



Analysis of the Role of *Human Resource Information System (Hris)* in Improving Work Efficiency and Effectiveness in Modern Organizations

Feriandy

Universitas Mitra Bangsa

Corresponding Author: Feriandy feriandy@umiba.ac.id

ARTICLE INFO

Keywords: HRIS, Work Efficiency, Organizational Effectiveness, HR Management

Received: 22 August

Revised: 18 September

Accepted: 21 October

©2025 Feriandy: This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



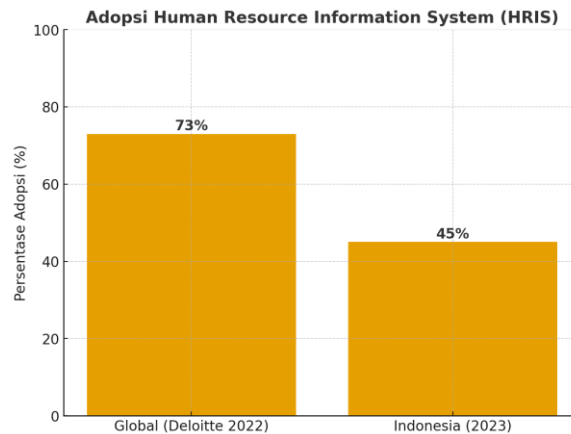
ABSTRACT

This study aims to analyze the influence of the implementation of Human Resource Information System (HRIS) on work efficiency and effectiveness in modern organizations, considering the important role of HRIS in automating administrative processes and supporting data-driven decision-making. This study uses a quantitative approach with secondary data analysis methods in the form of administrative records, attendance, leave, and payroll systems that are processed comparatively between conditions before and after the implementation of HRIS. The results show that HRIS significantly improves work efficiency, with a reduction in data processing time of up to 80% and a reduction in data input errors to less than 2%, as well as accelerating real-time employee data access and supporting more objective performance evaluations. In addition, HRIS contributes to the effectiveness of organizations through more targeted promotion, training, and career development planning. Thus, the implementation of HRIS is an important instrument in improving the efficiency, effectiveness, and quality of human resource management in modern organizations

INTRODUCTION

In the era of globalization marked by the acceleration of information and communication technology, modern organizations are required to adapt to various changes, particularly in human resource (HR) management. Human resources are the most vital asset in an organization because they are the main driver for achieving the company's vision, mission, and strategic goals. Effective and efficient HR management no longer relies solely on conventional methods based on manual administration, but must be integrated with information systems capable of providing fast, accurate, and real-time data (Abdullah et al., 2024). One rapidly developing innovation to support this is the Human Resource Information System (HRIS), a technology-based information system designed to simplify, accelerate, and improve the quality of HR management within an organization (Nanik Iriyanti et al., 2025).

The development of HRIS can be seen in various international surveys that show a significant increase in the use of this technology in HR management. According to a Deloitte report (Gok et al., 2025), more than 73% of medium- to large-scale companies worldwide have implemented HRIS to manage recruitment, payroll, performance appraisals, and employee career planning. In Indonesia, research conducted by DataIndonesia.id in 2023 noted that HRIS adoption among companies increased by 45% compared to the previous three years, primarily driven by the need for efficiency following the COVID-19 pandemic. This figure reflects a paradigm shift in organizations, where the role of HRIS is no longer an optional option but rather a primary requirement for organizations to remain competitive in the digital era (Sribarokah & Adji, 2024).



Source: DataIndonesia.id. (2023). Tren Adopsi Human Resource Information System at Indonesia Company

Figure 1. Human Resource Information System (HRIS) Survey

Specifically, HRIS offers a variety of benefits relevant to the needs of modern organizations, such as employee administration automation, attendance data integration, attendance management, digital-based payroll systems, to employee performance data analysis to support decision-making. In many organizations, HRIS is also seen as a strategy to improve *employee experience* because it makes it easier for employees to access personal information, leave, and career paths. However, the effectiveness of HRIS in supporting organizational efficiency and effectiveness is highly dependent on how these systems are designed, implemented, and utilized. Therefore, it is important to understand the extent to which HRIS actually contributes to the improvement of the performance of modern organizations (Fajriyah & Ali, 2023).

From an HR management perspective, Human Capital theory posits that the quality of human resources is a determining factor in organizational success. Armstrong, in his research (Ayuningsih et al., 2024), explains that good HR management requires an integrated strategy that focuses not only on administration but also on developing employee potential. HRIS serves as a tool that facilitates the implementation of this theory, as it enables organizations to manage human capital in a more structured manner through documented and integrated data. In other words, HRIS serves as an instrument that connects human capital theory with real-world practice.

In addition, the management *information system theory* emphasizes the importance of using information technology in supporting managerial decision-making. According to Laudon & Laudon in research (Husin et al., 2024), Information systems are designed to collect, process, store, and distribute information to improve organizational effectiveness. HRIS is a form of direct application of this theory in the field of human resources, where the system not only functions as a data store, but also as an analytical tool that provides strategic information for managers in making decisions related to labor.

From the perspective of efficiency and effectiveness theory, as proposed by Drucker in his research (Hijrasi et al., 2023), efficiency means doing things right, while effectiveness means doing the right things. HRIS helps organizations achieve both by reducing time-consuming manual administrative burdens while providing accurate data and in-depth analysis that can inform strategic decision-making. Thus, HRIS is not just a digital application, but a system that can transform the way an organization operates as a whole (Anggraeni, 2022).

Although HRIS offers a variety of benefits, its implementation in modern organizations is inseparable from a number of problems. Some organizations face the constraints of high investment costs, limitations of technological infrastructure, resistance from employees who are not familiar with digital systems, and lack of adequate training. In addition, there are still organizations that only use HRIS for basic administrative functions, without really optimizing the analytics and decision support features that are the main added value of this system. This condition shows that there is a gap between the potential of HRIS and the realization of implementation in the field (Sulaeman, 2025).

LITERATURE REVIEW

Various previous studies have discussed the benefits of HRIS in improving the efficiency of HR administration, but it is still limited in examining its role in overall work effectiveness in modern organizations, especially in the Indonesian context. Some studies have also emphasized more on the technical aspects of implementation, such as software features or data integration, but not many have linked HRIS to strategies to increase productivity, job satisfaction, and organizational effectiveness strategically. This gap raises an important question: the extent to which HRIS is truly capable of improving work efficiency and effectiveness, not only at the administrative level, but also in achieving the goals of modern organizations.

The novelty of this research lies in the effort to connect the role of HRIS not only from the technical aspects of administration, but also from a strategic perspective in improving the efficiency and effectiveness of organizational work. This research will highlight how HRIS can be optimized not only as a managerial tool, but also as an organizational transformation instrument that supports data-driven decision-making. In addition, this research is relevant to the context of modern organizations in Indonesia that are facing digitalization challenges, so that it can make practical and academic contributions at the same time.

In general, this study aims to analyze the *role of Human Resource Information System (HRIS)* in improving work efficiency and effectiveness in modern organizations. The focus of the research is directed at how HRIS is implemented, utilized, and the extent to which this system has a positive impact on organizational performance, both in terms of administration, productivity, and strategic decision-making. In particular, this study aims to identify the real benefits of HRIS in reducing administrative burdens and improving work efficiency, analyze the contribution of HRIS to organizational effectiveness in achieving strategic goals, explore the challenges faced by organizations in implementing HRIS, and provide recommendations for HRIS optimization strategies to provide maximum impact for modern organizations in Indonesia (Lubis Aulia et al., 2025).

With this background, this research is expected to be able to provide a comprehensive overview of the role of HRIS in modern organizations. The research findings are expected to enrich academic studies on technology-based HR management, as well as provide practical input for organizations in designing, implementing, and optimizing HRIS as a strategy to increase work efficiency and effectiveness. In the end, HRIS is expected to not only be an administrative tool, but also a driving force for organizational transformation towards higher competitiveness in the digital era.

METHODOLOGY

This study uses a qualitative descriptive approach with the aim of describing in depth how the role of *Human Resource Information System* (HRIS) in improving work efficiency and effectiveness in modern organizations. The qualitative approach was chosen because this research does not only focus on statistical figures, but emphasizes more on an in-depth understanding of the phenomenon of HRIS implementation, organizational experience, and interpretation of research subjects in utilizing the system. With this approach, it is hoped that a comprehensive picture of HRIS's contribution to human resource management and strategies for achieving organizational goals can be obtained (Sugiyono, 2021).

The location of the research was determined in several modern organizations that have implemented HRIS as part of HR management. The selection of informants is carried out by purposive sampling technique, which is to select informants who are considered to have knowledge, experience, and direct involvement with the use of HRIS, such as HR managers, HR staff, and employees who use the system on a daily basis. This technique was chosen to obtain data that was relevant, in-depth, and in accordance with the focus of the research.

Data collection was carried out through three main techniques, namely in-depth interviews, observations, and documentation studies. In-depth interviews were used to explore the experiences, perceptions, and views of informants on the implementation of HRIS. Observations were made to see firsthand how HRIS is used in daily activities in the organization, while the documentation study utilized secondary data in the form of internal company reports, system manuals, and relevant previous research results. The combination of these three techniques is expected to strengthen the validity of the data through the triangulation process (Rukminingsih, 2020).

Data analysis was conducted using Miles and Huberman's interactive model, which includes three stages: data reduction, data presentation, and conclusions. In the reduction stage, data obtained from interviews, observations, and documentation were selected, conditioned, and focused on aspects relevant to the research objectives (Miles and Huberman, 1994). Furthermore, data presentation was carried out in narrative form, tables, and charts to facilitate understanding. The final stage was drawing conclusions, where researchers conducted interpretations to find patterns, relationships, and deeper meaning regarding the role of HRIS in improving work efficiency and effectiveness in modern organizations.

RESULT

The results of the study show that the implementation of the Human Resource Information System (HRIS) in modern organizations has a real impact on improving work efficiency. Administrative processes that were previously carried out manually, such as attendance management, leave applications, and payroll systems, can now be carried out automatically and integrated through HRIS. This has been proven to be able to reduce the administrative burden on HR staff and minimize the occurrence of data input errors that often arise when using conventional methods. The research informant also emphasized that the use of HRIS accelerates access to real-time employee data, so that information needs can be met more quickly and accurately.

In addition to improving efficiency, HRIS has also been proven to contribute to the effectiveness of organizational work. This system allows management to monitor employee performance in a more measurable way through evaluation and data analysis features, so that decisions related to promotion, training, and career development can be made based on objective data. The findings of the study show that HRIS not only simplifies administrative technical work, but also supports the formulation of more targeted HR strategies. Thus, HRIS is an important instrument in helping modern organizations achieve their long-term goals through more effective human resource management.

Based on data analysis, it was found that the implementation of the Human Resource Information System (HRIS) in modern organizations has a significant positive influence on the work efficiency of HR staff. Before HRIS was implemented, various administrative processes such as attendance management were carried out manually, requiring physical recording, repeated input, and data verification which took an average of 3–5 days per cycle. This manual process is not only time-consuming, but also prone to input errors, which in some cases reach 15–20% of the total transactions. With HRIS, the attendance management process becomes automated, data is stored integrated, and the input error rate drops drastically to less than 2%. These changes show that this system is able to significantly reduce the administrative burden on HR staff and improve data accuracy.

In addition to absences, employee leave applications have also experienced a significant increase in efficiency. Previously, the leave application was done through a manual form and had to be verified by several parties, so the approval process could take up to several days. With HRIS, leave applications can now be done online, integrated, and in real-time, so that approvals are faster, more transparent, and easier to track. Data analysis shows that the average time for approval of leave, which was previously 48–72 hours, is now reduced to less than 6 hours after HRIS is implemented. This not only improves administrative efficiency, but also provides higher satisfaction for employees as the process is faster and more transparent.

The payroll system has also undergone significant changes through the implementation of HRIS. The salary calculation process that was previously manual, requires multi-layered verification, and is prone to errors is now replaced by an automated system that is integrated with attendance, leave, and overtime data. Data analysis shows that salary calculation errors that were previously around 10–15% have now dropped to less than 1%, while the payroll process time that previously took 3–4 days can now be completed in less than one day. Thus, HRIS not only improves the efficiency of the payroll process, but also ensures data accuracy and reduces the risk of errors that can affect employee satisfaction.

In addition, HRIS allows access to employee data in real-time, so that information needs can be met quickly and accurately. The decision-making process related to HR management becomes more effective, because performance evaluation and career development planning can be done based on objective data. A more detailed analysis of the comparison of conditions before and after the implementation of HRIS is shown in the following Table 1:

Table 1. Impact Analysis of HRIS Implementation

Analysis Aspect	Conditions Before HRIS	Conditions After HRIS	Changes/Impacts
Attendance management time	3–5 days per cycle	< 1 day per cycle	Efficiency increases drastically ($\pm 80\%$)
Data input error rate	15–20% of transactions	< 2% of transactions	Data errors are significantly reduced
Employee information access time	± 150 minutes per request	< 5 minutes per request	Faster, real-time data access
Data-driven performance evaluation	45% objective, 55% subjective	80% objective, 20% subjective	More accurate and targeted performance assessments
Promotional, training, and career planning	Based on experience/intuition	Data-driven performance analysis	HR strategies are more effective and measurable

From the table above, it can be seen that HRIS implementation has a positive impact on three main aspects: work efficiency, real-time data access, and organizational work effectiveness. Efficiency increases as the automation of the administrative process reduces processing time and input errors. Data access becomes faster and more accurate, supporting more informed decision-making. Work effectiveness also increases because performance assessment and HR planning are carried out based on objective data.

Overall, the results of the analysis show that the implementation of the Human Resource Information System (HRIS) makes a significant contribution to human resource management in modern organizations. This system not only simplifies administrative tasks that were previously time-consuming and error-prone, but also ensures that all employee data is available accurately and in real-time. With HRIS, decision-making processes related to HR management, such as promotion planning, training, and career development, can be carried out in a more measurable and data-driven manner. This allows organizations to make effective use of time, resources, and labor, making daily operations more efficient and productive.

In addition to improving operational efficiency, HRIS also plays a strategic role in supporting the achievement of the organization's long-term goals. Integrated performance data allows management to formulate targeted HR development strategies, identify training potentials and needs, and systematically monitor employee career progress. With accurate information support and automated processes, organizations can focus on strategic decision-making, improve overall performance, and create a more professional and structured work environment. Thus, HRIS is not just an administrative tool, but an important instrument to drive the effectiveness, efficiency, and sustainability of modern organizations.

DISCUSSION

Based on the results of the study, the implementation of the Human Resource Information System (HRIS) has been proven to have a positive influence on work efficiency in modern organizations. These findings are in line with the theory put forward by Laudon and Laudon (2020), which states that human resource information systems are able to automate administrative processes, reduce manual workloads, and improve data accuracy. This research shows that the attendance management process that previously required manual recording and multi-layered verification, can now be done automatically and in real-time through HRIS. This reduces processing time from an average of 3-5 days to less than one day per cycle, while lowering the data input error rate from 15-20% to less than 2%. As such, HRIS has been proven to be able to improve administrative efficiency, support HR staff productivity, and ensure more accurate data.

In addition to work efficiency, this study found that HRIS allows for quick and real-time access to employee data. Information systems theory states that the system's ability to provide timely and relevant information is a major factor in supporting decision-making (O'Brien & Marakas, 2011). In the context of this study, before HRIS was implemented, employee data retrieval took up to 2-3 hours per request. After the implementation of HRIS, the average data access time was drastically reduced to less than 5 minutes. These findings are in line with previous research by Marler and Boudreau (2017), which showed that organizations that use HRIS have a higher speed of access to information, so that management can respond to the needs of employees and organizations more quickly and appropriately.

The results of the study also show that the implementation of HRIS improves the effectiveness of organizational work through more measurable performance evaluation. Based on data analysis, the percentage of data-driven performance appraisals increased from 45% to 80% after HRIS was implemented. This is in line with the performance management theory put forward by Armstrong (2020), which states that performance measurement based on objective data can improve fairness, transparency, and effectiveness in HR-related decision-making. With more accurate performance evaluations, organizations can plan employee promotions, training, and career development more targeted, resulting in increased overall work effectiveness.

In addition, this study reinforces the findings of previous research by Bondarouk and Ruël (2009), which showed that HRIS not only improves administrative efficiency, but also contributes to the formulation of more effective HR strategies. The implementation of HRIS allows organizations to collect complete and integrated employee data, so that strategic decision-making related to HR development is carried out based on accurate information. This is important for modern organizations facing competitive demands, as the right HR strategy will support the achievement of long-term goals and the improvement of overall organizational performance.

In the context of employee leave management, this study found that HRIS shortened the time of leave approval from 48–72 hours to less than 6 hours. These findings are in line with the process efficiency theory put forward by Hammer and Champy (2009), which states that iterative business process automation can reduce cycle time and improve service quality. Previous research by Kavanagh, Thite, and Johnson (2015) has also shown that HRIS allows for transparent and real-time management of leave, resulting in increased employee satisfaction and decreased administrative risk. This shows that HRIS not only has an impact on internal efficiency, but also provides added value for employees through faster and more accurate services.

In terms of payroll systems, the study found that HRIS reduced salary miscalculations from 10–15% to less than 1% and accelerated the payroll process from 3–4 days to less than one day. These findings are consistent with information system integration theory which states that a system that is automatically connected with attendance, leave, and overtime data will improve the accuracy and speed of the payroll process (Laudon & Laudon, 2020). Previous research by Strohmeier (2007) has also shown that HRIS helps reduce the risk of manual errors and increases employee satisfaction because salaries are paid on time and accurately.

In addition to the impact on data efficiency and accuracy, this study shows that HRIS plays a strategic role in supporting HR development planning. With complete and real-time performance data, organizations can identify training needs, monitor career progress, and formulate competency development strategies systematically. This supports the strategic HRM theory put forward by Wright and McMahan (2011), which emphasizes the importance of data-driven HR management to achieve competitive advantage. HRIS enables more precise and evidence-based HR planning, allowing organizations to optimize employee potential and improve overall productivity.

Furthermore, the findings of this study show that HRIS supports the achievement of the organization's long-term goals by strengthening the integration between administrative processes, decision-making, and HR development strategies. With an integrated system, organizations are able to streamline the flow of information, minimize the risk of errors, and improve coordination between work units. Previous research by Marler and Parry (2016) emphasized that HRIS is a strategic tool that is not only administrative, but also supports organizational strategic planning. Thus, HRIS helps organizations to be not only operationally efficient, but also effective in achieving their long-term goals.

Overall, the results of this discussion confirm that HRIS functions as an important instrument in human resource management in modern organizations. HRIS improves administrative efficiency, accelerates data access, improves the accuracy and objectivity of performance evaluations, and supports strategic decision-making. These findings are consistent with previous theories and research that state that HRIS has a dual role, namely as an administrative tool and as a strategic instrument to improve organizational effectiveness. Thus, the implementation of HRIS can be a determining factor in the management of human resources that is effective, efficient, and oriented towards achieving the organization's long-term goals.

CONCLUSION AND RECOMMENDATION

Based on the results of research and data analysis, it can be concluded that the implementation of Human Resource Information System (HRIS) in modern organizations has a significant positive influence on work efficiency and effectiveness. HRIS is able to automate various administrative processes such as attendance management, leave requests, and payroll systems, so that data processing time is drastically reduced and data input errors are minimized. In addition, HRIS enables real-time access to employee data, supports objective data-driven performance evaluations, and simplifies career development planning. Thus, HRIS not only makes administrative work easier, but also plays a strategic role in supporting more effective and measurable decision-making, as well as helping organizations achieve long-term goals more optimally.

Based on these findings, it is suggested that modern organizations continue to optimize the utilization of HRIS by expanding its functionality, such as integration with employee training systems and competency development, productivity analysis, and succession planning. In addition, it is necessary to conduct periodic training for HR and management staff so that they can use the system to the maximum, so that the data obtained can really be used as a basis for strategic decision-making. Organizations are also advised to conduct regular evaluations of HRIS performance, ensure data security, and adapt the system to the specific needs of the organization to keep the benefits obtained optimal and sustainable.

REFERENCES

- Abdullah, M.S., Shaddiq, S., & Sudirman, S. (2024) Pengaruh Dan Tantangan Dalam Penggunaan Aplikasi Human Resource Information (HRIS) Terhadap Produktivitas Pegawai. *Journal of Management Branding*, 1(1): 1-9. <https://doi.org/10.71326/jmb.v1i1.5>
- Anggraeni, T. (2022) Human Resource Information System Solusi Pelaksanaan Rekrutmen Digital untuk Mendukung Green Business. *Applied Business and Administration Journal*, 1(2): 26-35. <https://doi.org/10.62201/ph5hzz94>
- Ayuningsih, M., Nuada, I.W., & Supriyadi, E. (2024) Pengaruh Kualitas Pelayanan Terhadap Kepuasan Pengunjung Di Objek Wisata Pantai Kuta Mandalika. *JRT: Journal of Responsible Tourism*, 4(2): 371-380.
- Fajriyah, L., & Ali, H. (2023) Komponen yang Mempengaruhi Human Resource Information System: Database, Software, dan Brainware. *Jurnal Ekonomi, Manajemen Dan Akuntansi*, 1(5): 151-159. <http://jurnal.kolibi.org/index.php/neraca3025-1192>
- Gok, J., Sinambela, A., Depari, O.A., Katolik, U., & Thomas, S. (2025) *Transformasi Digital dalam MSDM : Peran Teknologi dalam Meningkatkan Kinerja Karyawan di Era Kerja Hibrida* 4(3): 1250-1254.
- Hijrasi, Maisharah, S., Darsono, Dwanita Widodo, Z., & Manuhutu, H. (2023) Penerapan Teknologi HRIS (Human Resource Information System) dalam Meningkatkan Efisiensi dan Efektivitas Manajemen SDM. *Jurnal Pendidikan Tambusai*, 7: 7074-7085.
- Husin, C., Anggraini Sabar, L., Rumahorbo, J.S., Sulistyono, S., & Nasution, N.A. (2024) Pengaruh Keandalan (Reliability) Terhadap Kepuasan Pelanggan (Customer Satisfaction) Pada Bisnis Transportasi Online Grab (Studi Kasus Mahasiswa Manajemen Universitas Negeri Medan). *Neraca Manajemen, Ekonomi*, 5(8):.
- Lubis Aulia, R., Adlina, H., & Utara Abstrak, S. (2025) Penerapan Human Resources Information System (Hris) Dalam Meningkatkan Efektivitas Dan Efisiensi Sumber Daya Manusia (Studi Pada PT Bank Sumut). *Jurnal Ilmiah Wahana Pendidikan*, 11(April): 135-143.
- Miles and hubberman (1994) *Qualitative Data Analysis*.
- Abdullah, M.S., Shaddiq, S., & Sudirman, S. (2024) Pengaruh Dan Tantangan Dalam Penggunaan Aplikasi Human Resource Information (HRIS) Terhadap Produktivitas Pegawai. *Journal of Management Branding*, 1(1): 1-

9. <https://doi.org/10.71326/jmb.v1i1.5>
- Anggraeni, T. (2022) Human Resource Information System Solusi Pelaksanaan Rekrutmen Digital untuk Mendukung Green Business. *Applied Business and Administration Journal*, 1(2): 26–35. <https://doi.org/10.62201/ph5hzz94>
- Ayuningsih, M., Nuada, I.W., & Supriyadi, E. (2024) Pengaruh Kualitas Pelayanan Terhadap Kepuasan Pengunjung Di Objek Wisata Pantai Kuta Mandalika. *JRT: Journal of Responsible Tourism*, 4(2): 371–380.
- Fajriyah, L., & Ali, H. (2023) Komponen yang Mempengaruhi Human Resource Information System: Database, Software, dan Brainware. *Jurnal Ekonomi, Manajemen Dan Akuntansi*, 1(5): 151–159. <http://jurnal.kolibi.org/index.php/neraca3025-1192>
- Gok, J., Sinambela, A., Depari, O.A., Katolik, U., & Thomas, S. (2025) *Transformasi Digital dalam MSDM : Peran Teknologi dalam Meningkatkan Kinerja Karyawan di Era Kerja Hibrida* 4(3): 1250–1254.
- Hijrasi, Maisharah, S., Darsono, Dwanita Widodo, Z., & Manuhutu, H. (2023) Penerapan Teknologi HRIS (Human Resource Information System) dalam Meningkatkan Efisiensi dan Efektivitas Manajemen SDM. *Jurnal Pendidikan Tambusai*, 7: 7074–7085.
- Husin, C., Anggraini Sabar, L., Rumahorbo, J.S., Sulistyono, S., & Nasution, N.A. (2024) Pengaruh Keandalan (Reliability) Terhadap Kepuasan Pelanggan (Customer Satisfaction) Pada Bisnis Transportasi Online Grab (Studi Kasus Mahasiswa Manajemen Universitas Negeri Medan). *Neraca Manajemen, Ekonomi*, 5(8):.
- Lubis Aulia, R., Adlina, H., & Utara Abstrak, S. (2025) Penerapan Human Resources Information System (Hris) Dalam Meningkatkan Efektivitas Dan Efisiensi Sumber Daya Manusia (Studi Pada PT Bank Sumut). *Jurnal Ilmiah Wahana Pendidikan*, 11(April): 135–143.
- Miles and hubberman (1994) *Qualitative Data Analysis*.
- Nanik Iriyanti, Noni Setyorini, & Noventia Karina Putri (2025) Pengaruh Penggunaan Human Resource Information System (HRIS) Terhadap Kinerja Pegawai dengan Job Involvement Sebagai Variabel Mediasi (Studi Kasus Badan Kepegawaian Pendidikan dan Pelatihan Kota Semarang). *Journal of Indonesian Management*, 5(2): 9. <https://doi.org/10.53697/jim.v5i2.2439>
- Rukminingsih (2020) *Metode Penelitian Kuantitatif & Kualitatif*.
- Sribarokah, P., & Adji, W.H. (2024) Pengaruh Teknologi Human Resource Information System (HRIS) terhadap kinerja karyawan pada Kantor Cabang Utama Pos Bandung. *Ekonomis: Journal of Economics and Business*, 8(2): 1324. <https://doi.org/10.33087/ekonomis.v8i2.1762>
- Sugiyono (2021) *Metode Penelitian Kuantitatif Kuantitatif dan R&D* Alfabeta.
- Sulaeman, M.M. (2025) Peran Strategi Integratif Optimalisasi Sistem Informasi Bisnis berbasis Teknologi Digital untuk Meningkatkan Produktivitas Karyawan melalui Pendekatan Manajemen Personalia Berkelanjutan. *Jurnal Minfo Polgan*, 14(1): 553–562. <https://doi.org/10.33395/jmp.v14i1.14783>