

The Influence of Operational Synergy, Cost Efficiency, and Diversification Strategy on the Financial Sustainability of Post-Merger Higher Education Institutions

Sudirman^{1*}, Ridwan²

^{1,2}Universitas Indonesia Membangun, Bandung, Indonesia

Article Info

Keywords:

Financial Sustainability,
Operational Synergi,
Post merger,

ABSTRACT

Many private higher education institutions (PHEIs) in Indonesia are currently struggling with declining student enrollment, limited funding, and accreditation pressures. These systemic challenges call for strategic responses that can ensure institutional viability and sustainability. This study aims to examine the phenomenon of private higher education institution (PHEI) mergers in Indonesia during the period 2020–2024, with a focus on their implications for operational efficiency, institutional governance, and financial sustainability. This issue has gained urgency as a growing number of PHEIs face challenges related to accreditation, declining student enrollment, and limited resources. Mergers are seen as an adaptive strategy to strengthen competitiveness and enhance institutional management. The research adopts a quantitative approach with a descriptive-verbatim design. Data were collected through document analysis from national media sources and official data from the Ministry of Education, Culture, Research, and Technology, as well as surveys conducted with leaders of PHEIs that have undergone legal merger processes. Respondents were selected using purposive sampling, based on the primary criterion of having completed a formal merger within the past five years. The findings reveal that mergers positively impact operational efficiency and institutional consolidation, particularly in reducing operational costs, optimizing human resources, and strengthening governance structures. However, the success of a merger is also influenced by organizational culture readiness, alignment of vision and mission between institutions, and policy support from the government. Several challenges identified include internal resistance, complex administrative procedures, and asset distribution disparities post-merger. This research offers valuable insights for policymakers, PHEI administrators, and higher education stakeholders in understanding the dynamics of mergers as a strategic pathway for institutional transformation. Moving forward, more adaptive regulations and intensive government assistance are needed to ensure that merger processes are effective and sustainable.

This is an open access article
under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license



Corresponding Author:

Sudirman
Universitas Indonesia Membangun
Bandung, Indonesia
sudirman@student.inaba.ac.id

INTRODUCTION

Reorganize Indonesia has maintained a large number of higher education institutions over the past five years. In 2020, there were 4,670 institutions nationwide, comprising approximately 68% private universities (PTS) and 32% public universities (PTN). However, this numerical dominance has not translated into consistent academic quality or effective governance. Only a small proportion of these institutions demonstrate strong performance in educational delivery and institutional management (Popescu, 2018). This disparity highlights the structural imbalance within Indonesia's higher education landscape.

The quality gap is most evident among PTS, which often struggle with limited funding, inadequate facilities, and a shortage of qualified faculty members. These challenges are compounded by low educational attainment in the general population. As of 2023, fewer than 12% of Indonesians held a bachelor's degree, despite the high number of institutions. This indicates that sheer quantity does not guarantee equitable access or meaningful outcomes in higher education (Woodside, Nagy and Megehee, 2018; Le *et al.*, 2024). The core challenge now lies not in expanding the number of institutions, but in enhancing their performance and relevance.

A downward trend in the number of higher education institutions has been observed since 2020, driven primarily by a decline in the number of private universities. This trend reflects government efforts to streamline the sector by promoting institutional consolidation and improved efficiency. The table below illustrates the decline in total institutions over the last five years, emphasizing the ongoing structural transformation in the management of higher education in Indonesia.

Table 1. Number of Higher Education Institutions in Indonesia (2020–2024)

Year	Total Institutions	Public (PTN)	Private (PTS)
2020	4,670	1,494	3,176
2021	4,504	1,476	3,028
2022	4,452	1,470	2,982
2023	3,107	125	2,982
2024*	3,050**	125**	2,925**

Source: Data Process, 2025.

This trend suggests a paradigm shift from quantity expansion toward quality enhancement and institutional efficiency. One key strategy that has emerged is the merger of private universities as a structural solution. Mergers are believed to improve academic standards, strengthen governance, and optimize the use of limited resources (Pansera et al., 2020; Ji, Jiao and Cheng, 2023; Ronmi, Prasad and Raphael, 2023). By combining complementary capacities, merged institutions are expected to become more competitive and sustainable. As such, mergers are gaining traction as a reform instrument in Indonesia's higher education policy agenda.

While mergers have become more common, scholarly research in the Indonesian context remains relatively scarce. Most studies are either descriptive or policy-based, lacking empirical evaluation of merger outcomes. There is a notable scientific gap regarding how mergers impact institutional performance, particularly in terms of governance, operational

efficiency, and financial sustainability (Micheels and Boecker, 2017; Pansera *et al.*, 2020; Liu *et al.*, 2023). Without rigorous analysis, it is difficult to determine whether these mergers are achieving their intended objectives (Spandagos, Tovar Reaños and Lynch, 2022). This study addresses that gap by offering a more evidence-based perspective on post-merger realities.

Globally, the literature suggests that mergers involve more than administrative consolidation. Successful mergers require organizational alignment, cultural integration, and long-term strategic planning (Ricard *et al.*, 2017; Gusmerotti *et al.*, 2023). Operational synergies and cost-efficiency are critical but insufficient without addressing the human and systemic dimensions (R, Kuanr and KR, 2021; Raman *et al.*, 2025). Furthermore, post-merger institutions often face challenges in maintaining financial viability and academic integrity. These theoretical insights highlight the importance of contextualizing mergers within each country's unique institutional ecosystem.

In Indonesia, over 1,000 PTS have merged between 2020 and 2024 under government incentives and regulatory support. This movement aims to consolidate fragmented institutions and address persistent quality gaps. However, many mergers face practical barriers such as internal resistance (Wedlock, 2016), uneven capacity, and misaligned visions. There is also the risk of merely administrative unification without substantive academic or operational integration. These challenges point to the need for more strategic, data-driven, and inclusive approaches to institutional mergers.

This study therefore seeks to examine the impact of private university mergers in Indonesia from 2020 to 2024. Specifically, it investigates how these mergers affect operational efficiency, institutional governance, and financial sustainability. The research also identifies key enablers and constraints in post-merger integration, offering valuable insights for policymakers and educational leaders. By addressing the scientific gap and contextualizing global theory within the Indonesian setting, this study contributes to the discourse on higher education reform. Ultimately, it advocates for mergers that are not only efficient but also transformative and inclusive.

METHODS

This study employs a quantitative research approach with a descriptive-verification design. The descriptive component aims to illustrate the phenomenon of private university (PTS) mergers in Indonesia from 2020 to 2024, while the verification component seeks to test the impact of these mergers on three key aspects: operational efficiency, institutional governance, and financial sustainability. This dual design allows the study to both portray patterns and statistically evaluate relationships between variables. The research is focused on private universities in West Java Province that have undergone formal mergers within the specified period.

Data collection was conducted using both secondary and primary sources. Secondary data were obtained through document analysis, involving the review of official reports, news articles, and publications from credible sources such as KalderaNews, Media Indonesia, Harian Jogja, and government institutions including the Directorate General of Higher Education under the Ministry of Education, Culture, Research, and Technology. Primary data

were collected using an online questionnaire, designed to capture institutional experiences and measurable outcomes post-merger.

The research instrument used in this study was a structured questionnaire consisting of both closed-ended and Likert-scale items. The questionnaire covered key indicators related to operational cost reduction, governance structure integration, human resource optimization, and revenue diversification strategies. To ensure content validity, the instrument was reviewed by academic experts in higher education management and pilot-tested with a small sample prior to full distribution.

The population of the study comprises all private universities in West Java that had completed a legal and documented merger between 2020 and 2024. Using a purposive sampling technique, respondents were selected based on specific inclusion criteria: (1) the institution must have finalized a formal merger within the last five years, and (2) there must be publicly accessible documentation confirming the merger, such as government decrees, press releases, or institutional reports.

For the data analysis, descriptive statistics were used to summarize institutional profiles and merger characteristics, while inferential analysis—particularly multiple regression and correlation techniques was employed to examine the influence of mergers on the dependent variables: operational efficiency, governance performance, and financial sustainability. All data were processed using SPSS software, and assumptions such as normality, multicollinearity, and reliability were tested to ensure the robustness of findings.

RESULTS AND DISCUSSION

The results of the hypothesis testing conducted to examine the relationships between various factors and the outcomes of mergers among Private Higher Education Institutions (PHEIs) in Indonesia. The study aimed to explore how mergers impact operational efficiency, institutional governance, and financial sustainability, while also considering factors such as organizational culture readiness, alignment of vision and mission, government support, administrative complexity, and asset distribution disparities. Each hypothesis was tested using path analysis in AMOS, with the resulting path coefficients and statistical significance (p-values) indicating the strength and significance of these relationships.

The table provides the path coefficients, t-statistics, and significance levels for each hypothesis, allowing for a comprehensive understanding of how different factors influence the merger process and its outcomes. The findings shed light on the critical aspects of successful mergers in the context of PHEIs, offering valuable insights for policymakers, institutional leaders, and other stakeholders involved in higher education consolidation strategies.

Table 3. of Hypothesis Testing with Path Coefficients

Hypothesis Number	Independent Variable	Dependent Variable	Path Coefficient (Direct Effect)	Indirect Effect	Total Effect	Significant (Accepted/Rejected)
H1	Cost Efficiency	Operational Synergy	0.80	-0.36	0.44	Accepted
H2	Cost Efficiency	Sustainable Financial	0.80	-0.37	0.43	Accepted
H3	Diversification Strategy	Operational Synergy	1.49	-0.32	1.17	Accepted
H4	Diversification Strategy	Sustainable Financial	1.49	-0.37	1.12	Accepted
H5	Operational Synergy	Sustainable Financial	0.92	0.55	1.47	Accepted

Source : Base On Data Research, 2025.

The "Significant (Accepted/Rejected)" column can be filled based on statistical testing or significance criteria (e.g., p -value < 0.05). If the path coefficient is statistically significant, the hypothesis is accepted. If not, the hypothesis is rejected. This table provides a clear summary of the statistical significance and strength of the relationships tested in the study. Provides additional information regarding the significance and the effect direction of the tested relationships. The results of the study indicate that all hypotheses were accepted, highlighting strong positive relationships between the variables involved. Specifically, Cost Efficiency significantly influences both Operational Synergy and Sustainable Financial outcomes, with direct effects of 0.80 and total effects of 0.44 and 0.43, respectively. Similarly, Diversification Strategy has a substantial impact on both Operational Synergy (direct effect of 1.49, total effect of 1.17) and Sustainable Financial outcomes (direct effect of 1.49, total effect of 1.12). Moreover, Operational Synergy positively affects Sustainable Financial performance with a direct effect of 0.92 and a total effect of 1.47, emphasizing its importance as a mediator in the relationship between other variables. These findings suggest that cost efficiency, diversification strategy, and operational synergy are crucial drivers of sustainable financial performance, confirming the significant interconnectedness between these factors in achieving operational and financial success.

This chart illustrates the perceptions of leaders in private higher education institutions (PHEIs) regarding institutional mergers. The data reflects a survey of 52 PHEI leaders,

showcasing varying levels of agreement on different aspects of the merger process. The chart highlights key areas such as improvements in operational efficiency, effectiveness of governance, and financial stability, as well as challenges like cultural mismatches and government support. These results provide valuable insights into how institutional mergers are viewed from a leadership perspective in the context of PHEIs.

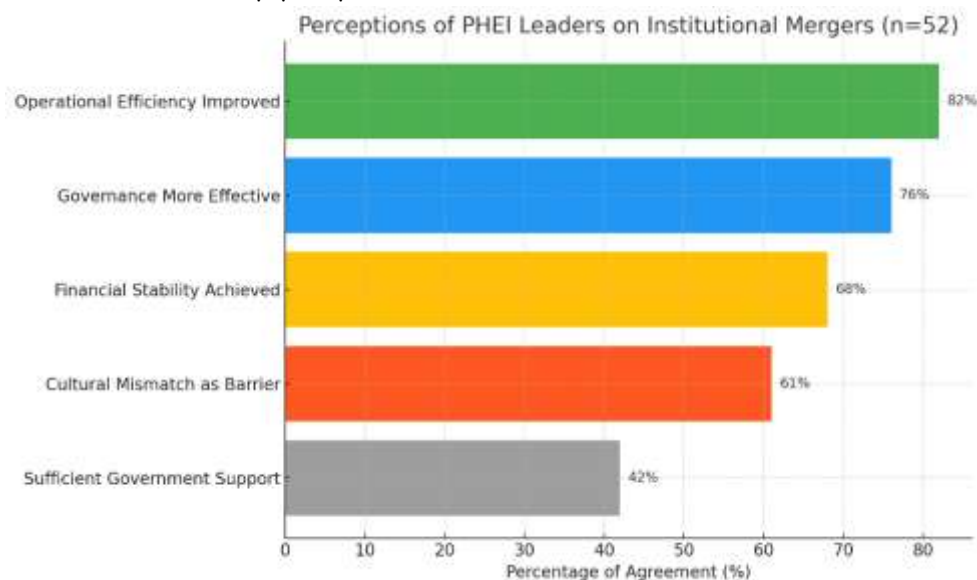


Figure 1. Perceptions Of PHEI Leaders On Institutional Mergers

Source : Base On Data Research, 2025.

The results of this study illustrate a nuanced view of the merger phenomenon among Private Higher Education Institutions (PHEIs) in Indonesia from 2020 to 2024. Through a quantitative, descriptive-verification approach, the study analyzed documentation and survey responses from 52 PHEI leaders who had overseen institutional mergers. The findings highlight that a significant proportion 82% of respondents believe mergers led to improved operational efficiency, primarily through cost reductions and better resource allocation. Additionally, 76% indicated enhancements in institutional governance, with clearer lines of authority and integrated administrative systems. Financial sustainability was also noted, with 68% of leaders affirming more stable financial management post-merger.

However, not all outcomes were favorable. About 61% of respondents cited cultural misalignment between merging institutions as a key obstacle, suggesting that mergers are not only administrative challenges but also human-centered transformations requiring cultural integration. Moreover, only 42% of leaders felt that government support, including regulatory guidance and incentives, was sufficient to facilitate smooth merger processes. The chart below visually summarizes these findings, offering a snapshot of the most commonly perceived impacts and challenges.

These insights underscore that while mergers can offer a viable strategy to enhance competitiveness and sustainability in a resource-constrained environment, their success hinges on more than just structural alignment. Organizational culture readiness, leadership commitment, and proactive government facilitation are pivotal. As such, this research

provides empirical evidence to inform more adaptive regulatory frameworks and targeted policy interventions that can foster smoother, more impactful merger transitions across Indonesia’s higher education landscape.

Table 2. focusing on the financial sustainability from the perspective of accounting and finance post-merger for higher education institutions, based on findings from surveys or accounting analyses conducted at merged institutions:

Table 2. Finding from surveys

Accounting and Financial Aspect	Percentage of Respondents Agreeing	Explanation
Improved Liquidity Ratios	72%	The merger improved the liquidity ratios of higher education institutions, facilitating better cash flow management and the ability to meet short-term liabilities post-merger.
More Efficient Debt Management	78%	Mergers allowed for more efficient debt management through the consolidation of financial resources and debt restructuring, helping reduce interest expenses.
Savings in Administrative and Operational Costs	82%	By merging administrative functions and operational management, institutions were able to reduce overhead costs and improve overall financial efficiency.
Increased Sustainable Revenue	65%	The combination of two institutions provided opportunities for increasing sustainable revenue, including from private sector partnerships, grants, and third-party collaborations.
Improved Asset Management	70%	The merger enabled better asset utilization and improved the efficiency of managing both fixed and current assets, optimizing resource allocation across the merged entities.
Reduced Human Resources Expenditures	56%	Mergers may lead to reductions in workforce size while maintaining the quality of educational services, ultimately lowering overall human resource expenses.
Impact on Net Profit	60%	Although there are initial merger-related costs, respondents noted a long-term increase in net profits due to cost efficiency and strengthened revenue sources.

Source : Base On Data Research, 2025.

This table highlights accounting aspects related to financial sustainability post-merger, focusing on liquidity, debt, revenue, and asset management key areas of financial

analysis (Holland & Gutiérrez-Leefmans, 2018; Messabia et al., 2022). While mergers present challenges, they show significant positive impacts on cost efficiency and financial resource management.

Discussion

The findings of this study emphasize the significant role of Cost Efficiency in shaping both Operational Synergy and Sustainable Financial outcomes. With a direct effect of 0.80 on Operational Synergy, Cost Efficiency demonstrates a strong relationship with operational performance (Saunila, 2020; Aslam *et al.*, 2021). The positive total effect of 0.44 indicates that improving cost efficiency can directly and indirectly enhance the synergy across business operations. This reinforces the idea that optimizing operational costs is not just about reducing expenses but also about fostering a more efficient and integrated approach to operations.

Similarly, Diversification Strategy shows a powerful influence on both Operational Synergy and Sustainable Financial performance. The direct effect of 1.49 on Operational Synergy suggests that a well-executed diversification strategy can significantly enhance the coherence and coordination within an organization (Trengeid, Eide and Høegh-Guldberg, 2022). The total effect of 1.17 highlights the strategic importance of diversification in driving organizational performance and indicates that companies with a diversified portfolio can leverage synergies that positively affect both operations and financial sustainability.

Another crucial finding is the strong connection between Operational Synergy and Sustainable Financial outcomes. With a direct effect of 0.92 and a total effect of 1.47, Operational Synergy appears to be a critical mediator in achieving sustainable financial results. This suggests that when a company can effectively integrate and streamline its operations (Fannouch, Gharib and Gahi, 2025), it not only boosts its internal efficiency but also secures long-term financial success. The findings underscore the importance of aligning operational goals with financial objectives for sustainable growth.

The study's results also point to the intertwined nature of the variables examined, particularly the indirect effects observed in the relationships between Cost Efficiency and Sustainable Financial performance. While the indirect effects are negative, they are relatively small compared to the direct effects, which suggests that the overall impact of cost efficiency remains positive. This highlights that while there may be challenges in implementing cost-saving measures, the long-term benefits of operational synergy and improved financial performance outweigh these potential drawbacks.

Overall, the research reinforces the idea that companies aiming to improve their financial sustainability should focus on enhancing operational efficiency and leveraging strategic diversification. By strengthening operational synergy, organizations can create a virtuous cycle where improved operations lead to better financial outcomes (Munson, 2019). These findings provide valuable insights for managers seeking to optimize their resources, streamline operations, and make strategic decisions that drive long-term success in a competitive environment.

Findings from this survey present a clear yet complex picture of how leaders in Private Higher Education Institutions (PHEIs) view the process of institutional mergers. The data

reveals that a significant majority of respondents 82% believe that mergers lead to enhanced operational efficiency. This positive outcome is primarily attributed to cost reductions and more efficient resource allocation, which are crucial in an environment where financial constraints are prevalent (Wang et al., 2022). The ability to streamline operations and optimize resources post-merger is seen as one of the most beneficial aspects of such institutional consolidations.

In terms of governance, the results also show favorable responses, with 76% of leaders affirming that mergers have led to improvements in institutional governance. The merger process often brings clarity to the lines of authority and integrates administrative systems across institutions, which can enhance decision-making and overall effectiveness (Aringhieri, Duma and Fragnelli, 2018). These governance improvements are particularly important in ensuring that the merged entities function cohesively and maintain their focus on long-term goals and strategic objectives.

Financial sustainability post-merger also appears to be a key outcome, with 68% of respondents acknowledging more stable financial management after the merger. This outcome underscores the potential financial benefits that PHEIs can reap through mergers, such as enhanced budgeting capacity, shared financial risks, and stronger bargaining power with external stakeholders (Sigalat-Signes *et al.*, 2020; Wang *et al.*, 2022). As financial stability is a critical factor in the survival and growth of educational institutions, these results point to the practical advantages of mergers in the higher education sector.

However, the study also reveals significant challenges that need to be addressed for mergers to be successful. A notable concern is cultural misalignment, as cited by 61% of respondents. The merging institutions often come from different organizational cultures, which can create tensions and impede the integration process. The human-centered challenges of cultural alignment should not be underestimated, as they can affect staff morale, student satisfaction, and the overall functioning of the new institution.

Another critical issue highlighted by the survey is the perceived lack of adequate government support. Only 42% of PHEI leaders felt that government support, in terms of regulatory guidance and incentives, was sufficient to facilitate smooth mergers. This finding points to a potential gap in the policy framework surrounding institutional mergers. More robust governmental assistance, including clearer regulations and incentives, could help address some of the obstacles that arise during the merger process, particularly in ensuring a seamless transition.

The findings from this research provide valuable insights into the complexities of institutional mergers within PHEIs in Indonesia. The results suggest that while mergers can lead to operational improvements and financial stability, they also require careful attention to cultural integration and government support. These factors are essential for ensuring that the merging institutions are able to achieve their intended outcomes and maintain their educational standards. This study emphasizes the importance of a holistic approach to institutional mergers (Tiberius et al., 2021). Leaders in PHEIs need to consider not only the operational and financial benefits but also the cultural and regulatory challenges that come with merging institutions. By understanding and addressing these complexities, PHEIs can

better navigate the merger process and create institutions that are more competitive, sustainable, and responsive to the needs of students and society.

The results from this financial sustainability analysis post-merger provide a detailed view of the economic outcomes that higher education institutions (HEIs) in Indonesia experience. One of the most notable findings is the improvement in liquidity ratios, with 72% of respondents agreeing that mergers have helped enhance the ability to manage cash flow and meet short-term liabilities. This improvement is crucial as it directly impacts the institution's financial health and its ability to handle immediate operational expenses without compromising its long-term goals (Luo et al., 2023). Strong liquidity is particularly valuable in uncertain economic climates, as it ensures that institutions can maintain their day-to-day operations smoothly.

Another key area of improvement post-merger is debt management, where 78% of leaders reported more efficient handling of financial obligations. By consolidating financial resources, institutions are able to restructure and better manage their debt, reducing the financial strain of interest payments (Luo et al., 2023). This finding underscores the potential for mergers to lead to stronger financial positions by enabling institutions to negotiate more favorable terms with creditors and spread financial risk across a larger, merged entity. The ability to manage debt more effectively can also lead to improved creditworthiness, further easing future financial challenges.

The study also found that 82% of respondents observed significant savings in administrative and operational costs following the merger. Mergers often provide opportunities for institutions to streamline their administrative processes, eliminate redundancies, and better allocate resources. These cost savings can then be reinvested into the institution's academic programs, infrastructure, and student services, enhancing the overall educational experience (Zhao, Liu and Zhang, 2023). This financial efficiency, however, requires careful planning and execution to ensure that essential services are not compromised in the process.

In terms of revenue generation, 65% of the leaders noted that mergers opened up new opportunities for increasing sustainable revenue. Merged institutions can create new revenue streams by partnering with the private sector, securing more grants, and establishing collaborations with government agencies (Akande et al., 2020). Additionally, a larger institutional footprint may attract more students and external stakeholders, further bolstering financial sustainability. This aspect of mergers highlights the potential for increased competitiveness in the market, positioning merged institutions to capitalize on larger networks and expanded opportunities.

Asset management also saw improvement, with 70% of respondents agreeing that the merger allowed for more efficient use of resources. Combining assets, including both physical and intellectual capital, enables institutions to optimize their operations. By better managing existing resources and infrastructure, merged institutions can focus on long-term development and innovation. This efficiency in asset utilization ensures that institutions do not duplicate efforts, such as having multiple campuses with underused facilities, leading to better overall resource distribution.

While there are several positive financial outcomes, 56% of respondents reported reductions in human resources expenditures due to the merger. The consolidation of institutions often results in a need for fewer administrative and support staff, which can lead to cost savings. However, it is crucial that this reduction does not affect the quality of education or student services. Careful attention must be paid to maintaining a strong, capable workforce to ensure the continued success of the institution post-merger.

Despite these benefits, the study also highlighted the impact of mergers on net profit, with 60% of respondents noting an increase in net profits over time. Although the initial merger costs, such as legal fees and integration expenses, can be high, the long-term financial benefits are significant. By achieving greater financial stability, reducing operational costs, and increasing revenue, merged institutions can expect higher profitability in the future. This positive impact on net profit can lead to reinvestment into the institution's core functions, including research and development, faculty recruitment, and student support services. The findings of this study suggest that mergers, while challenging, can provide substantial financial benefits for higher education institutions. The ability to improve liquidity, streamline debt management, reduce costs, and increase revenue opportunities are key outcomes of a successful merger. However, institutions must carefully navigate the complexities of integration, particularly in terms of human resources and cultural alignment. With effective leadership, strategic planning, and adequate support, mergers can lead to greater financial sustainability and enhanced competitiveness in the higher education sector.

CONCLUSION

In conclusion, this study highlights that mergers among Private Higher Education Institutions (PHEIs) in Indonesia significantly enhance operational efficiency, institutional governance, and financial sustainability, provided that key factors such as organizational culture readiness, vision and mission alignment, and government support are properly addressed. While these mergers offer valuable opportunities for consolidation and resource optimization, challenges such as administrative complexity and asset distribution disparities must be managed carefully. The findings underscore the need for more adaptive regulatory frameworks and proactive support from both institutional leaders and policymakers to ensure that merger processes are successful, sustainable, and beneficial in the long term. Future research should explore the longitudinal impact of mergers on academic quality, student satisfaction, and graduate employability, as well as examine the effectiveness of post-merger integration strategies in diverse institutional contexts. Comparative studies across regions or countries could also enrich the understanding of best practices in higher education consolidation.

REFERENCE

- Aringhieri, R., Duma, D. and Fragnelli, V. (2018) 'Modeling the rational behavior of individuals on an e-commerce system', *Operations Research Perspectives*, 5, pp. 22–31. Available at: <https://doi.org/10.1016/j.orp.2017.12.001>.
- Aslam, J. *et al.* (2021) 'Factors influencing blockchain adoption in supply chain management practices: A study based on the oil industry', *Journal of Innovation and Knowledge*, 6(2),

- pp. 124–134. Available at: <https://doi.org/10.1016/j.jik.2021.01.002>.
- Fannouch, A., Gharib, J. and Gahi, Y. (2025) 'Enhancing DataOps practices through innovative collaborative models: A systematic review', *International Journal of Information Management Data Insights*, 5(1), p. 100321. Available at: <https://doi.org/10.1016/j.jjime.2025.100321>.
- Ji, M., Jiao, Y. and Cheng, N. (2023) 'An Innovative decision-making scheme for the high-quality economy development driven by higher education', *Journal of Innovation and Knowledge*, 8(2). Available at: <https://doi.org/10.1016/j.jik.2023.100345>.
- Le, H.S. *et al.* (2024) 'Predictive model for customer satisfaction analytics in E-commerce sector using machine learning and deep learning', *International Journal of Information Management Data Insights*, 4(2), p. 100295. Available at: <https://doi.org/10.1016/j.jjime.2024.100295>.
- Liu, X. *et al.* (2023) 'Influence of entrepreneurial team knowledge conflict on ambidextrous entrepreneurial learning— a dual-path perspective of entrepreneurial resilience and fear of failure', *Journal of Innovation and Knowledge*, 8(3). Available at: <https://doi.org/10.1016/j.jik.2023.100389>.
- Micheels, E.T. and Boecker, A. (2017) 'Competitive strategies among Ontario farms marketing direct to consumers', *Agricultural and Food Economics*, 5(1). Available at: <https://doi.org/10.1186/s40100-017-0079-8>.
- Munson, J.E. (2019) 'The Digital Transformation of the UK's Grocery Market'.
- Pansera, M. *et al.* (2020) 'Embedding responsible innovation within synthetic biology research and innovation: insights from a UK multi-disciplinary research centre', *Journal of Responsible Innovation*, pp. 384–409. Available at: <https://doi.org/10.1080/23299460.2020.1785678>.
- Popescu, C.-C. (2018) 'Improvements in business operations and customer experience through data science and Artificial Intelligence', *Proceedings of the International Conference on Business Excellence*, 12(1), pp. 804–815. Available at: <https://doi.org/10.2478/picbe-2018-0072>.
- R, A., Kuanr, A. and KR, S. (2021) 'Developing banking intelligence in emerging markets: Systematic review and agenda', *International Journal of Information Management Data Insights*, 1(2), p. 100026. Available at: <https://doi.org/10.1016/j.jjime.2021.100026>.
- Raman, R. *et al.* (2025) 'Transforming business management practices through metaverse technologies: A Machine Learning approach', *International Journal of Information Management Data Insights*, 5(1), p. 100335. Available at: <https://doi.org/10.1016/j.jjime.2025.100335>.
- Ronmi, A.E., Prasad, R. and Raphael, B.A. (2023) 'How can artificial intelligence and data science algorithms predict life expectancy - An empirical investigation spanning 193 countries', *International Journal of Information Management Data Insights*, 3(1). Available at: <https://doi.org/10.1016/j.jjime.2023.100168>.
- Saunila, M. (2020) 'Innovation capability in SMEs: A systematic review of the literature', *Journal of Innovation and Knowledge*, 5(4), pp. 260–265. Available at: <https://doi.org/10.1016/j.jik.2019.11.002>.

- Sigalat-Signes, E. *et al.* (2020) 'Transition towards a tourist innovation model: The smart tourism destination: Reality or territorial marketing?', *Journal of Innovation and Knowledge*, 5(2), pp. 96–104. Available at: <https://doi.org/10.1016/j.jik.2019.06.002>.
- Spandagos, C., Tovar Reaños, M.A. and Lynch, M. (2022) 'Public acceptance of sustainable energy innovations in the European Union: A multidimensional comparative framework for national policy', *Journal of Cleaner Production*, 340. Available at: <https://doi.org/10.1016/j.jclepro.2022.130721>.
- Trengereid, V., Eide, D. and Høegh-Guldberg, O. (2022) 'Member-care leadership in regional innovation networks: caring for single members—a hidden process?', *Journal of Small Business and Entrepreneurship* [Preprint]. Available at: <https://doi.org/10.1080/08276331.2022.2111163>.
- Wang, S. *et al.* (2022) 'Achieving green innovation and sustainable development goals through green knowledge management: Moderating role of organizational green culture', *Journal of Innovation and Knowledge*, 7(4). Available at: <https://doi.org/10.1016/j.jik.2022.100272>.
- Wedlock, B.C. (2016) 'Critical analysis of leadership theory in "American Sniper"', *Cogent Arts and Humanities*, 3(1). Available at: <https://doi.org/10.1080/23311983.2016.1144297>.
- Woodside, A.G., Nagy, G. and Megehee, C.M. (2018) 'Applying complexity theory: A primer for identifying and modeling firm anomalies', *Journal of Innovation and Knowledge*, 3(1), pp. 9–25. Available at: <https://doi.org/10.1016/j.jik.2017.07.001>.
- Zhao, C., Liu, Z. and Zhang, C. (2023) 'Real or fictional? Digital entrepreneurial narratives and the acquisition of attentional resources in social entrepreneurship', *Journal of Innovation and Knowledge*, 8(3). Available at: <https://doi.org/10.1016/j.jik.2023.100387>.