E-ISSN : 0000-0000

OIKONOMIA Journal of Management Economics and Accounting

P-ISSN : 0000-0000
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/10.61942/oikonomia.v3i3.575

Vol. 3 No. 3, May 2026

The Implementation of Learning Analytics in Managerial Decision-Making in Educational Institutions

Arman Paramansyah
Institut Agama Islam Nusantara Bekasi, Indonesia

Received: February 05, 2025
Revised: February 22, 2026
Accepted: March 01, 2026
Published: March 12, 2026

Corresponding Author:
Author Name*: Arman Paramansyah
Email*: paramasnyah.aba@gmail.com

***Abstrak*:** *The increasing availability of educational big data has transformed decision-making processes in educational institutions, necessitating the integration of learning analytics to support data-driven managerial practices. This study aims to analyze the implementation of learning analytics in strengthening managerial decision-making through an integrated and evidence-based approach. The research employs a qualitative method with a descriptive-analytical design using a literature-based approach. Data were collected from recent scholarly journal articles and analyzed through content and thematic analysis to identify key patterns related to learning analytics, decision-making processes, and institutional management. The findings reveal that learning analytics significantly enhances academic monitoring, curriculum evaluation, resource allocation, and strategic planning by providing predictive insights and real-time data. It also improves decision accuracy and organizational performance compared to traditional intuition-based approaches. However, challenges such as limited organizational readiness, data integration issues, and ethical concerns regarding data governance remain critical barriers. The discussion emphasizes that successful implementation requires strong leadership support, a data-driven organizational culture, adequate technological infrastructure, and continuous staff training. In conclusion, learning analytics can effectively strengthen managerial decision-making in educational institutions when supported by integrated governance, organizational readiness, and ethical data practices.*

Keywords : Learning Analytics, Managerial Decision-Making, Data-Driven Education, Educational Management, Big Data

E-ISSN : 0000-0000

OIKONOMIA Journal of Management Economics and Accounting

P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

INTRODUCTION

The rapid development of digital technology has significantly transformed the landscape of education, particularly through the emergence of big data and advanced analytics systems that reshape how educational institutions operate and make decisions. In the contemporary era, educational environments are increasingly characterized by the proliferation of data generated from various platforms such as Learning Management Systems (LMS), Student Information Systems (SIS), Massive Open Online Courses (MOOCs), and other administrative systems. This exponential growth of educational data has rendered traditional intuition-based decision-making approaches insufficient and often ineffective in addressing the complexity of modern educational challenges. Consequently, there is a growing need for data-driven decision-making (DDDM) approaches that leverage analytical tools to improve institutional performance, accountability, and learning outcomes (Gaftandzhieva et al., 2023; Palancı et al., 2024).

The shift toward data-driven education is not merely a technological trend but a fundamental transformation in how educational institutions manage resources, evaluate performance, and design learning strategies. Empirical evidence suggests that the implementation of data-driven decision-making can significantly enhance the accuracy of resource allocation, student recruitment strategies, and monitoring of academic performance for both students and educators. By utilizing data analytics, institutions can identify patterns, predict trends, and make informed decisions that align with institutional goals and stakeholder needs. Furthermore, data-driven approaches have been shown to improve teaching precision, management efficiency, and overall institutional quality, particularly when supported by robust data governance and ethical frameworks (Bai, 2024; Jin et al., 2025). However, despite these advantages, many institutions still face challenges in effectively utilizing data due to limitations in infrastructure, data integration, and organizational readiness.

In this context, learning analytics (LA) emerges as a critical component of data-driven educational management, functioning as an analytical engine that transforms raw educational data into actionable insights. Learning analytics involves the measurement, collection, analysis, and reporting of data about learners and their contexts, with the aim of understanding and optimizing learning and the environments in which it occurs. At the level of academic management and quality assurance, LA enables institutions to monitor student engagement, predict dropout risks, identify at-risk students, and evaluate the effectiveness of courses and curricula. These capabilities allow educational leaders to take proactive measures to improve student retention and learning outcomes, thereby enhancing institutional effectiveness (Palancı et al., 2024; Honson et al., 2024).

Moreover, learning analytics plays a strategic role in operational management by supporting decision support systems (DSS) that utilize big data to inform strategic planning, course recommendations, scheduling, and resource optimization. Through the integration of LA into managerial processes, educational institutions can achieve higher levels of efficiency and responsiveness in managing their operations. This integration also facilitates evidence-based policy formulation and institutional planning, ensuring that decisions are grounded in empirical data rather than assumptions. Previous studies have demonstrated that LA-based decision support systems can significantly improve the effectiveness of educational management by providing real-time insights and predictive capabilities (Gaftandzhieva et al., 2023; Gourna et al., 2024).

In addition to its managerial and operational benefits, learning analytics also contributes to the development of future competencies and supports the achievement of

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

Sustainable Development Goals (SDGs), particularly SDG 4 (quality education) and SDG 10 (reduced inequalities). By providing insights into learner behavior and performance, LA enables the development of personalized learning strategies that foster self-regulated learning, collaboration, and critical thinking skills. These competencies are essential for preparing students to navigate the complexities of the digital age and contribute to sustainable development. Furthermore, the use of LA can help address educational inequalities by identifying disparities in learning outcomes and enabling targeted interventions for disadvantaged groups (Kleimola & Leppisaari, 2022; Chigbu & Makapela, 2025).

Despite the growing adoption of learning analytics in education, several critical challenges remain that hinder its effective implementation in managerial decision-making. One of the main issues is the fragmentation of data sources, which limits the ability of institutions to develop a comprehensive understanding of student learning and institutional performance. Many existing LA systems are confined to specific platforms, such as LMS, and do not integrate data from multiple sources, resulting in incomplete and potentially misleading insights. Additionally, there is a lack of standardized frameworks for integrating LA into institutional decision-making processes, which creates inconsistencies in how data is used across different departments and levels of management (Johar et al., 2023; Wong et al., 2025).

Furthermore, ethical considerations and data governance remain significant concerns in the implementation of learning analytics. The collection and analysis of large volumes of student data raise important questions regarding privacy, consent, and data security. Without proper governance structures and ethical guidelines, the use of LA may lead to unintended consequences, such as data misuse or bias in decision-making. Therefore, it is essential for educational institutions to establish clear policies and ethical frameworks that ensure the responsible use of data while protecting the rights and interests of all stakeholders. This aligns with previous research emphasizing the importance of integrating ethical considerations into data-driven educational management systems (Sakr & Abdullah, 2024; Kasope et al., 2024).

The existing body of literature on learning analytics has made significant contributions in areas such as predictive analytics, student engagement tracking, and course-level evaluation. However, there remains a notable research gap in the integration of learning analytics into holistic managerial decision-making frameworks at the institutional level. Most studies tend to focus on micro-level applications of LA, such as improving individual courses or identifying at-risk students, without addressing how these insights can be systematically incorporated into broader institutional strategies and governance structures. This gap highlights the need for research that bridges the divide between analytical capabilities and managerial decision-making processes (Fan et al., 2023; Sghir et al., 2022).

In addition, while there has been considerable research on the use of learning analytics within LMS environments, there is still a lack of comprehensive models that integrate multi-source data and involve multiple stakeholders, including administrators, educators, and policymakers. The absence of such integrative models limits the potential of learning analytics to support strategic decision-making and institutional transformation. Furthermore, existing frameworks often fail to address the cultural and organizational dimensions of data-driven decision-making, which are critical for the successful implementation of LA in educational institutions (Ngulube & Ncube, 2025; Correa-Peralta & Vunueza-Martinez, 2024).

Another important gap lies in the development of integrated governance frameworks that combine technology, policy,

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

ethics, and organizational culture in the implementation of learning analytics. While conceptual frameworks for data-driven leadership and business intelligence (BI) in education have been proposed, there is still limited research on how these elements can be integrated into a cohesive system that supports sustainable and ethical decision-making. This gap is particularly relevant in the context of rapidly evolving digital technologies, where the absence of clear governance structures can hinder the effective use of data and limit its impact on educational outcomes (Gaftandzhieva et al., 2023; Chigbu & Makapela, 2025).

Based on these gaps, the novelty of this study lies in its integrative approach to examining the implementation of learning analytics in managerial decision-making within educational institutions. Unlike previous studies that focus on isolated aspects of learning analytics, this research seeks to develop a comprehensive framework that integrates multiple data sources, stakeholder perspectives, and governance mechanisms. The study emphasizes the importance of aligning technological capabilities with institutional policies, ethical considerations, and organizational culture to ensure the effective and responsible use of learning analytics. By adopting this holistic perspective, the research contributes to a deeper understanding of how learning analytics can be utilized to support strategic decision-making and institutional transformation.

Furthermore, this study introduces a conceptual integration between learning analytics and managerial decision-making processes that extends beyond traditional applications of LA. It highlights the role of learning analytics not only as a tool for monitoring and prediction but also as a strategic instrument for shaping institutional policies, improving governance, and enhancing educational quality. This integrative perspective provides a novel contribution to the literature by bridging the gap between data analytics and educational management, thereby offering practical implications for policymakers and educational leaders.

In line with the background and identified research gaps, the objective of this study is to analyze how the implementation of learning analytics can support and improve managerial decision-making processes in educational institutions through an integrated, data-driven, and ethically grounded framework. This objective reflects the need to move toward a more systematic and holistic use of data in education, where learning analytics serves as a central component of institutional management and strategic decision-making in the era of digital transformation.

METHOD

This study employs a qualitative research approach with a descriptive-analytical design to explore the implementation of learning analytics in managerial decision-making within educational institutions. The qualitative approach is considered appropriate as it enables an in-depth understanding of complex interactions between data systems, institutional management, and decision-making processes in the context of data-driven education. The research adopts a library research strategy, focusing on the systematic review of scholarly literature related to learning analytics, data-driven decision-making (DDDM), and educational management. Data collection is conducted through a structured literature search using academic databases such as Scopus, Web of Science, and Google Scholar, with inclusion criteria including relevance to the research topic, publication within the last five years, and indexing in reputable or accredited journals. The collected data consist of peer-reviewed journal articles, conference proceedings, and conceptual studies that discuss the application of learning analytics in institutional management, academic decision-making, and governance frameworks.

The data analysis technique utilized in this study is qualitative content analysis combined with thematic analysis to identify

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000
E-ISSN : 3047-602X
Vol. 3 No. 3, May 2026
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

patterns, relationships, and key insights across the selected literature. The analysis process begins with data reduction, where relevant information is categorized based on major themes such as data-driven decision-making, learning analytics applications, managerial processes, and governance structures. This is followed by data display, where findings are organized into conceptual categories to facilitate interpretation and synthesis. The final stage involves drawing conclusions and developing an integrative framework that explains how learning analytics can support managerial decision-making in educational institutions. To ensure the validity and reliability of the findings, the study applies source triangulation by comparing multiple scholarly perspectives and cross-validating key concepts across different studies. This analytical approach allows for a comprehensive understanding of the role of learning analytics in enhancing institutional effectiveness and supporting evidence-based decision-making in the era of digital transformation.

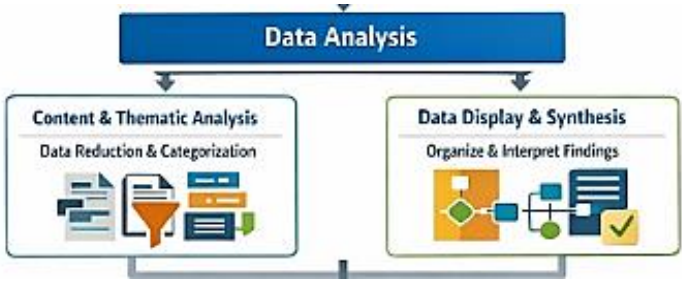

Figure 1. Diagram Conceptual Research

RESULTS AND DISCUSSION

The following table presents the research findings by summarizing the key dimensions of learning analytics implementation in managerial decision-making within educational institutions, along with their impacts and associated challenges.

Table 1. Implementation of Learning Analytics in Managerial Decision-Making

No	Dimension & Key Findings	Impact and Challenges
1	**Academic Management**: Learning analytics monitors student engagement, predicts dropout risk, and identifies at-risk students	Improves student retention and academic performance; challenges include data fragmentation and limited integration across systems
2	**Operational Management**: Learning analytics supports decision support systems (DSS) for planning, scheduling, and resource allocation	Enhances efficiency and strategic planning; challenges include infrastructure limitations and data quality issues
3	**Course & Curriculum Evaluation**: Analysis of LMS data and course effectiveness	Improves course design and learning quality; challenges include lack of multi-source data integration
4	**Student Learning Behavior Analysis**: Tracking learning patterns, participation, and performance trends	Enables personalized interventions and adaptive learning; challenges include over-reliance on analytics without pedagogical follow-up
5	**Data-Driven Leadership**: Managers use analytics for evidence-based policy and institutional decisions	Strengthens accountability and governance; challenges include lack of analytical competence among leaders
6	**Ethical & Data Governance**: Implementation of policies on data privacy, security, and ethical use	Ensures responsible and sustainable use of data; challenges include absence of standardized governance frameworks

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

Based on Table 1, it can be interpreted that the implementation of learning analytics significantly enhances managerial decision-making in educational institutions by providing accurate, real-time, and data-driven insights. Learning analytics supports various managerial dimensions, including academic monitoring, operational efficiency, curriculum evaluation, and strategic leadership, thereby improving institutional effectiveness and learning outcomes. However, the effectiveness of this implementation is influenced by several challenges, such as data integration issues, infrastructure readiness, limited analytical competencies, and ethical concerns related to data governance. Therefore, to maximize the benefits of learning analytics, educational institutions must adopt an integrated approach that combines technological infrastructure, human resource development, and strong governance frameworks to ensure sustainable and effective data-driven decision-making

Discussion

The findings presented in Table 1 indicate that the implementation of learning analytics (LA) has a substantial impact on strengthening managerial decision-making in educational institutions, particularly when it is supported by organizational readiness, effective data governance, and strong leadership commitment. Learning analytics functions as a critical instrument in transforming traditional decision-making processes into evidence-based practices that rely on real-time data and predictive insights. In the context of contemporary education, where complexity and uncertainty are increasingly prevalent, the ability of institutions to utilize data effectively becomes a key determinant of their performance and sustainability. This study confirms that learning analytics, when properly designed and implemented, provides a robust foundation for improving decision accuracy, responsiveness, and strategic alignment within educational management systems (Gaftandzhieva et al., 2023; Bai, 2024).

At the level of academic management and learning quality, learning analytics plays a pivotal role in supporting decisions related to student performance monitoring, dropout prediction, and early intervention strategies. The findings demonstrate that LA enables institutions to identify at-risk students through predictive modeling and engagement tracking, thereby allowing timely interventions that can improve student retention and academic success. This aligns with previous studies emphasizing that predictive learning analytics systems are highly effective in detecting patterns of disengagement and academic decline, which are often precursors to student dropout (Stojanov & Daniel, 2023; Kustitskaya et al., 2023). Moreover, the integration of early warning systems into institutional decision-making processes allows educational leaders to allocate resources more efficiently and design targeted support programs, ultimately enhancing the overall quality of education (Gaftandzhieva et al., 2023; Bai, 2024).

In addition to supporting academic management, learning analytics significantly contributes to program planning and curriculum development. The analysis of student performance data, course completion rates, and engagement patterns provides valuable insights into the effectiveness of existing curricula and instructional strategies. These insights enable decision-makers to redesign programs and adjust teaching approaches based on empirical evidence rather than assumptions. This study's findings are consistent with prior research indicating that data-driven curriculum design leads to improved learning outcomes and greater alignment between educational programs and student needs (Mukred et al., 2024; Kovanović et al., 2021). Furthermore, learning analytics facilitates continuous evaluation and refinement of educational programs, ensuring that they remain relevant and effective in a rapidly changing educational landscape (Gaftandzhieva et al., 2023; Bai, 2024).

From an operational and policy perspective, learning analytics enhances managerial decision-making by providing comprehensive dashboards and predictive models that support resource allocation, student recruitment strategies, and staff evaluation

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

processes. The availability of real-time data enables institutional leaders to make informed decisions regarding budgeting, infrastructure development, and human resource management. This capability is particularly important in optimizing the use of limited resources and ensuring that institutional strategies are aligned with performance indicators and regulatory requirements. The findings of this study support previous research showing that the integration of learning analytics into decision support systems significantly improves the efficiency and effectiveness of organizational management (Ibnu et al., 2023; Zhang et al., 2022).

The impact of learning analytics on decision effectiveness is further reinforced by the use of machine learning models and big data analytics, which enhance the predictive and prescriptive capabilities of managerial systems. These technologies enable institutions to forecast student performance, identify potential risks, and generate recommendations for both individual learners and institutional strategies. As a result, decision-making processes become more proactive rather than reactive, allowing institutions to anticipate challenges and implement preventive measures. This aligns with existing literature demonstrating that machine learning-based decision support systems can significantly improve organizational performance by enabling more accurate and timely decisions (Vrček et al., 2025; Nauman et al., 2021). Additionally, the adoption of big data analytics has been shown to have a positive correlation with organizational performance, particularly when supported by effective knowledge management processes (Sekli & De La Vega, 2021).

Despite these benefits, the effectiveness of learning analytics in managerial decision-making is highly dependent on several critical success factors, particularly at the organizational level. One of the most important factors is leadership commitment, which plays a crucial role in driving the adoption and integration of learning analytics within institutional processes. Leaders who prioritize data-driven decision-making and allocate sufficient resources for technological infrastructure and staff development are more likely to achieve successful implementation outcomes. Furthermore, the development of a data-driven organizational culture is essential to ensure that all stakeholders, including administrators, educators, and support staff, are actively engaged in utilizing data for decision-making purposes. This finding is consistent with previous studies highlighting the importance of leadership and organizational culture in facilitating the adoption of learning analytics (Márquez et al., 2023; Mukred et al., 2024).

Technological readiness is another key factor that influences the success of learning analytics implementation. The integration of multiple data sources, including LMS, SIS, and other institutional systems, is necessary to provide a comprehensive view of student learning and institutional performance. However, many educational institutions face challenges related to system interoperability, data quality, and infrastructure limitations. Without a well-designed data architecture and robust technological infrastructure, the potential benefits of learning analytics cannot be fully realized. This study's findings are in line with prior research emphasizing the importance of integrated data systems and advanced technological capabilities in supporting effective learning analytics (Stojanov & Daniel, 2023; Lin et al., 2023). Additionally, the use of cloud-based platforms and big data technologies can enhance scalability and accessibility, enabling institutions to manage large volumes of data more efficiently (Gaftandzhieva et al., 2023; Kustitskaya et al., 2023).

Human resource capacity and ethical considerations also play a critical role in the implementation of learning analytics. The findings indicate that the lack of data literacy and analytical skills among educational staff can hinder the effective use of learning analytics in decision-making processes. Therefore, continuous training and professional development programs are essential to equip staff with the necessary competencies to interpret and utilize data effectively. Moreover, ethical issues related to data privacy, consent,

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

and security must be addressed to ensure the responsible use of learning analytics. The collection and analysis of student data raise important concerns regarding the protection of personal information and the potential for bias in decision-making processes. As such, institutions must establish clear governance frameworks and ethical guidelines to regulate the use of data and safeguard stakeholder interests (Carney et al., 2023; Hussan et al., 2024).

Another important aspect highlighted in this study is the need for integrated data governance frameworks that align technological, organizational, and ethical dimensions of learning analytics. While many institutions have adopted learning analytics tools, the absence of comprehensive governance structures often results in fragmented and inconsistent data usage. Effective governance frameworks should include policies on data management, quality assurance, access control, and ethical use, as well as mechanisms for monitoring and evaluating the impact of learning analytics on institutional performance. This integrated approach ensures that learning analytics is not only technically effective but also socially responsible and aligned with institutional goals (Kovanović et al., 2021; Mukred et al., 2024).

Furthermore, the findings suggest that the successful implementation of learning analytics requires a shift in organizational mindset from reactive to proactive decision-making. Traditional decision-making approaches in education are often based on historical data and retrospective analysis, which limit their ability to address emerging challenges. In contrast, learning analytics enables predictive and prescriptive decision-making, allowing institutions to anticipate future trends and take preventive actions. This transformation is particularly important in the context of rapidly changing educational environments, where agility and adaptability are essential for success (Gaftandzhieva et al., 2023; Surendran et al., 2024).

In relation to the research objective, this study confirms that learning analytics can significantly strengthen managerial decision-making in educational institutions by providing accurate, timely, and actionable insights. However, the effectiveness of this approach depends on the extent to which institutions are prepared to adopt data-driven practices, develop robust governance frameworks, and invest in technological and human resource development. Without these supporting factors, the implementation of learning analytics may be limited in scope and impact, reducing its potential to enhance institutional performance.

Overall, this study contributes to the existing literature by providing a comprehensive analysis of the role of learning analytics in managerial decision-making, emphasizing the importance of an integrated approach that combines technology, organization, and ethics. The findings highlight that learning analytics is not merely a technical tool but a strategic resource that can drive institutional transformation when supported by appropriate policies, leadership, and organizational culture. By addressing the identified challenges and leveraging the opportunities offered by learning analytics, educational institutions can enhance their decision-making processes and achieve more effective and sustainable outcomes in the era of data-driven education.

CONCLUSIONS

Based on the findings and discussion, it can be concluded that learning analytics, when properly designed and implemented, can significantly strengthen managerial decision-making in educational institutions by enabling data-driven, predictive, and evidence-based processes across academic, operational, and strategic domains. Learning analytics supports more accurate monitoring of student performance, improves curriculum planning, and enhances resource allocation, ultimately contributing to increased institutional effectiveness and learning outcomes. However, the success of its implementation is highly dependent on organizational readiness, including strong leadership commitment, the development of a data-driven culture, adequate technological infrastructure, and the continuous improvement of staff data literacy. In addition,

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

robust data governance and ethical frameworks are essential to ensure responsible data use and protect stakeholder interests. Therefore, learning analytics should be positioned not only as a technological tool but as an integrated strategic system that aligns organizational, technological, and ethical dimensions to optimize managerial decision-making in educational institutions.

ACKNOWLEDGMENT

The authors would like to express their sincere appreciation to all researchers and scholars whose contributions in the field of learning analytics and data-driven education have provided valuable insights and theoretical foundations for this study. The authors also extend their gratitude to academic colleagues and institutions that have supported the research process through constructive discussions and intellectual engagement. Furthermore, appreciation is given to all stakeholders in the education sector whose ongoing efforts in implementing data-driven approaches and learning analytics continue to inspire advancements in managerial decision-making and institutional effectiveness.

REFERENCES

Bai, H. (2024). Design and application of decision support system for educational management based on big data. *Journal of Electrical Systems*. https://doi.org/10.52783/jes.3084

Carney, P., Sebok-Syer, S., Pusic, M., Gillespie, C., Westervelt, M., & Goldhamer, M. (2023). Using learning analytics in clinical competency committees: Increasing the impact of competency-based medical education. *Medical Education Online, 28*. https://doi.org/10.1080/10872981.2023.2178913

Chigbu, B., & Makapela, S. (2025). Data-driven leadership in higher education: Advancing sustainable development goals and inclusive transformation. *Sustainability*. https://doi.org/10.3390/su17073116

Correa-Peralta, M., & Vunueza-Martinez, J. (2024). Application of academic analytical models in education management. *Journal of Educational and Social Research*. https://doi.org/10.36941/jesr-2024-0171

Fan, O., Wu, M., Zheng, L., Zhang, L., & Jiao, P. (2023). Integration of artificial intelligence performance prediction and learning analytics to improve student learning in online engineering course. *International Journal of Educational Technology in Higher Education, 20*. https://doi.org/10.1186/s41239-022-00372-4

Gaftandzhieva, S., Doneva, R., & Bliznakov, M. (2023). Data analytics, students' academic performance and decision-making in higher education.

Gaftandzhieva, S., Hussain, S., Hilčenko, S., Doneva, R., & Boykova, K. (2023). Data-driven decision making in higher education institutions: State-of-play. *International Journal of Advanced Computer Science and Applications*. https://doi.org/10.14569/ijacsa.2023.0140642

Gourna, S., Rigou, A., Kyriazi, F., & Marinagi, C. (2024). The added value of learning analytics in higher education. *International Journal of Education and Information Technologies*. https://doi.org/10.46300/9109.2024.18.13

Honson, V., Vu, T., Tran, T., & Estay, W. (2024). Using learning analytics to alleviate course and student support administrative load for large classes: A case study. *Journal of Work-Applied Management*. https://doi.org/10.1108/jwam-11-2023-0121

Hussan, F., Er, H., & Nadarajah, V. (2024). Health professions students' acceptance and readiness for learning analytics: Lessons for educators. *BMC Medical Education, 24*. https://doi.org/10.1186/s12909-024-06284-3

E-ISSN : 0000-0000
OIKONOMIA Journal of Management Economics and Accounting
P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

Ibnu, M., S., Muhammad, S., Sodiq, A., Tulungagung, N., Stai, K., Ali, M., Ngunut, S., T., Sudjiman, P., Sudjiman, L., Sistem, I., Komputer, B., Proses, D., Keputusan, P., & Pustaka, D. (2023). Use of big data in education management: Building data-powered decision making. *Promis*. https://doi.org/10.58410/promis.v4i2.735

Jin, R., Peng, Y., Wang, Z., Wang, J., Tang, J., & Zhang, M. (2025). Data-driven educational decision-making: How to enhance educational quality and management efficiency. *Journal of Higher Education Research*. https://doi.org/10.32629/jher.v5i6.3385

Johar, N., Kew, S., Tasir, Z., & Koh, E. (2023). Learning analytics on student engagement to enhance students' learning performance: A systematic review. *Sustainability*. https://doi.org/10.3390/su15107849

Kasope, W., Elugbaju, W., Okeke, N., & Alabi, O. (2024). Conceptual framework for enhancing decision-making in higher education through data-driven governance. *Global Journal of Advanced Research and Reviews*. https://doi.org/10.58175/gjarr.2024.2.2.0055

Kleimola, R., & Leppisaari, I. (2022). Learning analytics to develop future competences in higher education: A case study. *International Journal of Educational Technology in Higher Education, 19*. https://doi.org/10.1186/s41239-022-00318-w

Kovanović, V., Mazziotti, C., & Lodge, J. (2021). Learning analytics for primary and secondary schools. *Journal of Learning Analytics, 8*, 1–5. https://doi.org/10.18608/jla.2021.7543

Kustitskaya, T., Esin, R., Kytmanov, A., & Zykova, T. (2023). Designing an education database in a higher education institution for the data-driven management of the educational process. *Education Sciences*. https://doi.org/10.3390/educsci13090947

Lin, J., Harada, K., & Goto, H. (2023). Frameworks of designing and implementing learning analytics in educational institutions: A review. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4558855

Márquez, L., Henríquez, V., Chevreux, H., Scheihing, E., & Guerra, J. (2023). Adoption of learning analytics in higher education institutions: A systematic literature review. *British Journal of Educational Technology, 55*, 439–459. https://doi.org/10.1111/bjet.13385

Mukred, M., Mokhtar, U., Hawash, B., Alsalman, H., & Zohaib, M. (2024). The adoption and use of learning analytics tools to improve decision making in higher learning institutions: An extension of technology acceptance model. *Heliyon, 10*. https://doi.org/10.1016/j.heliyon.2024.e26315

Nauman, M., Akhtar, N., Alhudhaif, A., & Alothaim, A. (2021). Guaranteeing correctness of machine learning-based decision making at higher educational institutions. *IEEE Access, 9*, 92864–92880. https://doi.org/10.1109/access.2021.3088901

Ngulube, P., & Ncube, M. (2025). Leveraging learning analytics to improve the user experience of learning management systems in higher education institutions. *Information, 16*, 419. https://doi.org/10.3390/info16050419

Palancı, A., Yılmaz, R., & Turan, Z. (2024). Learning analytics in distance education: A systematic review study. *Education and Information Technologies, 29*, 22629–22650. https://doi.org/10.1007/s10639-024-12737-5

Sakr, A., & Abdullah, T. (2024). Virtual, augmented reality and learning analytics impact on learners and educators: A systematic review. *Education and Information Technologies, 29*, 19913–

E-ISSN : 0000-0000

OIKONOMIA Journal of Management Economics and Accounting

P-ISSN : 0000-0000 Vol. 3 No. 3, May 2026
E-ISSN : 3047-602X
Available : https://jurnalhafasy.com/index.php/oikonomia
DOI : https://doi.org/

19962. https://doi.org/10.1007/s10639-024-12602-5

Sekli, M., & De La Vega, I. (2021). Adoption of big data analytics and its impact on organizational performance in higher education mediated by knowledge management. *Journal of Open Innovation: Technology, Market, and Complexity*. https://doi.org/10.3390/joitmc7040221

Sghir, N., Adadi, A., & Lahmer, M. (2022). Recent advances in predictive learning analytics: A decade systematic review (2012–2022). *Education and Information Technologies*. https://doi.org/10.1007/s10639-022-11536-0

Stojanov, A., & Daniel, B. (2023). A decade of research into the application of big data and analytics in higher education: A systematic review of the literature. *Education and Information Technologies, 29*, 5807–5831. https://doi.org/10.1007/s10639-023-12033-8

Surendran, D., Arulkumar, V., Aruna, M., Sangamithrai, K., & Thangadurai, N. (2024). Improving the quality of education through data analytics and big data contributions. *1st International Conference on EMMA-2021*. https://doi.org/10.1063/5.0183570

Toofaninejad, E., Dawson, S., Sohrabi, S., & Kalantarion, M. (2025). Exploring the transformative potential of learning analytics in medical education: A systematic review. *Journal of Advances in Medical Education & Professionalism, 13*, 12–24. https://doi.org/10.30476/jamp.2024.103973.2034

Vrček, N., Ređep, N., Šlibar, B., & Grabar, D. (2025). Smart decision-making: The role of digital twins, retrieval-augmented generation-enhanced AI, and learning analytics. *Ubiquity Proceedings*. https://doi.org/10.5334/uproc.170

Wong, B., Li, K., & Liu, M. (2025). The role of learning analytics in evaluating course effectiveness. *Sustainability*. https://doi.org/10.3390/su17020559

Zhang, M., Fan, J., Sharma, A., & Kukkar, A. (2022). Data mining applications in university information management system development. *Journal of Intelligent Systems, 31*, 207–220. https://doi.org/10.1515/jisys-2022-0006