Business Intelligence Solutions for Enhanced Accounting Decision-Making in Digital Transformation

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***Abstract*— In the era of fast-growing digital transformation, integrating business intelligence (BI) solutions in accounting decision-making has become essential for companies. This research reviews the critical role of BI solutions in optimizing the accounting decision-making process amid digital transformation. The method used in this research is a descriptive method with a qualitative approach, while the data used is secondary data obtained from previous studies. The data was collected through literature study techniques and analyzed qualitatively. The results of this study show that Business Intelligence (BI) plays a vital role in optimizing financial data presentation, adaptability to business changes, and providing competitive advantage through informed decision-making, especially in today's digital era. Implementing BI in an economic environment can improve efficiency, provide deep insights, and strengthen a company's competitiveness. BI is a technology tool and a strategic foundation supporting a company's success in the ever-changing digital era through its adaptability and ability to process data for decision-making.**

Keywords—Accounting, Business Intelligence, Decision-Making, Digital Transformation

I. INTRODUCTION

In the rapidly evolving digital transformation era, companies must integrate business intelligence (BI) solutions in accounting decision-making [1]. This research reviews how BI solutions are vital in optimizing accounting decision-making processes amid digital transformation.

In this context, BI becomes a vital cornerstone that enables companies to collect, analyze, and interpret financial data efficiently. According to Ref. [2], companies can convert financial data into valuable insights to support more informed and timely decision-making by utilizing advanced BI technologies.

BI solutions in finance and accounting open the door to applying more in-depth analysis methods to financial statements, business trends, and consumer behavior [3]. By understanding data thoroughly, companies can identify patterns, trends, and business opportunities that may have been missed in traditional manual processing.

The use of BI also goes beyond just data collection. It helps present financial information in a more structured and understandable way, both for upper management and those directly involved in the decision-making process in accounting [4]. Thus, stakeholders can quickly grasp the gist of the information presented and make smarter decisions.

The importance of BI solutions in accounting and finance lies in operational efficiency and its ability to assist companies in adjusting to dynamic changes in the business environment. Making informed and measured decisions can be a significant competitive advantage.

Therefore, this research will highlight the role of BI solutions in improving the accounting decision-making process in the digital transformation era. By providing an overview of how BI solutions can be implemented, integrated, and maximized in a financial environment, this research aims to provide an in-depth insight into the vast potential of BI solutions in supporting more effective and efficient accounting decisions in the future.

II. METHODS

The method adopted in this research is a descriptive method that assumes a qualitative approach. This approach provides an in-depth description of the observed phenomenon. This research uses secondary data from several relevant and related previous studies. These data were obtained through literature study techniques involving analysis and synthesis of various sources. The data analysis process was conducted qualitatively to collect detailed information, understand the context, and explore multiple perspectives of relevant descriptions contained in previous literature. This aims to provide a solid foundation for an in-depth understanding of the topic under study.

III. RESULTS

A. Integration of Business Intelligence (BI) Solutions in Accounting Decision Making

Integrating Business Intelligence (BI) solutions in accounting decision-making is crucial in today's digital transformation era. This research reviews the role of BI as a critical element in optimizing the accounting decision-making process amidst rapid and dynamic changes in the business world.

The importance of BI integration in accounting decision-making lies in its ability to enable companies to collect, analyze, and interpret financial data efficiently [5]. In this context, BI becomes the foundation that empowers companies to formulate smarter and more timely decisions.

A critical aspect of using BI is its ability to apply more profound analysis methods to financial statements, business trends, and consumer behavior [6]. By understanding data deeply, companies can identify patterns, trends, and business opportunities that may have been overlooked in traditional manual processes.

The importance of BI solutions in finance and accounting is limited to operational efficiency and its ability to help companies adjust to dynamic changes in the business

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environment. Making informed and measured decisions can be a significant competitive advantage amid intense competition.

BI also helps present financial information in a more structured and understandable way, both for top management and those directly involved in the accounting decision-making process [7]. This allows stakeholders to quickly understand the gist of the information presented and make smarter decisions.

BI integration in accounting decision-making is a technology adoption and a paradigm shift in financial operations. BI solutions provide information and empower companies to optimize data and translate it into actionable knowledge, ultimately leading to more intelligent, more efficient, and relevant decision-making with evolving business dynamics.

B. The Role of BI in Financial Data Collection, Analysis, and Interpretation

The role of Business Intelligence (BI) in collecting, analyzing, and interpreting financial data is essential in improving the efficiency and effectiveness of company operations in today's digital era [8]. BI facilitates the efficient collection of economic data from various sources, both internal and external [9].

In this context, BI technology enables data integration from various platforms and systems, including internal databases, cloud platforms, or external data sources such as social media or financial markets. This provides a holistic view of the company's financial health, an essential foundation for strategic decision-making.

BI uses advanced analytical techniques to process such financial data. Through its algorithms and analytical tools, BI can identify trends, patterns, and correlations that are not directly visible [10]. This provides an in-depth understanding of a company's financial performance, reveals opportunities or threats, and maps out future strategies.

BI's role in financial data interpretation does not stop at analysis; it also translates the results into insights that can be used for more intelligent decision-making [11]. This is realized in the creation of financial reports that are more structured and easier to understand. BI helps present financial data visually through graphs, dashboards, or integrated reports, making it easier for decision-makers to understand the essence of the data [12].

In finance, BI also paves the way for more in-depth analytical applications on specific aspects, such as cash flow prediction, identification of payment trends, or evaluation of investment performance. Thus, the role of BI not only accelerates the decision-making process but also increases the accuracy and precision in planning future financial strategies [13].

BI provides data and analyses and is a means to integrate understanding into company operations. In a fast-changing business environment, BI helps respond to changes quickly through timely and accurate information [14]. BI implementation empowers companies to respond more to market dynamics, changing consumer behavior, and industry competition.

In financial data, BI also brings more automated processes in managing, processing, and interpreting data [2]. This automation helps reduce manual workload, improve efficiency, and minimize the risk of human error in handling susceptible financial data.

Therefore, for operational benefits, BI's role in financial data also affects risk management strategies. More in-depth and timely analyses help identify risks proactively [15]. By having greater visibility into the company's financial condition, management can take appropriate actions to minimize risks and strengthen its financial position.

BI integration in the collection, analysis, and interpretation of financial data has significant implications for the quality of corporate decision-making. With more accurate, measurable, and relevant information, strategic decisions can be made more confidently. This becomes critical in supporting company growth, adapting to change, and maintaining a competitive advantage in an ever-evolving marketplace.

IV. DISCUSSION

A. Benefits of BI in the Structuring and Presentation of Financial Information

The benefits of Business Intelligence (BI) in the structuring and presenting of financial information are critical in aiding understanding and informed decision-making [16]. BI has a significant role in delivering financial data to the various stakeholders in an organization in a more structured, organized, and easier-to-understand way [17].

BI enables the presentation of financial data in a visual and structured manner. Various BI tools and platforms can transform complex data into easier-to-understand reports, such as interactive dashboards, charts, and tables containing detailed yet structured information [18]. This provides a more precise and comprehensive understanding of the company's financial situation.

BI facilitates the presentation of real-time and up-to-date data. In a fast-changing business environment, timely information is critical. BI allows users to access up-to-date financial data and generate reports instantly. This makes it easier for decision-makers to respond to market changes or rapidly changing financial situations [19].

BI also supports presenting financial data that can be personalized according to user needs. Each level of management or department within a company has different information needs [20]. Through BI, financial information can be tailored to the needs of each user so that the reports produced are more relevant and meaningful to each stakeholder.

Through BI, integration between various data sources can be done. Within a company, financial data may come from different platforms, systems, or departments [21]. BI enables the merging and integrating data from these diverse sources into a unified whole. This allows users to see the relationships and interrelationships between data more clearly.

BI helps in providing better visibility into the company's financial performance. Through structured and easy-to-understand reports, management and other stakeholders can see the company's financial performance over time [22]. The analyses provided by BI allow users to identify trends, patterns, and possible problems so that corrective actions can be taken more quickly and appropriately.

BI also facilitates the use of technology in the presentation of financial data. With intuitive BI tools, presenting financial information becomes more accessible without requiring specialized data manipulation skills [4]. This opens

opportunities for more individuals within the organization to access and use financial data more efficiently.

B. BI Adaptability in a Dynamic Business Environment

The adaptability of BI in a dynamic business environment is a crucial aspect that enables an organization to remain relevant and responsive to change [23]. In an era of constant change, BI's adaptability is essential, especially in an ever-changing business environment.

BI must be able to accommodate rapid changes in the business environment. Businesses today face rapidly changing markets, consumer needs, and technological innovations [24]. Adaptive BI must be able to integrate and process data from multiple sources that continue to evolve rapidly. This capability enables organizations to stay relevant and make the right decisions amid ongoing changes.

Adaptive BI must be able to adjust to the needs and demands of users. In a dynamic business environment, information needs can change suddenly. BI must be able to adjust the reports and analyses it produces according to the users' needs and preferences [25]. In other words, adaptive BI can provide relevant, actual, and needed information according to different times and situations.

BI's ability to adapt is also reflected in its flexibility in dealing with different data types. In a rapidly changing business environment, data can come from various sources and forms, from internal company data to external data such as consumer or market data [26]. Adaptive BI must manage and analyze these different types of data quickly.

Adaptive BI must also be able to cope with the demands of technological changes. The development of information technology is happening rapidly, from the use of mobile devices to the implementation of AI technology or Big Data analysis [27]. Adaptive BI must integrate with these new technologies without disrupting existing functions. This allows organizations to continue optimizing the use of the latest technology in generating valuable information.

Adaptive BI must also have the ability to adapt to different analysis needs. Different levels of management require additional information to make decisions. Adaptive BI must be able to provide reports and analyses that match the needs and level of detail required by different levels of management.

C. Competitive Advantage through Informed Decision Making

In today's digital age, competitive advantage through informed decision-making is a critical foundation for organizational success. Ref. [28] stated that his ability to make informed and timely decisions, supported by accurate and relevant information, is a crucial factor differentiating a company from its competitors. Informed choices are critical in shaping strategy, responding to market changes, and providing a significant edge in a competitive business environment.

Informed decisions enable organizations to respond more accurately to market changes. In a rapidly changing business environment, accessing real-time information about market trends, consumer behavior, and changes in the industry is crucial [29]. Companies that interpret this information well can better adjust their strategies, allowing them to remain relevant and competitive in a fluctuating market.

Informed decisions allow companies to identify emerging business opportunities. With proper access to data and in-depth analysis, organizations can recognize patterns, trends, and potential opportunities that their competitors may have missed [30]. As such, they can design more innovative strategies, launch new products or services, and enter previously unexplored markets.

Informed decisions also give companies an edge in risk management. Through proper analysis, companies can identify potential risks that may arise and plan strategies to manage them [31]. This allows organizations to anticipate potentially adverse market changes and take the necessary steps to mitigate their impact.

Informed decisions also provide a more solid basis for long-term strategic planning. Through good access to data and robust analysis, organizations can make more brilliant plans, forecast future trends, and plan the steps needed for long-term business growth and development.

Decisions supported by accurate information also improve operational efficiency. Ref. [32] stated that companies can identify areas requiring improvement, manage resources more efficiently, and increase overall productivity by better understanding business processes and in-depth performance analysis.

Informed decisions give companies a significant competitive advantage in today's digital age. The ability to respond quickly to market changes, recognize new business opportunities, manage risks, plan better strategies, and improve operational efficiency are key points that differentiate advanced companies from stagnant ones in the ever-changing business era. In this context, informed decision-making is necessary and a solid foundation for an organization’s future success.

D. Implementation and Integration of BI Solutions in a Financial Environment

Implementing and integrating Business Intelligence (BI) solutions in the financial environment has become an essential focal point for companies in today's digital era. BI is no longer just a tool for collecting data but has become the foundation for intelligent and informed decision-making in various business sectors, including finance.

The urgency of BI in the financial environment lies in its ability to optimize data collection, information processing, and decision-making at every level of the organization [33]. In finance, BI not only collects financial data but also integrates that data with other resources such as sales, supply chain, or other operational data. This integration provides a more comprehensive picture of the company's financial performance.

The successful implementation of BI in a financial environment also depends on its integration with existing financial management software or systems [34]. Good integration allows data from economic systems such as Enterprise Resource Planning (ERP) or accounting systems to be accessed and analyzed using BI solutions. This way, companies can better understand their financial health and make better decisions.

The utilization of BI in a financial context also impacts operational efficiency. The ability to access financial data quickly and accurately eliminates the need for slow and error-prone manual processes [35]. This results in more efficient

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and accurate financial reporting, allowing management to make more timely decisions.

BI in a financial context also provides powerful predictive analytics. By leveraging historical data and advanced algorithms, BI can predict economic trends, consumer behavior, or market conditions that may occur in the future [36]. This gives companies an edge in long-term strategic planning.

Data security is also essential in implementing BI in the financial environment [23]. With susceptible financial data, protecting confidential company information is a top priority. Therefore, BI integration requires strong security to protect the integrity and confidentiality of financial data.

However, despite its many benefits, the implementation and integration of BI in a financial environment also face challenges. One is the complexity of integrating multiple data sources from different systems. In addition, specialized expertise is required in managing and analyzing such complex data.

Implementing and integrating BI solutions in the financial environment is essential to improve decision-making efficiency, accuracy, and quality at various enterprise levels. BI has become a strong foundation for companies to understand better, analyze, and respond to financial information, improving overall performance amid the dynamic changes in the digital era.

E. Great Potential of BI Solutions in Improving the Effectiveness of Accounting Decisions

Using BI solutions promises excellent potential to improve decision-making effectiveness in accounting. Today, especially in the ever-evolving digital age, BI is not just a technology tool but the key to managing and analyzing data in ways never imagined.

In the context of accounting decision-making, BI has a vital role. One of the critical advantages of BI is its ability to collect and integrate data from multiple sources. In the accounting world, data from different departments or branches of a company can be combined to provide a comprehensive picture of financial performance in real time [22]. This is very beneficial for accountants and management in making more timely and accurate decisions.

BI also plays a vital role in improving financial analysis. Through advanced BI tools, economic data can be analyzed in depth, identifying specific trends, patterns, or tendencies that may have been missed in the traditional analysis process [37]. These analyses help make better and more informed decisions, strengthening a company's ability to plan more intelligent financial strategies.

In practice, BI also helps present financial information in a more structured and easy-to-understand manner [18]. This impacts the transparency of information among different levels of management. With the right BI tools, financial information can be presented in an attractive visual format, making it easier for management to understand the essence of the data.

The existence of BI also provides significant predictive capabilities in the field of accounting. By analyzing historical data, BI can provide accurate estimates of financial trends and future predictions to assist management in long-term planning [36]. This opens up opportunities for companies to make more adaptive and proactive decisions to changes that may occur.

However, the implementation of BI in accounting also faces several challenges. One is the lack of a good enough understanding of the technology. The steep learning curve is often an obstacle for some companies. In addition, the cost of implementing and integrating BI solutions can also be a limiting factor for some organizations.

V. CONCLUSION

Business Intelligence is crucial in presenting structured financial information, aiding informed decision-making, and enhancing a company's competitiveness in the ever-changing digital age. In the context of financial information structure and presentation, BI enables visual, real-time, and customized data presentation. Integrating data from various platforms becomes more unified, providing a deeper understanding of the company's financial performance. However, BI also faces challenges, such as integrating data from different systems.

BI adaptability is essential in dealing with a dynamic business environment. An adaptive BI can adjust to market changes, user needs, diverse data types, and technological developments without compromising functionality. This enables organizations to stay relevant, make informed decisions, and efficiently use the latest technologies.

Competitive advantage through informed decision-making is a critical foundation for organizational success. Decisions supported by in-depth analysis provide the ability to adjust strategies, recognize new business opportunities, manage risks, and improve operational efficiency. In this context, BI is not just a technology tool but a strategic tool that adds significant value to a company's operations and decisions.

BI implementation in a financial environment is not just about data collection but how that data is optimized for intelligent decision-making. BI enables merging financial data with other operational data, resulting in more comprehensive information and better decision support. However, BI implementation also faces challenges, such as integrating with existing financial management systems.

The vast potential of BI in improving the effectiveness of accounting decision-making cannot be underestimated. In this context, BI expands the understanding of data, increases the speed of decision-making, and gives companies a competitive advantage. With the proper implementation, BI provides deep insights, accelerates decision-making, and strengthens a company's competitiveness in an ever-changing business era.

BI integration in finance is not only about technology but also about understanding information thoroughly to support decision-making. BI must be able to provide structured, real-time, and relevant information for various levels of management. BI's adaptability to accommodate diverse data, user needs, and technological changes is critical in determining the success of its implementation.

Thus, BI is not just a technology tool but a strategic foundation that provides added value to the company in managing and processing information. Decisions supported by adaptive, informative, and structured BI will be a strong foundation for the company's growth and success in the ever-evolving digital era.

VI. REFERENCES

[1] Y. Niu, L. Ying, J. Yang, M. Bao, and C. B. Sivaparthipan, "Organizational business intelligence and decision making using big data analytics," *Information Processing and Management*, vol. 58, no. 6, p. 102725, 2021, doi: 10.1016/j.ipm.2021.102725.

[2] C. Shao, Y. Yang, S. Juneja, and T. GSeetharam, "IoT data visualization for business intelligence in corporate finance," *Information Processing and Management*, vol. 59, pp. 1–14, 2022, doi: 10.1016/j.ipm.2021.102736.

[3] K. K. H. Ng, C. H. Chen, C. K. M. Lee, J. (Roger) Jiao, and Z. X. Yang, "A systematic literature review on intelligent automation: Aligning concepts from theory, practice, and future perspectives," *Advanced Engineering Informatics*, vol. 47, pp. 1–15, 2021, doi: 10.1016/j.aei.2021.101246.

[4] A. R. Alshehadeh, G. A. Elrefae, A. K. Belarbi, A. Qasim, and H. A. Al-Khawaja, "The impact of business intelligence tools on sustaining financial report quality in Jordanian commercial banks," *Uncertain Supply Chain Management*, vol. 11, no. 4, pp. 1667–1676, 2023, doi: 10.5267/j.uscm.2023.7.002.

[5] Z. S. Seguer and A. M. Hasna, "Business Intelligence as a Challenge for the Managerial Function: Case Study on Managerial Decision Making in Algerian Companies," *Business Ethics and Leadership*, vol. 6, no. 3, pp. 35–46, 2022, doi: 10.21272/bel.6(3).35-46.2022.

[6] S. Ahmad, S. Miskon, R. Alabdan, and I. Tlili, "Towards sustainable textile and apparel industry: Exploring the role of business intelligence systems in the era of industry 4.0," *Sustainability (Switzerland)*, vol. 12, no. 7, pp. 1–23, 2020, doi: 10.3390/su12072632.

[7] X. Parra, X. Tort-Martorell, F. Alvarez-Gomez, and C. Ruiz-Viñals, "Chronological Evolution of the Information-Driven Decision-Making Process (1950–2020)," *Journal of the Knowledge Economy*, vol. 14, no. 3, pp. 2363–2394, 2023, doi: 10.1007/s13132-022-00917-y.

[8] L. K. Choi, A. S. Panjaitan, and D. Apriliasari, "The Effectiveness of Business Intelligence Management Implementation in Industry 4.0," *Startupreneur Business Digital (SABDA Journal)*, vol. 1, no. 2, pp. 115–125, 2022, doi: 10.34306/sabda.v1i2.106.

[9] M. T. Nuseir, A. Aljumah, and M. T. Alshurideh, "How the Business Intelligence in the New Startup Performance in UAE During COVID-19: The Mediating Role of Innovativeness," *Studies in Systems, Decision and Control*, vol. 334, pp. 63–79, 2021, doi: 10.1007/978-3-030-67151-8_4.

[10] S. Bimonte *et al.*, "Collect and analysis of agro-biodiversity data in a participative context: A business intelligence framework," *Ecological Informatics*, vol. 61, pp. 0–28, 2021, doi: 10.1016/j.ecoinf.2021.101231.

[11] M. Djerdjouri, "Data and Business Intelligence Systems for Competitive Advantage: prospects, challenges, and real-world applications," *Mercados y Negocios*, no. 41, pp. 5–18, 2019, doi: 10.32870/myn.v0i41.7537.

[12] D. T. Quynh, "The Impact of Dashboards on Risk Management and Decision-Making in Finance," *Journal of Empirical Social Science Studies*, vol. 7, no. 1, pp. 51–63, 2023.

[13] N. A. Alghamdi and H. H. Al-Baity, "Augmented Analytics Driven by AI: A Digital Transformation beyond Business Intelligence," *Sensors (Basel, Switzerland)*, vol. 22, pp. 1–19, 2022, doi: 10.3390/s22208071.

[14] J. P. Bharadiya, "A Comparative Study of Business Intelligence and Artificial Intelligence with Big Data Analytics," *American Journal of Artificial Intelligence*, vol. 7, no. 1, pp. 24–30, 2023, doi: 10.11648/j.ajai.20230701.14.

[15] G. Dicuonzo, G. Galeone, E. Zappimbulso, and V. Dell'Atti, "Risk Management 4.0: the Role of Big Data Analytics in the Bank Sector," *International Journal of Economics and Financial Issues*, vol. 9, no. 6, pp. 40–47, 2019, doi: 10.32479/ijefi.8556.

[16] M. M. Alasiri and A. A. Salameh, "The impact of business intelligence (BI) and decision support systems (DSS): Exploratory study," *International Journal of Management*, vol. 11, no. 5, pp. 1001–1016, 2020, doi: 10.34218/IJM.11.5.2020.092.

[17] S. R. Joshua and T. Mogea, "Agile analytics: Adoption framework for business intelligence in higher education," *Journal of Theoretical and Applied Information Technology*, vol. 98, no. 7, pp. 1032–1042, 2020.

[18] A. T. Junaedi, N. Renaldo, I. Yovita, K. Veronica, and Jahrizal, "Development of Digital Economy Teaching Materials: Basic Concepts of Business Intelligence," *Reflection: Education and Pedagogical Insights*, vol. 1, no. 2, pp. 51–61, 2023, doi: 10.61230/reflection.v1i2.28.

[19] O. Azeroual and H. Theel, "The Effects of Using Business Intelligence Systems on an Excellence Management and Decision-Making Process by Start-Up Companies: A Case Study," *International Journal of Management Science and Business Administration*, vol. 4, no. 3, pp. 30–40, 2018, doi: 10.18775/ijmsba.1849-5664-5419.2014.43.1004.

[20] F. Hamad, R. Al-Aamr, S. A. Jabbar, and H. Fakhuri, "Business intelligence in academic libraries in Jordan: Opportunities and challenges," *IFLA Journal*, vol. 47, no. 1, pp. 37–50, 2021, doi: 10.1177/0340035220931882.

[21] I. A. Ajah and H. F. Nweke, "Big data and business analytics: Trends, platforms, success factors and applications," *Big Data and Cognitive Computing*, vol. 3, no. 2, pp. 1–30, 2019, doi: 10.3390/bdcc3020032.

[22] S. Bose, S. K. Dey, and S. Bhattacharjee, *Big data, data analytics and artificial intelligence in accounting: An overview*. Edward Elgar Publishing, 2022. doi: 10.4337/9781800888555.00007.

[23] C. A. T. Romero, J. H. Ortiz, O. I. Khalaf, and A. R. Prado, "Business intelligence: business evolution after industry 4.0," *Sustainability (Switzerland)*, vol. 13, no. 18, pp. 1–12, 2021, doi: 10.3390/su131810026.

[24] J. Ahmadi, "The Impact of IT Capability on Company Performance : The Mediating Role of Business Process Management Capability and Supply Chain Integration Capability," *Journal of Science, Management and Tourism Letter*, vol. 2021, pp. 1–6, 2021.

[25] J. Abormegah and D. Tarik, "Transitioning Business Intelligence from Reactive to Proactive Decision-Making Systems," *MSc Thesis, University of Borås*, 2020.

[26] P. Mikalef, M. Boura, G. Lekakos, and J. Krogstie, "The role of information governance in big data analytics driven innovation," *Information and Management*, vol. 57, no. 7, p. 103361, 2020, doi: 10.1016/j.im.2020.103361.

[27] M. Supriya and V. K. Chattu, "A review of artificial intelligence, big data, and blockchain technology applications in medicine and global health," *Big Data and Cognitive Computing*, vol. 5, no. 3, pp. 1–20, 2021, doi: 10.3390/bdcc5030041.

[28] J. P. Bharadiya, "Leveraging Machine Learning for Enhanced Business Intelligence," *International Journal of Computer Science and Technology (Ijcst)*, vol. 7, no. 1, pp. 1–19, 2023.

[29] M. Niaz, "Revolutionizing Inventory Planning: Harnessing Digital Supply Data through Digitization to Optimize Storage Efficiency Pre-and Post-Pandemic," *BULLET: Jurnal Multidisiplin Ilmu*, vol. 1, no. 3, pp. 522–532, 2022.

[30] K. Agustian, A. Pohan, A. Zen, W. Wiwin, and A. J. Malik, "Human Resource Management Strategies in Achieving Competitive Advantage in Business Administration," *Journal of Contemporary Administration and Management (ADMAN)*, vol. 1, no. 2, pp. 108–117, 2023, doi: 10.61100/adman.v1i2.53.

[31] N. P. Rana, S. Chatterjee, Y. K. Dwivedi, and S. Akter, "Understanding dark side of artificial intelligence (AI) integrated business analytics: assessing firm's operational inefficiency and competitiveness," *European Journal of Information Systems*, vol. 31, no. 3, pp. 364–387, 2022, doi: 10.1080/0960085X.2021.1955628.

[32] J. Butt, "A conceptual framework to support digital transformation in manufacturing using an integrated business process management approach," *Designs*, vol. 4, no. 3, pp. 1–39, 2020, doi: 10.3390/designs4030017.

[33] I. Constantiou, A. Shollo, and M. T. Vendelø, "Mobilizing intuitive judgment during organizational decision making: When business intelligence is not the only thing that matters," *Decision Support Systems*, vol. 121, pp. 51–61, 2019, doi: 10.1016/j.dss.2019.04.004.

[34] N. U. Ain, G. Vaia, W. H. DeLone, and M. Waheed, "Two decades of research on business intelligence system adoption, utilization, and success – A systematic literature review," *Decision Support Systems*, pp. 1–13, 2019, doi: 10.1016/j.dss.2019.113113.

[35] P. Polak, C. Nelischer, H. Guo, and D. C. Robertson, "'Intelligent' finance and treasury management: what we can expect," *AI and Society*, vol. 35, no. 3, pp. 715–726, 2020, doi: 10.1007/s00146-019-00919-6.

[36] J. P. Bharadiya, "Machine Learning and AI in Business Intelligence: Trends and Opportunities," *International Journal of Computer (IJC) International Journal of Computer*, vol. 48, no. 1, pp. 123–134, 2023.

[37] S. Mathrani and X. Lai, "Big data analytic framework for organizational leverage," *Applied Sciences (Switzerland)*, vol. 11, no. 5, pp. 1–19, 2021, doi: 10.3390/app11052340.