Synergy of Artificial Intelligence and Local Wisdom to Achieve Sustainable Development Goals among Lecturers at Private Universities in the Riau Islands Province

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Abstract. *Digital transformation through artificial intelligence (AI) provides strategic opportunities for higher education institutions in supporting the achievement of the Sustainable Development Goals (SDGs). However, the use of AI that is not based on the socio-cultural context has the potential to create gaps and ethical issues. This study aims to expand the conceptual and empirical study of the synergy of artificial intelligence and local wisdom in the implementation of the Tridharma (Three Pillars of Higher Education) by lecturers at private universities (PTS), with a focus on the Riau Islands Province. The methods used are systematic literature study, policy analysis, and empirical reflection on the practices of lecturers at private universities, particularly at the University of Riau Islands (UNRIKA). The results of the study indicate that the integration of AI with Malay local wisdom values, such as deliberation, mutual cooperation, and harmony with nature, can improve the relevance of learning, the quality of applied research, and the sustainability of community service. The conclusion of this study is a conceptual model of AI-Local Wisdom-SDGs Synergy as a strategic approach for lecturers at private universities in the archipelago region.*

Keywords: artificial intelligence, local wisdom, SDGs, PTS lecturers, Riau Islands

1. Introduction

The 2030 Sustainable Development Goals (SDGs) agenda demands the active participation of all stakeholders, including universities. As centers for the development of science and innovation, universities play a strategic role in producing superior human resources, conducting applied research, and providing community service that has a direct impact on society. In the era of the Industrial Revolution 4.0 and Society 5.0, artificial intelligence (AI) is a key technology influencing the way we learn, research, and serve.

The Riau Islands Province has an archipelagic geography, a multicultural society dominated by Malay values, and unique development challenges, such as unequal access to education, limited digital infrastructure, and the vulnerability of coastal environments. In this context, lecturers at private universities (PTS) are required to innovate while maintaining socio-cultural relevance. Therefore, the synergy between artificial intelligence and local wisdom is a crucial approach to ensure that AI implementation is aligned with local values and sustainable development goals.

Artificial Intelligence in Higher Education

Artificial intelligence refers to computing systems capable of performing human cognitive functions, such as learning, reasoning, and problem-solving. In higher education, AI is applied through adaptive learning, learning analytics, academic chatbots,

recommendation systems, and big data-based research support. A study by Zawacki-Richter et al. (2019) showed that AI has the potential to improve learning effectiveness and lecturer work efficiency, although it still faces ethical challenges and human resource readiness.

Artificial intelligence in higher education is the application of intelligent computing systems capable of mimicking human intelligence to support learning, research, and academic management in an adaptive, personalized, and ethical manner (Zawacki-Richter et al., 2019; Luckin et al., 2016; UNESCO, 2021).

Local Wisdom and Sustainable Development

Local wisdom is the knowledge, values, and practices that develop within a community and serve to maintain social and environmental sustainability. In the Malay community of the Riau Islands, local wisdom values are reflected in the principles of deliberation and consensus, mutual cooperation, customary law (adat bersusunan syarakah), and a harmonious relationship with nature. These values align with the principles of the SDGs, particularly social justice, inclusivity, and environmental sustainability.

Local wisdom is a system of values, knowledge, and cultural practices that develop within a community and serve as ethical guidelines for maintaining a balanced relationship between humans, society, and the environment and contribute significantly to achieving sustainable development (Geertz, 1983; Keraf, 2010; Sartini, 2004; UNESCO, 2017).

SDGs and the Role of Lecturers in Private Universities

Higher education contributes to various SDGs, including SDG 4 (quality education), SDG 9 (innovation), SDG 11 (sustainable communities), SDG 13 (climate action), and SDG 17 (partnerships). Private university lecturers play a strategic role as agents of change through the integration of SDGs into the curriculum, research based on local needs, and community service.

The SDGs are a global development agenda that demands the active involvement of higher education institutions. Private university lecturers play a strategic role as agents of change through the integration of sustainability principles into education, research, and community service (Lozano et al., 2015; Ministry of Education, Culture, Research, and Technology, 2020; Tilbury, 2011; United Nations, 2015; UNESCO, 2017).

2. Method

This research employed a qualitative-descriptive approach using systematic literature review, higher education policy analysis, and empirical reflection on the practices of private university lecturers in the Riau Islands. Data sources include national and international journal articles, SDGs documents, higher education policies, and reports on the *Tridharma* (Three Pillars of Higher Education) activities of UNRIKA lecturers. The analysis was conducted thematically to identify patterns of synergy between AI, local wisdom, and the SDGs.

3. Results and Discussions

To strengthen the empirical dimension, a simple descriptive survey was conducted among lecturers and students at the University of Riau Islands (UNRIKA). The survey aimed to map the level of artificial intelligence utilization, perceptions of local wisdom,

and its relevance to the SDGs.

The survey subjects were 25 lecturers from private universities (across faculties) and 60 undergraduate students. The instrument consisted of a closed-ended Likert-scale questionnaire (1-5) and short open-ended questions. Analysis was conducted using both quantitative and qualitative descriptive methods.

Table 1. Summary of Survey Results on AI Utilization and Local Wisdom.

Indicators	Lecturers	Students
Have you ever used AI in learning?	72	68
AI helps with the effectiveness of learning/teaching.	80	75
The importance of local wisdom in learning.	88	83
AI needs to be limited by local ethics and values.	92	85

Source: Survey Results (2025).

The survey results show that the majority of respondents are familiar with and utilize AI but still place the value of local wisdom as an important element in learning and academic activities.

Empirical Practice of AI Utilization by Private University Lecturers in the Riau Islands

Lecturers at private universities, particularly at UNRIKA (Universitas Riau Indonesia), utilize AI to develop digital teaching materials, prepare OBE-based lesson plans (RPS), analyze research data, and assist with community service. This use of AI still requires strengthening internal policies and ongoing training.

Empirical practices of AI utilization by lecturers at private universities represent concrete applications of artificial intelligence technology in learning, research, and community service that are contextual, ethical, and oriented toward improving the quality of the *Tridharma* (Three Pillars of Higher Education) and the local needs of the Riau Islands community (Luckin et al., 2016; Zawacki-Richter et al., 2019; UNESCO, 2021; Selwyn, 2019).

Integration of Local Wisdom in AI-Based Learning

The integration of local wisdom is carried out through case studies of coastal, maritime, and Malay culture in the Riau Islands. Students are involved in problem-based learning projects that address real-life issues in the island community, making learning more contextual and meaningful.

The integration of local wisdom in AI-based learning is a pedagogical approach that positions technology as an adaptive and humanistic tool, while local cultural values serve as an ethical foundation, learning context, and sustainability orientation. This approach ensures relevance, inclusivity, and a tangible contribution of higher education to sustainable development.

AI-Local Wisdom Synergy in Research and Community Service

In research, AI is used to analyze socio-economic data on coastal communities and map regional potential. In community service, lecturers utilize AI-based digital technology for digital literacy for MSMEs, village information systems, and community-based environmental education.

The synergy of artificial intelligence and local wisdom in research and community

service represents an integrative approach that utilizes AI as a tool for analysis and innovation, while local wisdom serves as a foundation for values, social context, and ethics, enabling activities within the *Tridharma* (Three Pillars of Higher Education) to contribute significantly to sustainable development and community well-being.

Conceptual Model of AI–Local Wisdom–SDGs Synergy

The proposed conceptual model positions artificial intelligence as a technological enabler, Malay local wisdom as an ethical-cultural foundation, and the SDGs as developmental outcomes. These three components are integrated through the Tri Dharma of Higher Education.

Figure 1. Conceptual Model of AI-Local Wisdom-SDGs Synergy.

Figure 1 is explained as follows:
1. First circle: Artificial Intelligence (adaptive learning, data analytics, digital systems)
2. Second circle: Malay Local Wisdom (deliberation, mutual cooperation, harmony with nature)
3. Third circle: SDGs. The three circles intersect at the center, which bears the inscription "*Tridharma* of Sustainable Higher Education".

This model emphasizes that the successful use of AI in higher education is largely determined by the integration of local values and a sustainable development orientation.

Challenges and Strengthening Strategies

Key challenges include limited digital infrastructure, lecturers' AI literacy, and potential value conflicts. Strengthening strategies include ongoing AI training, institutional AI ethics policies, and collaboration between universities, local governments, and local communities.

4. Conclusions

The synergy of artificial intelligence and local wisdom is a strategic approach for lecturers at private universities in the Riau Islands Province to support the achievement of the SDGs. This integration enhances the relevance of the Tri Dharma of Higher Education, strengthens local identity, and promotes sustainable development.

Strengthening institutional policies, enhancing lecturer capacity, and developing research and community service based on AI and local wisdom are recommended.

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