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BENCHMARKING ANALYSIS FOR THE DEVELOPMENT STRATEGY OF UPJA CAHAYA BINTANG (AGRICULTURAL MACHINERY SERVICE UNIT) MUARA ENIM

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Abstract
A follow-up study is important to evaluate the competitiveness of UPJA Cahaya Bintang through benchmarking analysis against similar business units in other regions. The results show that UPJA Cahaya Bintang has a well-structured organization and diversified services; however, it still lags in terms of financial feasibility, utilization of digital technology, and partnership development. The benchmarking analysis reveals the need for strategies to strengthen institutional capacity, diversify services, enhance human resource competencies in technology application and digital outreach, and reinforce partnerships to improve the competitiveness of UPJA Cahaya Bintang. This study recommends organizational restructuring with a clear division between technical and administrative functions, implementation of digitalized operational processes and recording systems, innovation in the diversification of agricultural machinery rental services, capacity building for human resources, and strengthening partnerships with formal institutions.

Keywords*: UPJA; Benchmarking; Development Strategy; Agricultural Mechanization.*

INTRODUCTION

Agriculture is a key sector supporting the rural economy in Indonesia. In an effort to improve the productivity and efficiency of farming activities, the government has encouraged the adoption of agricultural mechanization through the provision of agricultural machinery and equipment (Directorate General of Agricultural Facilities and Infrastructure, 2014). However, challenges related to accessibility and limited capital have prevented most farmers from independently owning agricultural machinery. To bridge this gap, Unit Pelayanan Jasa Alat dan Mesin Pertanian (UPJA) was established.

UPJA is an institution that provides collective agricultural machinery rental services (alsintan). UPJA Cahaya Bintang, located in Muara Enim Regency, is one of the active UPJAs that contributes to the provision of agricultural machinery services for farmer groups in its area. A previous study by Framita et al., (2025) indicated that this UPJA is financially feasible, with an R/C ratio of 1.04. Nevertheless, the relatively small profit margin suggests that there is still room for improvement in operational efficiency and business development.

Facing the era of modern and digital agriculture, UPJA is required not only to be operationally efficient but also to be able to innovate and adapt to technological developments and market dynamics. Therefore, a more strategic evaluation approach is needed to increase UPJA's competitiveness amidst competition among agricultural machinery service providers, limited human resources, and equipment maintenance challenges. According to Sa'diah (2020), UPJAs play a vital role in driving rural economic growth and reducing unemployment, thereby improving the welfare of farming communities.

The UPJA also holds a crucial role in promoting agricultural mechanization in Indonesia. However, to remain relevant and competitive, appropriate strategies for improving competitiveness are required. One effective approach to evaluate and enhance the performance of institutions such as UPJAs is benchmarking. Benchmarking is a systematic and logical method for performance improvement through measurement and comparison of performance

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indicators, which are then used as a basis for enhancing performance (Winanda & Akbar, 2022). Benchmarking is conducted by comparing the strengths of selected UPJAs, and the comparison results can serve as a foundation for developing strategies for the improvement of UPJA Cahaya Bintang. Benchmarking enables an in-depth analysis of service indicators, cost efficiency, partnership strategies, and the utilization of digital technology within UPJA Cahaya Bintang.

Through benchmarking studies with other UPJAs located in Kalimantan and Java, it is expected that a comprehensive understanding of performance gaps and development opportunities applicable to UPJA Cahaya Bintang can be obtained. Thus, this study not only provides evaluative results but also produces strategic recommendations to enhance the competitiveness and sustainability of UPJAs in the long term. This aligns with the findings of Mayrowani & Pranadji (2012), who emphasized the importance of institutional innovation and managerial capacity strengthening in UPJA development as part of a competitive national agribusiness system.

This research highlights the relevance of adopting modern operational practices, such as digital-based recordkeeping, structured maintenance planning, and transparent financial reporting, which have been successfully implemented by high-performing UPJAs in other regions. Strengthening collaborative networks with farmers, local governments, and private machinery service providers also emerges as a key strategy to improve service delivery and expand operational scale. By integrating these insights, UPJA Cahaya Bintang can advance toward a more efficient, adaptive, and resilient organizational model capable of supporting broader agricultural mechanization efforts in its operational area.

RESEARCH METHODS

This study employs a qualitative descriptive method with a case study and comparative benchmarking approach, conducted using a purposive method (Widyatami, 2020). This approach aims to obtain a comprehensive overview of the position of UPJA Cahaya Bintang in terms of institutional structure, operational techniques, managerial performance, and business sustainability, by comparing it with two other UPJAs that have demonstrated strong performance in similar aspects.

Benchmarking was selected as the primary method because it allows the identification of *best practices* from the comparison of UPJAs and provides strategic improvement for the UPJA under study (Ramadhlan et al., 2025). Through this approach, it is possible to determine the extent of the performance gaps between UPJAs and identify ways to narrow them.

Location and Time of Research

The research location was conducted from June to August 2025 at the Cahaya Bintang UPJA, Kepur Village, Muara Enim District, Muara Enim Regency, as the main object. The comparison objects include:

a. UPJA Mandiri, located in Andaman I Village, Anjir Pasar District, Barito Kuala Regency, South Kalimantan (comparator 1), based on the study of Halimatus Sa'diah et al., 2020.
b. UPJA Berkah Tani, located in Luwungbata Village, Tanjung District, Brebes Regency (comparator 2), based on the study by Royan et al., (2021).

Types and Sources of Data

This research uses a combination of primary and secondary data. Primary data were obtained directly from the field, while secondary data were obtained indirectly from various documents and literature sources.

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a. Primary Data: In-depth interviews with the management of UPJA Cahaya Bintang (chairperson, treasurer, and agricultural machinery operators). Direct observation was carried out on operational activities, agricultural machinery services, and institutional relationships with farmer groups. Additionally, focus group discussions (FGDs) were held with farmers who use UPJA services.
b. Secondary Data: Literature studies, academic documents, and two scientific benchmarking articles on UPJA used as comparison references. Other sources included UPJA's internal documents, such as financial & activity reports, organizational structures, and standard operating procedures (SOPs).

Data Analysis Techniques

The data collection techniques used in this research include:

a. Semi-Structured Interviews: This technique was selected to explore managerial, financial, and institutional challenges in depth from UPJA management.
b. Participant Observation: Conducted on the machinery service processes and interactions between UPJA and farmer groups.
c. Documentation Study: Involves analyzing various institutional documents, SOPs, annual reports, and financial records.
d. Content Analysis of Scientific Articles: Reviewing the articles of Halimatus Sa'diah et al. (2020) and Royan et al., (2021) to systematically extract comparative data.

The data were analyzed using a descriptive-comparative approach combined with gap analysis, which consisted of the following stages:

a. Identification of Comparative Indicators: The researcher developed a benchmarking indicator matrix based on four main dimensions:
   (1) Institutional structure and management,
   (2) Types of services and business diversification,
   (3) Financial performance and operational efficiency,
   (4) Marketing and partnership strategies.
b. Position and Performance Mapping: Each UPJA was evaluated based on the same indicators to identify performance gaps.
c. Gap and Best Practice Analysis: The identified gaps were analyzed to determine their causes, along with examples of best practices successfully implemented by the comparator UPJAs.
d. Formulation of Strategic Recommendations: Based on gap analysis and external learning, recommendations for improvement.

RESULTS AND DISCUSSION

The benchmarking analysis illustrates that UPJA Cahaya Bintang has great potential for improvement in terms of competitiveness and sustainability. Strategic recommendations include integrating digital-based services, diversifying business activities, and strengthening institutional capacity. Support from local governments and collaboration with other institutions are key driving factors for UPJA's future development. Here is the complete description:

Organizational Structure

UPJA Cahaya Bintang has a relatively complete organizational structure consisting of a general manager, secretary, treasurer, and technical manager who supervises the operators and mechanics responsible for the agricultural machinery (Figure 1). Meanwhile, UPJA Mandiri

Agribusiness Journal

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has an organizational structure consisting of a manager, secretary, treasurer, mechanic, operator, and members (Sa'diah et al., 2020). The structure of UPJA Berkah Tani includes a manager, secretary, treasurer, technician, and operator (Royan et al., 2021). The organizational function is highly important in any institution, as task grouping based on expertise allows activities to be carried out effectively and efficiently (Mamonto et al., 2020).

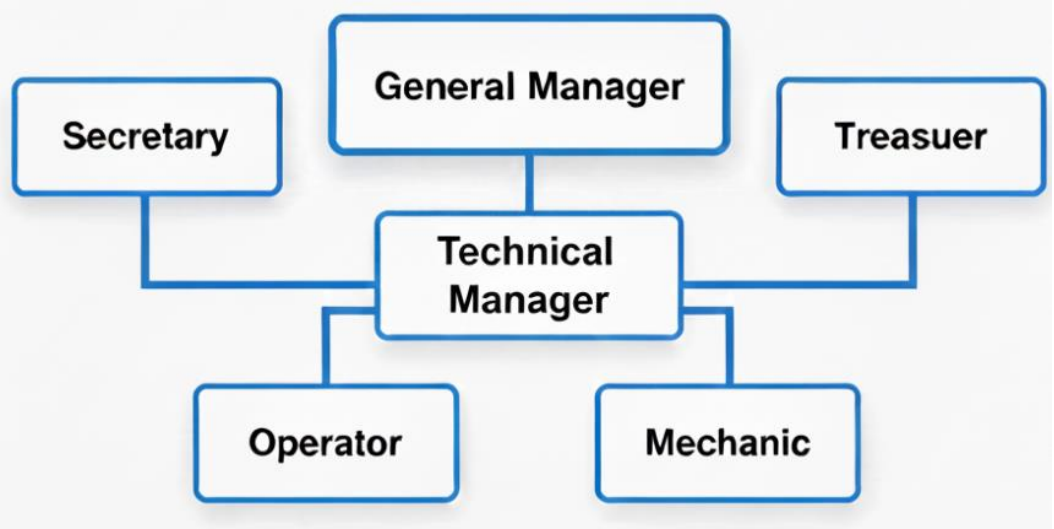

Figure 1. Organizational Structure of Cahaya Bintang UPJA
(Source: Primary Data, 2025)

Based on the comparison, it can be observed that in terms of structure and management, UPJA Cahaya Bintang is more complete than the other UPJAs. It has a Technical Manager responsible for machinery operators and mechanics, a position that does not exist in UPJA Mandiri and UPJA Berkah Tani. In both comparator UPJAs, the operators and technicians report directly to the manager.

Service Diversification and Innovation

In addition to renting out combine harvesters, UPJA Cahaya Bintang has diversified its services by offering grain drying, milling, and storage. UPJA Berkah Tani provides rental services for medium and large combine harvesters, water pumps (4.5 HP and 6.5 HP), and two- and four-wheeled tractors (Royan et al., 2021). The services utilized by farmers at UPJA Mandiri include four hand tractors, five power threshers, and two combine harvesters (Sa'diah et al., 2020).

In terms of service diversification and innovation, UPJA Cahaya Bintang performs better because it offers post-harvest processing such as milling, drying, and grain storage, which not only increases revenue but also expands the service scope. However, in terms of machinery rental innovation, it still lags behind the comparator UPJAs since it only provides combine harvester rentals. UPJA Berkah Tani and UPJA Mandiri have a more varied set of agricultural machinery compared to UPJA Cahaya Bintang.

Finance and Operational Efficiency

Financially, UPJA Cahaya Bintang demonstrates feasible performance with an R/C ratio of 1.04, implementing two rental systems: machinery rental without operator and rental with operator services (Framita et al., 2025). However, using the same system, UPJA Mandiri achieved a higher R/C ratio of 1.15 (Sa'diah et al., 2020), while UPJA Berkah Tani achieved 1.5. This result was obtained from operational activities over four planting seasons, including

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machinery rental and repair, with calculations based on total operational costs, total revenues, and profits (Royan et al., 2021). Operational cost efficiency is the key factor. The comparator UPJAs have implemented preventive maintenance schedules and digital recording systems to minimize repair costs.

Technology and Digitalization

The increase in farmers' income is evident when they use agricultural machinery in their farming activities. The existence of UPJAs as machinery rental service providers helps reduce production and labor costs (Sekarnoto et al., 2022). Institutional development plays a crucial role in strengthening coordination among farmers and expanding access to resources, financing, and markets.

UPJA Cahaya Bintang has used information technology in its operations, primarily through WhatsApp communication. This makes the administrative system functional but not yet efficient, and difficult to monitor in the long term. However, the application of digitalization can be optimized for promotional activities. UPJA Mandiri has implemented digital recording and online services. Similarly, UPJA Berkah Tani has implemented an internal digital system. Digitalization has been proven to increase time efficiency and service transparency. UPJA Cahaya Bintang could utilize digital platforms for real-time data recording updates and promote its services more broadly to the general public, especially farmers in Muara Enim Regency. UPJA Cahaya Bintang should enhance its digital capacity by providing staff training and adopting user-friendly digital tools.

Farmer Partnerships and Institutions

The UPJA institution plays a critical role in strengthening relationships among service providers, farmers, financial institutions, and external partners. According to the Minister of Agriculture Regulation No. 25 (2008), UPJA institutions are classified into three levels: *Beginner UPJA*, *Developing UPJA*, and *Professional UPJA*. Ideally, UPJAs are expected to evolve into *Professional UPJAs*, which operate with a business-oriented approach. UPJAs must be able to generate economic benefits; therefore, professional business management is essential. Economic aspects include the expansion of machinery units, funding sources, customer base, and service area coverage.

Interviews revealed that UPJA Cahaya Bintang is integrated with a joint farmer group (*Gapoktan Cahaya Bintang*) and collaborates with PT Bukit Asam [PTBA], which entrusts a combine harvester to UPJA Cahaya Bintang under a profit-sharing scheme. However, the UPJA Cahaya Bintang has not yet established formal partnerships with regional financial institutions, unlike both comparator UPJAs. Consequently, UPJA Cahaya Bintang can be categorized as a *Developing UPJA* rather than a *Professional UPJA*. In comparison, UPJA Mandiri has established formal partnerships with microfinance institutions and the local Department of Agriculture, which assist in providing maintenance capital and operator training. Meanwhile, UPJA Berkah Tani in Brebes has advanced further in terms of socio-economic institutional development, being connected to farmer cooperatives and local financial institutions, which enhances access to capital and business development opportunities.

The benchmarking results indicate that the limited partnership intensity at UPJA Cahaya Bintang restricts its business network development and access to financing. Moreover, the absence of formal partnerships with institutions such as village-owned enterprises (BUMDes) makes the business operations more individualistic and vulnerable to income fluctuations. The overall comparison across the five benchmarking dimensions, including Organizational Structure, Service Diversification, Finance and Efficiency, Technology and Digitalization, and Partnership and Institutional Network is comprehensively presented in Table 1.

Agribusiness Journal

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Table 1. Benchmarking Indicator Matrix among UPJAs

Indicator	UPJA Cahaya Bintang	UPJA Mandiri (South Kalimantan)	UPJA Berkah Tani (Brebes)	GAP Analysis & Insights
Organizational Structure	Complete, with a technical manager and operators	Simple, without technical division	Simple	Cahaya Bintang's structure is more formal but needs improved coordination.
Service Diversification	Combine harvester, milling, drying, and storage	Tractor, thresher, harvester	Tractor, pump, combine	Strong in post-harvest services but needs digital innovation.
Finance & Efficiency	R/C ratio = 1.04	R/C ratio = 1.15	R/C ratio = 1.5	Requires operational efficiency and digital recording systems.
Technology & Digitalization	Uses WhatsApp for coordination	Digital records and online services	Internal digital system	Needs a simple digital application system.
Partnership & Institutional Network	Integrated with farmer groups and PTBA, but no formal finance partner	Partnered with Dept. of Agriculture and microfinance institutions	Linked with farmer cooperatives and local banks	Must build formal partnerships to strengthen capital access and business networks.

(Source: Primary Data, 2025)

CONCLUSIONS AND SUGGESTIONS

Conclusion

The benchmarking results show that UPJA Cahaya Bintang has strong potential due to its complete organizational structure and post-harvest services. However, the main weaknesses lie in digitalization, financial efficiency, and formal partnerships. Adopting best practices from UPJA Mandiri and UPJA Berkah Tani can serve as a strategic reference for enhancing competitiveness and business sustainability. Overall, UPJA Cahaya Bintang has significant development prospects, provided that it undertakes organizational restructuring, service diversification, and partnership strengthening. The main constraints lie in limited institutional innovation and digital technology utilization.

Suggestions

Strategic recommendations include:

1. Organizational restructuring with a clear division between technical and administrative functions;
2. Digitalization of operational processes and record-keeping systems;
3. Innovation in agricultural machinery rental diversification;
4. Human resource capacity development; and
5. Strengthening partnerships with cooperatives and financial institutions.

Implementing these measures is expected to transform UPJA Cahaya Bintang into an adaptive and competitive agricultural machinery service enterprise.

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