to employee performance,

productivity, or retention rates is often poorly documented, or if available, is in an inconsistent format, making it difficult to process for analytical purposes. Poor data quality, including incomplete or biased data, can lead to misinterpretations during analysis. This diminishes the strategic value of HR analytics, as decisions based on invalid data can potentially be detrimental to the organization. In the context of SMEs with limited resources, this challenge is compounded by the frequent lack of dedicated teams dedicated to the ongoing management and validation of HR data.

The lack of analytical competency within HR teams is another significant barrier. HR analytics is more than simply reading reports or spotting simple trends; it requires skills in analyzing data, interpreting the results, and translating them into strategic recommendations (Bartoli, 2024). Many HR teams in SMEs still focus on administrative functions such as payroll, recruitment, and personnel administration, leaving them with limited analytical skills and understanding of how to use data to support business strategy. HR teams often struggle to use available analytical tools due to a lack of training or technical guidance. This lack of understanding leads to HR analytics being perceived as a complex, time-consuming process with little immediate visible results, slowing adoption.

Resistance to changes in work culture is also a common challenge in implementing HR analytics. Implementing analytics technology requires a shift in mindset, where HR decisions are no longer based solely on intuition or managerial experience, but also on data and empirical evidence. For some individuals, especially those who have long worked with conventional methods, this approach feels unfamiliar and uncomfortable. There are also concerns that data transparency could reveal weaknesses in individual or team performance, which can fuel resistance to analytics initiatives. In some cases, middle management or even company leaders themselves are not fully convinced of the benefits of HR analytics, resulting in weak support for its implementation. Without a cultural shift that supports the use of data as a basis for decision-making, HR analytics implementation will struggle to achieve optimal results (Willetts et al., 2020).

Another equally important factor is budget constraints and business priorities. SMEs tend to focus more on activities that directly impact revenue growth or operational continuity, so investment in HR analytics is often considered a secondary need. Implementing an analytics system requires costs for software purchases, IT infrastructure upgrades, employee training, and ongoing system maintenance. For many SMEs, allocating funds for these needs

is difficult, especially if they haven't seen tangible short-term benefits. Furthermore, business priorities that lean more toward market expansion, product development, or cash flow management prevent HR analytics projects from becoming a primary focus. These resource constraints slow down or even delay HR analytics adoption indefinitely.

The combination of these five barriers creates a cycle of interconnected challenges. Technological limitations hinder quality data management, a lack of quality data reduces the effectiveness of analysis, limited competencies prevent HR teams from optimally utilizing analysis results, cultural resistance slows the adoption of new systems, and budget constraints make all these efforts difficult to sustain. Therefore, overcoming the barriers to HR analytics implementation in SMEs requires a holistic approach that focuses not only on technical aspects but also encompasses skills development, organizational culture change, and realistic strategic planning so that the benefits of HR analytics can truly be felt by the organization.

Factors Driving HR Analytics Readiness in SMEs

The readiness of small and medium enterprises (SMEs) to adopt HR analytics is heavily influenced by the presence of driving factors that strengthen the foundation of digital transformation in human resource management. One of the most crucial factors is the support of leadership and top management. The role of leadership in providing direction, vision, and legitimacy for the implementation of HR analytics cannot be replaced by mere technical aspects (Verma et al., 2020). Without commitment from the executive level, analytics initiatives often stall early on due to insufficient resource allocation, a lack of strategic prioritization, and the absence of adequate internal policy support. Visionary leadership will encourage organizations to view HR analytics not simply as a reporting tool, but as a strategic instrument that can optimize decisions related to talent, productivity, and workforce planning. Furthermore, leadership support can facilitate the creation of a data-driven work culture at all levels of the organization, resulting in more objective and measurable decision-making processes (Maroufkhani et al., 2022).

In addition to leadership support, another significant driving factor is the availability of training programs and the development of HR competencies in analytics. Many SMEs have HR teams accustomed to administrative and operational functions, but lack the skills to interpret data in depth. Through a structured training program, HR teams can understand basic analytical concepts, data processing techniques, and the use of relevant analytical tools.

These competencies not only assist in managing HR Analytics systems but also ensure that the resulting data can be accurately interpreted to support strategic decision-making. This training can cover a wide range of aspects, from statistical fundamentals and data visualization to the ability to develop actionable insights. Beyond just technical skills, improving analytical capacity also fosters a critical mindset and a results-oriented approach, which are key to successful HR Analytics implementation (Motjolopane & Chanza, 2023).

The use of cloud-based technology solutions and Software as a Service (SaaS) is a relevant driver for SMEs with limited budgets and infrastructure. Cloud-based models offer flexibility, scalability, and cost-efficiency, perfectly suited to the characteristics of SMEs (Lutfi et al., 2022). With this technology, SMEs eliminate the need for large upfront investments in server infrastructure or expensive software licenses. Instead, they can utilize subscription services at predictable costs tailored to business needs. Other advantages of cloud solutions include ease of system updates, data security professionally managed by the service provider, and real-time data accessibility from multiple locations. This allows HR managers and company leaders to monitor HR performance indicators anytime and anywhere, enabling rapid response to changing workforce conditions.

Collaboration with consultants or third parties is also a crucial lever for HR Analytics readiness in SMEs. Many SMEs lack the internal capacity to develop complex analytics systems, so collaborating with external parties can accelerate the adoption process and reduce the risk of failure. Experienced consultants can assist with needs assessments, selecting the right technology platform, designing relevant performance indicators, and providing training to internal teams. This collaboration not only accelerates the learning curve but also allows SMEs to gain best-in-class perspectives from proven industry practices. In the long term, the knowledge transferred from third parties to internal teams will build organizational independence in managing HR Analytics sustainably (Wong & Kee, 2022).

Integrating HR Analytics into business strategy is the final driver that has a systemic impact on SME readiness (Fernandez & Gallardo-Gallardo, 2020b). HR Analytics will deliver maximum value when used as an integral part of a company's strategic planning, not simply as a supplement to monthly reports. This integration enables HR data analysis to be used to predict workforce needs, identify potential turnover risks, measure the impact of training on productivity, and align talent management with business growth directions. Thus, HR Analytics is not merely a passive reporting tool but also an active

partner in the strategic policy formulation process. In this context, business decisions such as market expansion, product development, or organizational restructuring will be supported by accurate data and insights from the HR Analytics system.

All of these driving factors complement each other and strengthen SMEs' readiness to implement HR Analytics. Leadership support ensures clear strategic direction and priorities, HR training enhances internal capacity, cloud-based technology facilitates access and efficiency, external collaboration accelerates adoption, and integration into business strategy ensures long-term relevance. When all these factors work in harmony, HR Analytics will not only be a technological innovation but also a transformation of work culture toward a more adaptive, responsive, and data-driven organization. For SMEs, this can be a significant competitive differentiator, especially amidst increasingly dynamic market competition and growing demands for efficiency.

Strategic Impact of HR Analytics Implementation

The implementation of HR analytics in Small and Medium Enterprises (SMEs) has a significant strategic impact on business sustainability and growth, particularly in the context of increasingly competitive and dynamic job markets. One key impact identified is an improvement in the quality of data-driven decision-making. By utilizing comprehensive data analysis, SME managers and leaders can reduce reliance on intuition alone, replacing it with decisions supported by quantitative evidence and empirical trends. Structured and integrated data enables more targeted decision-making, whether in workforce planning, determining training needs, or allocating human resources. Decisions that may have previously been made based on experience or assumptions can now be measured and validated with relevant data, minimizing the risk of error (McCartney & Fu, 2022). This, in turn, improves the accuracy of implemented business strategies, strengthens operational effectiveness, and provides a solid foundation for developing HR policies aligned with the company's long-term goals.

Furthermore, HR analytics can directly contribute to the efficiency of performance management and recruitment processes in SMEs. In performance management, HR Analytics enables organizations to monitor individual and team achievements in real time, identify areas for improvement, and provide more timely interventions (Falletta & Combs, 2020). This analysis can include productivity evaluations, competency assessments, and employee engagement measurements. The recruitment process also becomes more

efficient because HR Analytics can automatically process and analyze applicant data, including background, skills, and organizational culture fit. This allows the selection process to be faster, more objective, and more able to target candidates with high potential to contribute to the company's success. For SMEs, which often face limited resources, this efficiency is crucial because it can save costs and time while improving the quality of recruited talent.

Another strategic impact is increased employee retention and more targeted career development (Arora et al., 2022). HR Analytics can be used to analyze job satisfaction patterns, engagement levels, and factors influencing employee decisions to stay or leave the company. With this information, SMEs can identify turnover risks early and take preventative measures, such as increasing compensation, improving the work environment, or providing career development opportunities that align with employee aspirations. On the other hand, targeted career development can be achieved through competency and performance analysis, enabling companies to design tailored training programs and promotion paths. This strategy not only increases employee motivation and loyalty but also ensures that the company's talent pool continues to develop and is equipped to face future challenges. In the long term, this creates a work environment conducive to innovation and sustainability.

Ultimately, implementing HR analytics provides a competitive advantage for SMEs in the job market. By leveraging data to optimize HR management, SMEs can attract and retain high-quality talent typically sought by larger companies. Accurate analytics enable SMEs to tailor compensation strategies, develop flexible work policies, and create an organizational culture that appeals to today's workforce. This advantage can be a significant differentiator in the highly competitive workforce market, where companies that offer a positive work experience and opportunities for personal development are more attractive. Furthermore, a reputation as a modern, adaptive, and data-driven company strengthens SMEs' image in the eyes of business partners, investors, and customers. This competitive advantage not only supports short-term success in attracting top talent but also provides a strong foundation for sustainable growth amidst rapid changes in the economic and technological landscape.

CONCLUSION

The conclusion of the study "HR Analytics Readiness in SMEs: Barriers, Enablers, and Strategic Impact" indicates that SME readiness to adopt HR analytics is heavily influenced by a combination of internal and external factors.

Barriers include limited technological resources, minimal data literacy among HR management and staff, and cultural resistance to technology-driven change. Meanwhile, enabling factors such as visionary leadership, the availability of structured data, and strategic policy support are crucial catalysts for increasing this readiness. The interaction between these barriers and enablers determines how quickly and effectively SMEs can move toward optimal HR analytics utilization.

The implementation of HR analytics in the SME context serves not only as a more efficient human resource management tool but also as a strategic instrument for evidence-based decision-making. Organizations that successfully overcome these barriers and maximize enabling factors are able to leverage employee data to increase productivity, identify training needs, reduce turnover rates, and align HR strategies with long-term business goals. Readiness in terms of technology, analytical skills, and organizational culture has proven to be the key foundations for successful HR analytics implementation in SMEs.

Strategically, HR Analytics readiness in SMEs has a broad impact on business competitiveness and sustainability. Organizations that have integrated HR Analytics into their management processes can respond more adaptively to changes in the labor market, create innovations in HR management, and improve the quality of data-driven decision-making. Therefore, investing in strengthening technological readiness, developing analytical competencies, and creating a work culture that supports innovation are crucial steps for SMEs to not only survive but also thrive in an increasingly digitalized and competitive business environment.

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