



International PKM enhances the Study of the potential implementation of appropriate technology in Angkasa Malaysia cooperatives to improve education or campus cooperatives.

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Abstract

The International Community Service Program (PKM) has become a strategic tool in identifying and encouraging the use of appropriate technology in the development of higher education cooperatives. This study aims to explore the potential implementation of appropriate technology in the management and operational systems of the ANGKASA Malaysia Cooperative as a model for developing campus cooperatives in Indonesia. Through an observational approach, semi-structured interviews, and institutional document review, empirical data were obtained regarding the digitalization and information systems engineering practices implemented by ANGKASA. The study results indicate that technology integration based on the needs of cooperative members can improve service efficiency, financial accountability, and academic community participation. These findings serve as important reflections for higher education cooperatives in Indonesia to adopt similar adaptive and sustainable systems. Therefore, synergy is needed between educational institutions, technology developers, and the government to strengthen the digital cooperative ecosystem on campus.

Keywords: International PKM, appropriate technology, campus cooperatives, ANGKASA Malaysia, digitalization of cooperatives



INTRODUCTION

Cooperatives in higher education play a strategic role in supporting the well-being of the academic community while also serving as laboratories for collective-based entrepreneurship. Amidst the dynamics of the 4.0 industrial revolution, campus cooperatives are faced with the demands of digital transformation and the application of appropriate technology to increase efficiency and competitiveness (Susanti et al., 2020). One educational cooperative model that has successfully integrated technological innovation into its management is the ANGKASA Cooperative (Angkatan Koperasi Kebangsaan Malaysia Berhad), which oversees more than 6,000 cooperatives in Malaysia and is known for its digital-based and structured management (ANGKASA, 2022).

The implementation of appropriate technology, such as digital financial systems, online membership applications, and information technology-based training, has been proven to drive operational efficiency, increase transparency, and encourage active participation among cooperative members (Rahman et al., 2021). In the Indonesian context, campus cooperatives still face challenges in modernizing their management systems and utilizing technology relevant to local needs (Sutrisno & Widiyanto, 2020). Therefore, peer review and international collaboration through cross-border Community Service (PKM) activities are strategic approaches to enriching knowledge and enhancing the institutional capacity of cooperatives within higher education institutions.

The International Student Creativity Program (PKM) conducted in Malaysia, particularly through direct interaction with the management and system of ANGKASA, provides a significant opportunity to explore the potential for adapting appropriate technology to campus cooperatives in Indonesia. This study aims to identify and analyze ANGKASA's best practices that can be replicated or modified to suit the local context and challenges of university cooperatives in Indonesia.

METHOD

This research uses a descriptive qualitative approach with field study and documentation methods. This approach was chosen to gain an in-depth understanding of the implementation practices of appropriate technology in the ANGKASA Malaysia cooperative management system, which is oriented towards the development of higher education cooperatives.

Data collection was conducted through direct observation during International Community Service (PKM) activities in Malaysia, semi-structured interviews with ANGKASA cooperative administrators and members, and a review of relevant documents, such as annual reports, internal cooperative policies, and implemented technology systems. Key informants were the cooperative's leadership, information technology unit manager, and representatives from the cooperative's partner higher education institutions.



Data were analyzed using content analysis techniques to identify key themes related to the use of appropriate technology, operational efficiency, and its impact on higher education. Data validity was achieved through triangulation of sources and methods to ensure the reliability and accuracy of the findings.

This method allows researchers to explore the complex social, institutional, and technological contexts within the higher education cooperative ecosystem, and to assess its potential for adoption in campus cooperatives in Indonesia.

RESULTS AND DISCUSSION

1. Implementation of Appropriate Technology in the ANGKASA Malaysia Cooperative

The International Student Creativity Program (PKM) activities conducted at the ANGKASA Malaysia Cooperative demonstrated that the cooperative has integrated various forms of appropriate technology into its operations. One key implementation is an online cooperative information system, which includes digital membership management, automated financial reporting, and inventory and logistics management systems. This system not only improves internal work efficiency but also strengthens accountability and transparency for cooperative members (Mohd. Nasir et al., 2021).

The ANGKASA Cooperative has also developed a mobile application that allows members to access savings and loan reports, training program information, and cooperative-based e-learning. This innovation strengthens the cooperative's position as both a provider of economic services and a community education agent (Shafie et al., 2020).

2. Replication Potential for Higher Education Cooperatives in Indonesia

Observations and interviews during the Student Creativity Program (PKM) activities indicate that the technology implemented at ANGKASA is adaptive and replicable by campus cooperatives across Indonesia. The digital membership system, for example, is well-suited for students already familiar with digital technology. The implementation of an e-cooperative system can also support cooperative-based entrepreneurship learning on campus, while strengthening the educational function of student cooperatives (Yulianti et al., 2022).

From an operational perspective, the use of software for financial management and annual reporting can minimize manual errors and increase reporting efficiency to cooperative supervisors and relevant ministries. This aligns with the principles of good cooperative governance (Suyatno, 2021).

3. Implementation Barriers and Challenges

Although the appropriate technology used by ANGKASA has proven effective, focus group discussions revealed several challenges when implementing it in campus cooperatives in Indonesia. These challenges include limited human resources skilled in IT, limited budgets for digital system development, and resistance from existing cooperative administrators accustomed to manual systems. Therefore, mentoring strategies, technology training, and integration with the



Independent Learning-Independent Campus (MBKM) program are needed to accelerate adoption (Rahman et al., 2021).

4. Impact on Improving the Quality of Education

The application of appropriate technology in educational cooperatives like ANGKASA has been proven to support the educational and innovative functions of educational institutions. In Malaysia, educational cooperatives serve as entrepreneurship training platforms, digital business laboratories, and real-life case-based learning media for students (Zulkifli & Azmi, 2020). If adopted in Indonesia, this approach could strengthen the synergy between vocational education and cooperative management practices, as well as open up opportunities for campus-based cooperative employment and internships.

CONCLUSION

This study confirms that the implementation of appropriate technology by the ANGKASA Malaysia Cooperative can be a relevant and adaptive model for higher education cooperatives in Indonesia. Through the integration of digital information systems, automated financial reporting, and mobile applications that support member engagement, cooperatives can improve operational efficiency, accountability, and contributions to education. The results of the International Student Creativity Program (PKM) demonstrate that technology-based cooperatives serve not only as economic tools but also as educational and community empowerment tools for campus communities.

However, adoption in Indonesia requires attention to local challenges, such as resource constraints, human resource readiness, and the need for policy and infrastructure adaptation. Therefore, synergy between educational institutions, the government, and technology developers is essential to creating a sustainable digital cooperative ecosystem capable of supporting the transformation of higher education.

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