Developing HR Capabilities in Data Analysis for More Effective Decision Making in Organizations

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A R T I C L E   I N F O

A B S T R A C T

Data-driven decision-making is now key to determining an organization's success in the digital age. The capabilities to effectively analyze and interpret data is critical for decisions to reflect changing market conditions. Organizations need to develop their Human Resources (HR) skills in data analytics, as decisions that are not driven on data are often risky and inaccurate. Providing analytical skills to all levels of the organization, supported by the right technology infrastructure, can strengthen more strategic and evidence-driven decision-making. This helps organizations increase operational efficiency and create sustainable competitive advantage. In developing these capabilities, leaders play an important role in creating a culture that encourages the effective use of data. The success of data-driven decision-making depends on the technology, and how a data-driven culture can develop in every aspect of the team's work. For this reason, it is important for organizations to provide relevant training, align the use of data in every level of decision-making, and ensure that the technology used is able to support this process properly.

INTRODUCTION

Effective decision-making in an organization is increasingly dependent on the data available to support the process. In recent decades, more and more companies have adopted technology to collect, manage and analyze data to increase their strategic decisions. Data-driven decision-making allows organizations to make decisions driven on concrete evidence, rather than mere intuition or experience (Borges et al., 2021). The implementation of data analysis in the decision-making process has been shown to improve results and efficiency, especially in managerial aspects, where decisions must consider various factors that can affect the running of the company (McAfee et al., 2012).

While the clear benefits of using data in decision-making, there are still significant challenges in effectively utilizing data. Many organizations struggle to turn raw data into actionable insights. HR plays a key role in ensuring that data can be properly interpreted and used for better decision-making (Penn & Dent, 2016). One of the main barriers is the inability of organizations to develop analytical skills in their HR, which leads to suboptimal and data-driven decisions that are not robust enough or even misinterpreted (Brynjolfsson & McElheran, 2016).

While technology has enabled massive data collection, organizations often struggle to optimize the use of that data for better decision-making. One of the main problems is the lack of analytical skills within HR teams to process and interpret data in the right way (Koman, 2017). Even when organizations adopt sophisticated data analysis tools, reliance on untrained staff to interpret data effectively can limit their capabilities to implement data-driven decisions (Davenport & Harris, 2007). Another problem that arises is that lack of clarity in data management strategies leads to errors in data interpretation, which can further lead to inappropriate decision-making.

Most organizations are still stuck in top-down decision-making, where final decisions are often made by managers or senior executives without engaging the deeper insights that data can provide. This creates an inequality between the potential offered by data and the way decision-making actually happens in practice. This leaves the available data underutilized and risks producing suboptimal decisions (Provost & Fawcett, 2013). Not including data in this process hinders the effectiveness of the organization in responding to complex and fast-changing market dynamics.

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Given the importance of data-driven decisions in increasing organizational performance, it is important to examine how HR can be empowered to analyze and interpret data effectively. Increasing analytical skills within HR teams will greatly contribute to an organization's capabilities to make more informed and evidence-driven decisions. Strategic decisions in HR management are increasingly required to be based on evidence obtained from data analysis. Neglecting to develop these capabilities will hamper the effectiveness of the decision-making process and reduce the organization's competitiveness in an increasingly data-driven market.

The aim of this discussion is to examine how organizations can develop analytical skills in their people to make the most of data in decision-making. This skill increase aims to make decision-making in organizations more effective and evidence-driven, thereby supporting the achievement of organizational aims more efficiently.

RESEARCH METHOD

The method used in this study is a literature study approach that allows researchers to examine and analyze various sources of information relevant to the topic of data-driven decision making and HR skills development in organizations. This approach allowed the researcher to identify theories, concepts, as well as best practices that have been implemented in different types of organizations that implement data-driven decisions. This literature study also aimed to explore how decision-making and HRM theories are integrated in fast-paced and dynamic organizations (Davenport, 2013). Using the existing literature, the researcher was able to extract insights related to the development of theory and practice in data-driven decision making and the importance of HR development in organizations. This process also included reviewing journal articles, books, industry reports and other academic sources.

This literature study approach will provide a solid foundation for understanding how organizations can optimize the use of data in the decision-making process. By checking past research, the researcher can identify key trends, existing problems, and tested solutions, which help answer the research questions. The references used included current research on data analytics in HR management and decision-making, which provided insights into the role of data in improving organizational performance. This literature study relies on a variety of valid sources to ensure that the findings are relevant and reliable in real-world applications (Hitt, Ireland, & Hoskisson, 2012).

RESULT AND DISCUSSION

In the midst of accelerating digital transformation, the capabilities to analyze and interpret data is becoming a key competency in organizational decision-making. As technology advances, data becomes more abundant and varied, posing a challenge for organizations to make optimal use of the information available. Organizations that want to remain competitive must develop their people capacity in data analytics. This includes training in data literacy, the use of modern analytical tools, as well as strengthening interpretive e skills that are contextualized to business needs. As a deep understanding of how to manage and analyze data, more informed and evidence-driven decisions can be made. This is especially important given that decisions made without sufficient data tend to be risky and can be detrimental to the organization in the long-term (Saravanabhavan et al., 2020).

As the trend of big data and data analytics develops, organizations are increasingly realizing the importance of providing adequate analytical skills to all team members, from operational to executive levels. Data analytics has become the responsibility of the IT or data science team alone, and has become part of the competencies of all stakeholders in the organization. This reflects a paradigm shift where every stakeholder in the organization must be able to read, interpret, and use data to support decisions within their sphere of responsibility. Creating a data-driven culture is a challenge for many organizations that have yet to fully adopt this approach. Through the development of analytical skills, organizations can optimize day-to-day operations, and plan more accurate long-term strategies (Ranjan & Foropon, 2021). A successful organization in the data-driven era is not just one that collects data, but one that is able to build internal capacity to analyze and act on that information.

To achieve success in data-driven decision-making, organizations depend not only on increasing technical capabilities, but also on providing adequate infrastructure to support the analysis process. Infrastructure such as data warehouses, cloud computing, and advanced analytics software are critical elements to ensure that data can be accessed in real-time and used effectively by decision-makers at all levels. Without the support of systems that support effective data processing and storage, even with skilled human resources, the immense potential that exists in data will not be fully utilized. It is important for organizations to approach the problem of data-driven decision-making holistically, which includes the equipping of human resources, the adoption of appropriate technology, and a culture that supports data utilization (Choi et al., 2021).

In an era dominated by technology and big data, it is important for organizations to develop their HR capabilities in analyzing and interpreting data for more effective and data-driven decision making. Organizations can no longer rely solely on specialized teams such as data analysts or IT departments to translate data into decision-making. Every part of the organization, from operational lines to top management, is required to have adequate data literacy in order to contribute to a fast, accurate, and adaptive decision-making process. One of the first approaches organizations should take is to provide comprehensive training in data analytics. With the right skills, employees can utilize data to support strategic decisions, increase operational efficiency, and identify previously unseen opportunities (Ekka, 2021). This education is not only limited to technical training but also includes developing critical capabilities to assess data quality and identify relevant trends (Müller, 2016).

Training and skill development in data analysis is essential to ensure that employees can utilize data effectively in decision-making. Training and skill development in data analysis can be done through various methods, including classroom-driven training, online courses, as well as internship or rotation programs in analytics teams. Empowering HR in understanding and using advanced data analysis tools is also very important. These analytics tools can include statistical software, predictive models, and data visualization tools that allow employees to analyze and understand patterns in data more easily. In some cases, organizations can engage data experts or work with educational institutions to develop a training curriculum tailored to their organization's specific needs (Brynjolfsson & McAfee, 2014). Proper training, accompanied by the use of appropriate tools, will enable organizations to optimize the full potential of their data.

Creating a data-driven culture within the organization is an important step to ensure that data is used optimally in every aspect of decision-making. This culture should encourage employees at all levels to utilize data in every decision they make, be it daily operational decisions or long-term strategic decisions. Organizations need to provide incentives for employees who demonstrate the capabilities to process data effectively, as well as introduce management systems that support data accessibility. Implementing technology that enables efficient data sharing between departments is also crucial to strengthening cross-functional collaboration. The implementation of technology that supports data sharing between departments can also help increase the engagement and effectiveness of data analysis (LaValle et al., 2011).

HR capabilities development also engages developing soft skills related to data interpretation. Employees need to be trained to not only understand data technically but also to think critically about the business implications of the analysis results. They should be able to evaluate whether the data is representative enough, identify biases in data collection, and formulate relevant questions driven on data analysis. The capabilities to effectively communicate findings from data analysis to non-technical stakeholders is critical in ensuring that data-driven decisions are well accepted and implemented within the organization (Davenport, 2013). Training that involves developing these skills will enrich the analysis performed by employees and support wiser and more targeted decision-making. These skills, which combine technical acumen and critical thinking, are essential to meet the challenges of a data-driven business environment.

Organizations need to provide opportunities for HR to collaborate in multidisciplinary teams that cover a wide range of expertise, including data science, finance, marketing and strategy. In an increasingly data-driven business environment, data-driven decision-making does not only rely on technical data analysis, but also requires a broad perspective from various departments. This interdepartmental cooperation can enrich the way data is analyzed and used in decision-making. Shared learning enables an exchange of perspectives that can enrich the understanding of how data can be translated in different settings. This is especially important in complex organizations, where data can be used to make decisions that affect multiple business areas at once (Shmueli, 2016). This collaborative approach allows organizations to use data more effectively, produce more evidence-based decisions, and minimize the risks associated with making decisions that are unilateral or limited to a single perspective.

Developing data analytics capabilities within HR also engages major challenges in terms of access and quality of the data itself. One of the major obstacles many organizations face is the problem of inaccurate or incomplete data collection. Many organizations still struggle with issues related to collecting and cleaning inaccurate or incomplete data. Without the right data, data-driven decision-making is limited, and can even be misguided. It is important for organizations to develop policies that ensure the data collected is accountable and can be used effectively in the analysis process (Redman, 2016). Organizations that ignore the data quality aspect will risk making wrong decisions, which in turn can be detrimental to their performance and competitiveness in the market.

Developing HR capabilities in data analysis also requires significant investment in technology and infrastructure. To truly harness the potential of data in decision-making, organizations must adopt the latest technologies that enable faster and more accurate data processing and analysis. Without the right technology support, even if employees have great analytical skills, the potential of data owned by the organization still cannot be fully utilized. Investments in cloud computing, data storage systems, and advanced analytics tools will greatly support the success of data-driven strategies. These technologies enable easier data access, better collaboration between teams, and more efficient data storage and processing (Chui et al., 2016). All of this supports better decision-making, improves operational efficiency, and helps organizations adapt to market changes.

Organizations should also pay attention to the importance of providing constructive feedback to HR on their data analytics skills. This includes assessing how they apply their analytical skills in real-life situations. Sustainable evaluation of these capabilities allows for the identification of areas that need improvement and provides opportunities for employees to continue to develop in their analytical capabilities. Effective feedback is not only limited to providing an assessment of the work done, but also offers insights on ways to improve the quality of data analysis and application in real-life situations. This process gives employees the opportunity to understand their strengths and weaknesses, which can accelerate the process of improvement and skill development. In this way, organizations can ensure that HR continues to be at the forefront of analytical skills and can implement their knowledge practically (Salgado, 2014).

In multinational organizations, developing HR capabilities in data analysis also requires an understanding of how data should be interpreted in different cultures and markets. Data-driven decisions in different regions require attention to local nuances, differences in market habits, and regulations that apply in each country. The ability to adapt data interpretation to the local context is essential so that data-driven decisions are not only globally relevant, but also fit the specific needs and realities of each market. This adds to the complexity of developing HR capable of managing and analyzing data on a global level (McAfee & Brynjolfsson, 2017). Ignorance or negligence in understanding these regulatory differences can be risky for organizations, both in terms of legal compliance and in building trust with customers in various markets.

To maximize the effectiveness of data-driven decision-making, organizations need to develop leadership capacity that is adaptive and responsive to such needs. Effective leaders must be able to understand and implement more objective and data-driven decision-making methods, which include the ability to critically analyze data and interpret the results within the relevant scope. This engages not only a technical understanding of data analysis tools and techniques, but also the capabilities to communicate the findings to the team in a clear and understandable manner. Leaders act as a bridge between data and action, ensuring that decisions are based on accurate and relevant information. The leader must be able to direct the team to use data as a tool to achieve common aims. This engages creating a culture where data is considered a valuable asset that can be used to improve performance and innovation. Leaders who are competent in data-driven decision-making will encourage team members to collaborate in analyzing data, sharing insights, and developing evidence-based solutions. By engaging teams in the decision-making process, leaders not only increase employee engagement, but also strengthen ownership of the results. This is in line with Gartner's (2014) findings that organizations with leaders who are skilled in using data tend to perform better and more efficiently.

The development of leaders who are competent in data-driven decision-making also contributes to overall HR development (Pak & Desimone, 2019). When leaders demonstrate the capabilities to use data in decision-making, they create a learning environment that encourages team members to develop their own analytical skills. Training and development that focuses on data literacy and analysis can help employees feel more confident in using data to support their decisions (Ghasemaghaei et al., 2018). According to Weigert (2017), organizations increase their decision-making capabilities, and build more skilled and adaptive teams, which can then contribute to the long-term success of the organization in the face of constantly evolving challenges in the market.

Data-driven decision-making should not only focus on the technical side of analytics, but should also include data integration with the broader business scope. The use of data must be aligned with the vision and strategy of the organization to maintain the relevance of the decision. As Porter and Hepperlmann (2019), every decision made must be considered from various aspects, such as long-term aims, potential impact on customers, and overall business sustainability.

Overall, developing HR capabilities in data analysis and interpretation is key to more informed and data-driven decision-making in organizations. This process requires support from all levels of the organization, including leaders who are able to provide clear direction and encourage a data-driven culture (DiClaudio, 2019). Not only can organizations increase operational efficiency, but they can also adapt faster to market changes and make smarter decisions in the long-term (Liu et al., 2020).

After understanding how important it is to develop HR capabilities in data analysis and interpretation, we can conclude that organizations must prioritize the development of these skills in order to remain relevant and competitive in the digital era. By increasing analytics capabilities in decision-making, organizations will not only increase operational efficiency, but also create more targeted strategies. This will bring sustainable competitive advantage as data-driven decisions tend to be more accurate and more resilient to rapid market changes (Cusi & Bernal, 2020).

This process requires careful planning, from providing relevant training to the establishment of a work culture that encourages the use of data in every aspect of decisions. To achieve optimal results, it is important for organizations to continuously invest in the latest technologies that support data collection, storage, and processing (Boakye & Lamptey, 2020). Data-driven decision-making is not just a matter of technique, but also how all team members can see and utilize data as a valuable resource. When the entire organization can operate with data-driven insights, better and more profitable decisions for the future of the organization will be created (Konovalova et al., 2021).

Developing HR capabilities in analyzing and interpreting data not only helps organizations make better decisions, but also plays a major role in creating sustainable competitive advantage. Developing these skills requires a holistic and sustainable approach, where technology, training and a data-driven culture support each other to create a more responsive, efficient and innovative organization.

CONCLUSION

Developing HR capabilities in analyzing and interpreting data is an important step for organizations looking to increase the effectiveness of their decision-making. In an increasingly data-driven world, evidence-driven decisions tend to be more informed and effective in meeting the challenges of a dynamic market. Organizations need to allocate resources to equip their HR with adequate analytical skills, ensuring that all team members, from operational to managerial levels,

have the capabilities to understand and use data effectively. The right technology is also needed to support the collection, storage and analysis of data at scale, and to create an environment that encourages data-driven decisions.

To achieve optimal results, it is important for organizations to create a data-driven culture that promotes transparency and collaboration. Organizations should provide sustainable training for employees and build an infrastructure that enables efficient data processing. The role of leaders in facilitating the use of data in decision-making is crucial to ensure that all decisions taken are in line with the long-term vision of the organization. Successful data-driven decision-making will increase the organization's competitiveness and help them achieve greater aims.

REFERENCES

Boakye, A., & Lamptey, Y. A. (2020). The Rise of HR Analytics: Exploring its Implications from a Developing Country Perspective. *Journal of Human Resource Management*, 8(3), 181-189.

Borges, M., Bernardino, J., & Pedrosa, I. (2021). Data-driven Decision-making Strategies Applied to Marketing. *In 2021 16th Iberian Conference on Information Systems and Technologies (CISTI)*, 1-7.

Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. William Warder Norton & Company.

Brynjolfsson, E., & McElheran, K. (2016). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. William Warder Norton & Company.

Choi, Y., Gil-García, J. R., Burke, G. B., Costello, J., Werthmuller, D., & Aranay, O. (2021). *Towards Data-driven Decision-making in Government: Identifying Opportunities and Challenges for Data Use and Analytics*. Hawaii International Conference on System Sciences.

Chui, M., Manyika, J., & Miremadi, M. (2016). *The Age of Analytics: Competing in a Data-driven World*. McKinsey Global Institute.

Cusi, M. L., & Bernal, L. D. P. (2020). Strengthening the Capabilities in Data Analytics: A Case Study in Bogotá, Colombia. *In Handbook of Research on Social and Organizational Dynamics in the Digital Era*. IGI Global

Darmawan, D., R. Mardikaningsih, E. A. Sinambela, S. Arifin, A.R. Putra, M. Hariani, M. Irfan, Y.R. Al Hakim, & F. Issalillah. (2020). The Quality of Human Resources, Job Performance and Employee Loyalty, *International Journal of Psychosocial Rehabilitation*, 24(3), 2580-2592.

Davenport, T. H. (2013). *Analytics at Work: Smarter Decisions, Better Results.* Harvard Business Press.

Davenport, T. H., & Harris, J. G. (2007). *Competing on Analytics: The New Science of Winning*. Harvard Business Review Press.

DiClaudio, M. (2019). People Analytics and the Rise of HR: How Data, Analytics and Emerging Technology Can Transform Human Resources (HR) Into a Profit Center. *Strategic HR Review*, 18(2), 42-46.

Ekka, S. (2021). HR Analytics: Why it Matters. *The Journal of Contemporary Issues in Business and Government*, 27(2), 2283-2291.

Fared, M. A. & D. Darmawan. (2021). Design and Implementation of Cross-Functional Training to Improve Team Collaboration, *Journal of Social Science Studies*, 1(1), 215 – 220.

Gartner. (2014). *Gartner's 2014 CIO Agenda: A Study of the CIO's Role in the Data-Driven Economy*. Gartner.

Ghasemaghaei, M., Ebrahimi, S., & Hassanein, K. (2018). Data Analytics Competency for Improving Firm Decision Making Performance. *The Journal of Strategic Information Systems*, 27(1), 101-113.

Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2012). *Strategic Management: Competitiveness and Globalization (10th Ed.)*. Cengage Learning.

Koman, G. (2017). Usage of Big Data in Decision Making Process in Companies. *Global Journal of Computer Sciences: Theory and Research*, 6(2), 68-75.

Konovalova, V., Aghgashyan, R. V., & Galazova, S. S. (2021). Perspectives and Restraining Factors of HR Analytics in the Conditions of Digitization of Human Resources Management. *In Socio-economic Systems: Paradigms for the Future*. Springer

LaValle, S., Lesser, E., Shockley, R., Hopkins, M. S., & Kruschwitz, N. (2011). Big Data, Analytics, and the Path from Insights to Value. *MIT Sloan Management Review*, 52(2), 21-32.

Liu, L., Akkineni, S., Story, P. A., & Davis, C. (2020). Using HR Analytics to Support Managerial Decisions: A Case Study. *In Proceedings of the 2020 ACM Southeast Conference,* 168-175.

McAfee, A., & Brynjolfsson, E. (2017). *Machine, Platform, Crowd: Harnessing Our Digital Future*. William Warder Norton & Company.

McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D. J., & Barton, D. (2012). Big Data: The Management Revolution. *Harvard Business Review*, 90(10), 60-68.

Müller, J. (2016). *Data Science and Analytics with Python*. Springer.

Pak, K., & Desimone, L. M. (2019). Developing Principals' Data-driven Decision-making Capacity: Lessons from One Urban District. *Phi Delta Kappan*, 100(7), 37-42.

Penn, S., & Dent, E. B. (2016). Attaining Data-driven Decision-making Through Social Discourse. *The Journal of Applied Management and Entrepreneurship*, 21(2), 26-44.

Porter, M. E., & Heppelmann, J. E. (2014). How Smart, Connected Products are Transforming Competition. *Harvard Business Review*, 92(11), 64-88.

Provost, F., & Fawcett, T. (2013). *Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking*. O'Reilly Media.

Ranjan, J., & Foropon, C. (2021). Big Data Analytics in Building the Competitive Intelligence of Organizations. *International Journal of Information Management*, 56(C), 102231.

Redman, T. C. (2016). *Data-driven: Creating a Data Culture*. Harvard Business Review Press.

Salgado, J. F. (2014). Predicting Job Performance using Personality Measures: A Meta-analysis of the Validity of Personality Traits in the Workplace. *The Industrial-Organizational Psychologist*, 51(4), 4-23.

Saravanabhavan, H., Raman, S., & Maddulety, K. (2020). Value Creation from the Impact of Business Analytics. *In Re-imagining Diffusion and Adoption of Information Technology and Systems: A Continuing Conversation: IFIP WG 8.6 International Conference on Transfer and Diffusion of IT, Proceedings*. Springer International Publishing.

Shmueli, G. (2016). *Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner*. John Wiley & Sons.

Weigert, T. (2017). Data-driven Decision making: an Adoption Framework. D*octoral Dissertation*, Massachusetts Institute of Technology