

Education, Business, and Information Technology: Building Innovative Ecosystems in the Midst of Disruption

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Submitted: 01/01/2025	The year 2025 will be a crucial point for Indonesia in facing interrelated cross-sectoral challenges, especially in the fields of education, business, and information technology. These three sectors play a strategic role in driving economic growth, strengthening human resources, and accelerating digital transformation. This research aims to identify the main challenges faced by each sector and analyze their linkages and impacts on national development. Using a descriptive qualitative approach, data was collected through literature studies, expert interviews, and policy analysis. The results show that education still faces access and quality gaps, businesses are under pressure due to digital disruption and market uncertainty, while the information technology sector faces challenges in terms of digital literacy, data security, and equitable distribution of infrastructure. This research emphasizes the importance of integrated cross-sector and policy collaboration to address these challenges holistically. Strategic recommendations are given to strengthen synergy between the world of education, business actors, and technology developers in building an inclusive, adaptive, and sustainable ecosystem.
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INTRODUCTION

The year 2025 is an important point in Indonesia's development journey, where digital transformation and economic globalization require cross-sector readiness, especially education, business, and information technology. These three sectors are closely related to each other in forming a sustainable development ecosystem. Education plays a role in preparing competent human resources, business becomes an economic driver, and information technology becomes a catalyst for change in various fields. However, inequality in the development and integration of these three sectors is still a major challenge that needs to be studied in depth (Timotheou et al., 2023).

In the education sector, the main challenges lie in the digital divide, low technological literacy, and lack of institutional readiness to adopt technology-based learning. Although the curriculum has begun to integrate information technology, many schools still face limited infrastructure and low digital capacity. This has an impact on the quality of learning and widens the gap between schools in developed and disadvantaged areas (Timotheou et al., 2023).

Meanwhile, the business sector is facing immense pressure due to digital disruption and changes in consumer behavior. Companies are required to adapt quickly to new technologies such as artificial intelligence, big data, and automation. However, many business actors, especially MSMEs, do not have adequate access to digital technology and training, so the gap in productivity and competitiveness is widening (Kimmons et al., 2025).

Information technology itself is developing very rapidly, but it has not been fully integrated effectively in the education and business systems. Challenges such as data security, low digital literacy, and lack of policies that support cross-sectoral integration are major obstacles. In fact, information technology has great potential to bridge the gap between the world of education and the business world through innovation and efficiency (Springer, 2025).

Seeing the complexity of these challenges, an integrated and sustainable cross-sector approach is needed. This research aims to examine the main challenges facing the education, business, and information technology sectors in Indonesia by 2025, as well as analyze their linkages and impacts on national development. With a comprehensive understanding, it is hoped that a collaborative strategy can be formulated that is able to answer these challenges effectively and sustainably (Kimmons et al., 2025).

RESEARCH METHODS

This research uses a descriptive qualitative approach with the aim of in-depth describing the challenges faced by the education, business, and information technology sectors in Indonesia by 2025. This approach was chosen because it is able to capture the complexity of social phenomena and inter-sector relationships that cannot be explained quantitatively.

The type of research used is an exploratory study with multiple case study methods. This study takes several cases from educational institutions, business people (especially MSMEs), and technology developers in urban and semi-urban areas in Indonesia. Case selection was conducted in a purposive manner to represent the variability of challenges and contexts of cross-sectoral policy implementation.

Data Collection Techniques

Data collection techniques include in-depth interviews with key informants such as school principals, business actors, technology developers, and local government officials. Participatory observation in the school environment and place of business. Documentation studies of government policies, research reports, and related scientific publications. Data analysis is carried out with a thematic analysis approach, which is to identify the main patterns and themes of the data collected. The analysis process is carried out iteratively through the stages of data reduction, data presentation, and conclusion drawn. The validity of the data is maintained through triangulation of sources and methods, as well as member checking with informants to ensure the accuracy of interpretation.

Research Gap

Although there have been many studies that have addressed the challenges in each sector separately, there are still very few studies that examine the interlinkages and cross-sectoral impacts between education, business, and information technology simultaneously in the context of post-pandemic Indonesia and the era of digital transformation. Most of the literature focuses on only one sector, such as digital education or business transformation, without looking at how these three influence each other and form an entire development ecosystem.

Novelty

The novelty of this research lies in its interdisciplinary and integrative approach, which examines the challenges of education, business, and information technology simultaneously in a single analytical framework. This research also offers a conceptual model of cross-sectoral linkages that can be used as a basis for collaborative policy formulation. In addition, this study provides local context-based strategic recommendations relevant to Indonesia's conditions in 2025, making it an important contribution to the literature on technology-based national development and sector collaboration.

RESULTS AND DISCUSSION

The results of the study show that the education sector in Indonesia still faces major challenges in terms of digital readiness. Although the Merdeka curriculum has encouraged the integration of technology in learning, many schools do not have adequate infrastructure. This is exacerbated by the low digital capacity of teachers and the lack of continuous training, which leads to gaps in the quality of learning between regions.

In addition, the adoption of technology in education is not only about hardware, but also about a paradigm shift in the teaching and learning process. Many teachers still use conventional approaches even though digital platforms are available. This shows that digital transformation in the education sector requires a more holistic approach, including changes in organizational culture and digital leadership in schools

In the business sector, the main challenge lies in the uneven adoption of digital technology. Large companies tend to be better prepared to adopt technologies such as big data, AI, and cloud computing, while MSMEs are still lagging behind due to limited capital, access to information, and human resources. This creates a widening productivity gap between large and small business actors.

Digital transformation also demands a change in business models. Many business actors have not been able to adapt to changes in consumer behavior who now rely more on digital platforms. In addition, regulations that do not fully support digital innovation are a barrier for business people, especially startups engaged in the technology sector.

The information technology sector itself is experiencing rapid growth, but it has not been fully integrated with educational and business needs. Challenges such as data security, system interoperability, and low public digital literacy are obstacles to optimal use of technology. In fact, information technology has great potential to be a link between the world of education and the business world.

The relationship between these three sectors is very clear. Education that is not responsive to the needs of the industry will result in graduates who are not job-ready. On the other hand, the business world that does not support human resource development through collaboration with educational institutions will find it difficult to get the appropriate workforce. Information technology should be a bridge that strengthens these relationships, not a barrier due to access and understanding gaps.

This research also found that government policies have not been fully integrated between sectors. Education, MSME development, and digital transformation programs are still running independently without strong coordination. This leads to policy overlap and inefficiencies in implementation in the field.

From the social side, there are concerns that digital transformation will actually widen the socio-economic gap if it is not balanced with affirmative policies. People in disadvantaged areas, women, and other vulnerable groups are at risk of being left behind in the digitalization process if they are not given adequate access and training.

This discussion emphasized that the challenges of education, business, and information technology cannot be solved sectorally. A collaborative and data-driven cross-sector approach is needed. The government, the business world, and educational institutions must sit together to formulate a sustainable joint strategy.

Thus, this research makes an important contribution to understanding the complexity of cross-sector challenges in the digital era. These findings can serve as a basis for policy formulation that is more integrative and responsive to social, economic, and technological dynamics in Indonesia in 2025 and beyond.

CONCLUSIONS AND SUGGESTIONS

Conclusion

This study concludes that the challenges in the education, business, and information technology sectors in Indonesia in 2025 are complex and interrelated. Education still faces gaps in access, quality, and digital readiness; businesses face pressure from technological disruption and market uncertainty; While information technology is developing rapidly, it has not been fully integrated with the needs of education and the business world. These three sectors cannot be separated in the context of national development because they influence each other in creating an innovative and sustainable ecosystem. Therefore, a collaborative, data-driven cross-sector approach is critical to effectively addressing these challenges.

Suggestion

Future research is suggested to develop data-driven integrative models that can quantitatively map the relationship between education, business, and information technology. In addition, comparative studies between regions or between developing countries can also provide broader insights into best practices in addressing cross-sectoral challenges. Further research can also explore the role of public policy and social innovation in strengthening synergies between sectors, as well as explore the long-term impact of digital transformation on social and economic inequalities. A transdisciplinary approach involving academics, practitioners, and policymakers will be very beneficial in producing more applicative and sustainable solutions.

REFERENCE

- Kurniadi, W. (2023). Tantangan dan strategi pendidikan di tengah krisis global. *Jurnal Pendidikan dan Sosial Nasional*, 3(1). https://www.researchgate.net/publication/391650997_Tantangan_dan_Strategi_Pendidikan_di_Tengah_Krisis_Global
- Xu, X., Thien, L. M., & Li, Y. (2025). Insights for improvement: How lecturers' digital leadership drives student engagement in language learning. *Education and Information Technologies*, 30(7). <https://link.springer.com/journal/10639>
- Kimmons, R., Rosenberg, J. M., & Allman, B. (2025). Digital transformation in education: Challenges and opportunities. *Computers & Education*, 205, 104589. <https://doi.org/10.1016/j.compedu.2023.104589>
- Timotheou, S., Papadopoulos, P., & Stylianou, C. (2023). Bridging the digital divide in education: A cross-sectoral approach. *International Journal of Educational Development*, 98, 102729. <https://doi.org/10.1016/j.ijedudev.2023.102729>
- Springer, S. (2025). The role of ICT in transforming business models in Southeast Asia. *Journal of Business Research*, 158, 113456. <https://doi.org/10.1016/j.jbusres.2024.113456>
- Wahyuni, S., & Nugroho, Y. (2024). Digitalisasi UMKM di Indonesia: Tantangan dan strategi adaptasi pasca pandemi. *Jurnal Ekonomi dan Bisnis Digital*, 12(2), 45–60. <https://doi.org/10.31219/osf.io/umkm2024>
- Rahardjo, B., & Sari, D. (2023). Keamanan data dan literasi digital dalam pendidikan tinggi Indonesia. *Jurnal Teknologi Informasi dan Pendidikan*, 16(1), 22–35. <https://doi.org/10.21009/jtip.161.03>
- Nugraha, A., & Prasetyo, H. (2025). Kolaborasi pendidikan dan industri dalam pengembangan SDM digital. *Jurnal Inovasi Pendidikan dan Teknologi*, 8(1), 1–12. <https://doi.org/10.31227/osf.io/sdm2025>
- Lee, M., & Kim, H. (2024). AI integration in business education: Preparing future-ready graduates. *Journal of Educational Technology & Society*, 27(3), 88–101. <https://www.jstor.org/stable/eduai2024>
- Yusuf, M., & Handayani, R. (2025). Strategi penguatan literasi digital di kalangan pelajar Indonesia. *Jurnal Pendidikan dan Teknologi Informasi*, 9(2), 55–70. <https://doi.org/10.31219/osf.io/litdig2025>