

APPLICATION-BASED SYSTEM "SISGANIS" IN IMPROVING BUSINESS MANAGEMENT OF RENGGANIS COFFEE SMEs IN JEMBER

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Abstrak: Rengganis Coffee Cup and Roastery merupakan mitra kegiatan Pengabdian Kepada Masyarakat (PKM) yang berlokasi di Kecamatan Tanggul, Kabupaten Jember. Mitra kegiatan PKM ini memiliki model bisnis kopi dengan berbagai varian bentuk dan rasa, baik kopi bubuk maupun kopi minuman dalam kemasan. Permasalahan yang dialami oleh mitra adalah tidak adanya sistem yang terintegrasi terkait pencatatan persediaan, pencatatan transaksi hingga pelaporan keuangan, sehingga mitra kesulitan dalam pengambilan keputusan bisnisnya. Tujuan program PKM ini adalah dengan membangun dan mengimplementasikan sistem informasi manajemen berbasis aplikasi yang diberinama "SISGANIS" (Sistem Informasi dan Manajemen Rengganis), memberikan pelatihan dan pendampingan kepada mitra terkait pengelolaan manajemen usaha meliputi pengelolaan persediaan, manajemen sumber daya manusia, pemasaran digital dan pelaporan keuangan dan mendaftarkan HKI atas aplikasi SISGANIS. Metode pelaksanaan kegiatan ini adalah melakukan observasi masalah dengan mitra, melalui observasi tersebut dibangunlah sistem aplikasi SISGANIS dan diimplementasikan kepada mitra melalui pelatihan. Selain itu diadakan juga pelatihan terkait sistem persediaan, pemasaran dan pelaporan keuangan. Untuk menjamin tercapainya sasaran dari setiap kegiatan pelatihan dan pendampingan diadakan monitoring dan evaluasi untuk mengukur peningkatan kemampuan mitra. Hasil yang diperoleh dalam kegiatan ini adalah pengimplementasian SISGANIS kepada usaha mitra, terlaksananya pelatihan dan pendampingan dan terdaftarnya HKI atas aplikasi SISGANIS. Implikasi yang diperoleh dari kegiatan ini adalah meningkatnya kapasitas bisnis mitra melalui database informasi keuangan yang terhimpun dalam SISGANIS, sehingga mempermudah mitra dalam pengambilan keputusan terkait bisnisnya.

Kata Kunci: aplikasi, kopi, sistem informasi, SISGANIS

Abstract: Rengganis Coffee Cup and Roastery is a Community Service (PKM) activity partner located in Tanggul District, Jember Regency. This PKM activity partner has a coffee business model with various forms and flavours, both ground coffee and packaged coffee drinks. The problem experienced by partners is the absence of an integrated system related to inventory recording, transaction recording and financial reporting, making it difficult for partners to make business decisions. The objectives of this PKM program are to build and implement an application-based management information system called "SISGANIS" (Rengganis Information and Management System), provide training and assistance to partners related to business management, including inventory management, human resource management, digital marketing and financial reporting and register IPR on the SISGANIS application. The method of implementing this activity is to observe problems with partners. Through these observations the SISGANIS application system is built and implemented to partners through training. In addition, training related to inventory systems, marketing, and financial reporting was also held. To ensure the achievement of the objectives of each training and mentoring activity, monitoring and evaluation were held to measure the improvement of partners' abilities. The results obtained in this activity are the implementation of SISGANIS to partner businesses, the implementation of training and mentoring and the registration of IPR on the SISGANIS application. The implication obtained from this activity is the increased business capacity of partners through the financial information database compiled in SISGANIS, making it easier for partners to make decisions related to their business.

Keywords: application, coffee, information system, SISGANIS

Introduction

Coffee is one of the most traded agricultural commodities globally, with a market share of \$84.5 billion. Over the past four decades, the consumption of coffee has increased at an average yearly rate of between 2.4% and 2.9% (Dinda & Fitriani, 2020). Statistical data from the Jember Regency Cooperative Office indicates that in 2024, there were 514,859 MSMEs in Jember. As a major producer of coffee and cocoa, Jember fosters numerous medium-sized enterprises (SMEs) with coffee-based business models, including powdered coffee and packaged coffee beverages.

Rengganis Coffee Cup and Roastery is an SME and a community service partner that has been engaged in the coffee product industry since 2016. Ahmad Budi Santoso, SE, the owner of this SMEs, has a vision of creating coffee products with high integrity, ensuring quality, quantity, and continuity to establish a local brand with national-class recognition. The business is located at Jalan Urip Sumoharno 10, Tanggul, Jember Regency, approximately 33.7 km or one hour from Jember city centre. Its target market comprises young people, university students, and employees. The business manages its coffee production independently, from roasting to creating recipes for approximately 20 types of powdered and packaged coffee products. In order to produce a high-quality coffee that meets its standards, the partner has established partnerships with four farmer groups, from whom it sources premium coffee beans grown on the slopes of Mount Argopuro.

Based on the observations conducted by the team in collaboration with our community service partner, several issues have been identified as the focus of this community service activity. The first issue is the absence of an integrated management information system to assist the partner in managing inventory, recording transactions, and preparing financial reports. Rengganis still manually manages raw material inventory and has yet to compile transaction records and financial reports that accurately reflect the company's financial position. Therefore, an application is needed to integrate all raw material inventory and financial transaction information into a single, application-based integrated management information system. According to Sari (2021), using accounting information systems to manage SME business finances in the Kampung Baru area of Jember can assist in more structured and measurable business activity planning.

The second issue relates to human resources and inventory management. Since our partner has only five employees (accounting, cashier, marketing, barista, and warehouse staff), the owner also takes on multiple responsibilities. According to Gunawan et al. (2021), the development of human resources in SMEs during the COVID-19 pandemic can be optimized through information technology, which can enhance the performance and skills of business operators. Human resource management includes a selective recruitment process to acquire competent employees who match the needs of the business. In addition, it is essential to provide practical training so that they can perform their tasks well. Employees between 18 and 22 are considered to lack initiative in the sales and marketing of the Partner's products.

Meanwhile, the owner needs to plan marketing strategies carefully for marketing management. It involves in-depth market analysis to understand customer preferences and industry trends. Additionally, providing incentives through vouchers and discounts to loyal customers is essential to increase sales (Kusuma et al., 2021). The owner may need to actively design and create promotional content and manage customer relationships. Using digital platforms and social media can also serve as a solution to reach a broader audience (Rizal, 2020). Moreover, Apsari et al. (2017) stated that coffee processing and packaging can improve the marketing and productivity of coffee produced by farmers or coffee groups from Sidomulyo Village and positively impact the community. Furthermore, the coffee farming sector can be developed into a coffee tourism village, contributing economically to the community's well-being (Kusuma, 2017).

Based on the results of the community service carried out by Manongga et al., (2022), implementing information technology in the form of a website to support purchasing, sales, and promotional activities successfully helped SMEs increase sales during the COVID-19 period. Meanwhile, the results of the community service conducted by Atmojo (2022) concluded that the utilization of information technology using marketplaces to sell SME products has been implemented. However, based on both results, information technology has been limited to promotional and sales activities. On the other hand, this community service activity developed a management-based information system, a website-based application that provides information in the form of an inventory database, financial transaction records, and financial report preparation. SISGANIS aims to minimize human errors in managing raw materials and daily transactions, and the system also accelerates decision-making analysis, leading to better decisions in a shorter time (Sari et al., 2024). Based on the results of the research Sari et al., (2024) by using SISGANIS at Rengganis, it was found that raw material waste decreased by 29.17%, transaction speed increased by 33.3%, and the time required to prepare financial reports was reduced by 60%. It has increased efficiency and competitiveness for the partner in the culinary industry, providing a solid foundation for faster and more accurate decision-making.

Method

This community service employed the ABCD (Asset-Based Community Development) method, a sustainable empowerment approach based on the community's assets, strengths, and potential (Setyawan et al., 2022). The training and mentoring activities are divided into six stages: observation, training on business management, mentoring on financial reports for SMEs, and hands-on practice related to using the SISGANIS system. [Diagram 1](#) illustrates the method of this community service program.

Based on [Diagram 1](#), the flow of the method used to address the partner's issues begins with an observation to identify problems and solutions conducted online and offline. This observation involves interviews with the partner to understand the workflow, business needs, and main challenges. The information gathered is then used to design solutions tailored to the partner's needs. During the system development stage, it is crucial to consider fast computation

processes and relatively lightweight data storage (Wiranto & Made Tirta, 2022). Furthermore, the team developed a web-based application management information system named Sistem Informasi Manajemen Rengganis (SISGANIS), a web-based application designed to support transaction recording, inventory management, and financial reporting. **Digram 2** depicts the stages of the system development.

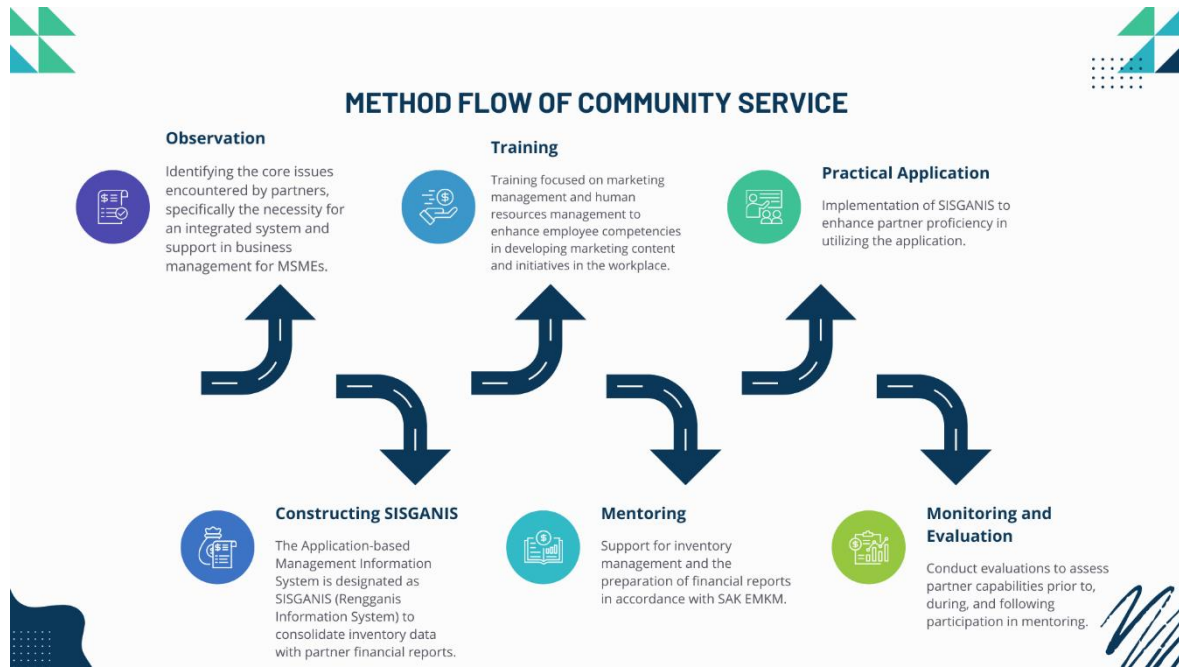


Diagram 1. Method Flow of Community Service



Diagram 2. Development System Flow of SISGANIS

Requirement Analysis

The requirement analysis phase is crucial in the initial step to ensure the developed system can address the problems. During this phase, in-depth interviews are conducted with the owner and employees of Rengganis to understand their business workflow, including transaction recording, inventory management, and financial reporting processes. The development team uses Business Process Modeling Notation (BPMN) to visually map the business processes, helping identify the key processes that need to be supported by the system. Additionally, the needs analysis also involves gathering related documents, such as manual financial records or inventory tracking methods previously used by the partner. The outcome of this phase is a list of functional and non-functional requirements that will serve as the foundation for system development.

Design System

Based on the results of the requirement analysis, the team then designed the user interface (UI) and the database structure. The system design focuses on efficiency principles, including fast computational processes and lightweight data storage. The user interface is developed to be intuitive and easy to navigate, ensuring that users can interact with the system effectively. Meanwhile, the database structure is designed to optimize data retrieval and storage, minimizing unnecessary complexity while ensuring the system can scale as needed. The design also considers the need for seamless integration between transaction recording, inventory management, and financial reporting modules, ensuring that the system operates efficiently and meets the Rengganis requirements (Wiranto & Made Tirta, 2022). The system design phase focuses on creating the user interface, database structure, and system logic. This system design prioritizes usability to ensure that employees with limited technological literacy can operate the system efficiently. The database structure is designed with efficiency and security as primary considerations, ensuring that transaction data, inventory, and financial reports can be accessed in real-time without overloading the server. The main menus designed include:

- a) Transaction Recording → A feature for automatically recording daily sales transactions.
- b) Inventory Management → A module that enables the employees and owner to monitor stock availability in real-time.
- c) Financial Reporting → A system capable of generating reports on income, expenses, and profit/loss in various formats.
- d) Role-Based Access → A feature that divides authority among the Rengganis Admin, Sales Admin, and Warehouse Admin to ensure control and security.

System Coding and Development

The coding phase represents the technical implementation of the system design that has been previously developed. A web-based technology framework is utilized to ensure the system's accessibility across various devices with internet connectivity, including computers, tablets, and smartphones. The selection of programming languages and frameworks is aligned with the system's requirements to facilitate an efficient development process while ensuring flexibility for future enhancements. The key features developed during this phase include:

- a) Automated Inventory Management → A system that automatically updates the stock levels based on incoming transactions at Rengganis Café.
- b) Real-Time Financial Reporting → A feature that enables the owner of Rengganis Café to receive financial reports instantly, eliminating the need for manual calculations. The development team also conducts initial code testing to prevent technical errors before proceeding to the next phase.

System Testing

Before being fully implemented, the SISGANIS system underwent three phases of testing to ensure its functionality and alignment with the Rengganis requirement:

- a) Alpha Testing → The development team conducted an initial test to evaluate fundamental functionalities like login, transaction recording, and inventory management. This phase was intended to identify and resolve bugs or technical errors within the system.
- b) Beta Testing → This phase was conducted in collaboration with the owner and employees of the Rengganis Café to gather feedback on the system's usage. During this stage, they tested the main features in real-world operational scenarios. Several issues were identified, such as users' perceived interface as less intuitive and response times that needed optimization. This feedback was utilized to make improvements prior to full implementation.
- c) User Acceptance Testing (UAT) → The final test phase was conducted to ensure that all Rengganis requirements were met and the system was ready for deployment. The User Acceptance Testing (UAT) involved more complex operational simulations and evaluated whether the system could handle a more significant workload.

Implementation and Monitoring

Once the system was deemed ready, the implementation phase began by integrating SISGANIS into the business processes. This phase commenced with intensive employee training, covering the use of the system's features, understanding the new workflow, and providing solutions for potential issues that might arise during operations. The development team also provided user manuals and troubleshooting guides to facilitate the system adoption. Monitoring is conducted periodically to assess the system's performance and ensure it functions as expected. Feedback from the Rengganis owners and employees during the implementation phase is the foundation for further refinement. For instance, during the monitoring phase, the development team incorporated new features (minor revisions) based on emerging needs. In addition to system development, training and mentoring sessions were conducted on four distinct topics: inventory and marketing management, advanced human resource management, financial management and reporting systems, and practical use of SISGANIS. The goal of this training is to ensure that employees not only understand the technical aspects of using the system but also possess the ability to apply effective management practices within their businesses.

System Evaluation

Evaluation is conducted through monitoring and feedback collected during the implementation phase. Several improvements were made based on this evaluation, such as refining the user interface to enhance the user experience and adjusting the reporting features to better align with the Rengganis needs.

Before developing the system, the process began with creating a Business Process Modeling Notation (BPMN). According to Afiana et al. (2022), the BPMN phases and the creation of user stories provided an overview of the available menus and ensured proper integration, thereby minimizing errors that could potentially harm the company. Below is the developed BPMN, which includes three authorities: Admin Rengganis, Sales Admin, and Warehouse Admin, as shown in [Figure 1](#), [Figure 2](#) and [Figure 3](#).

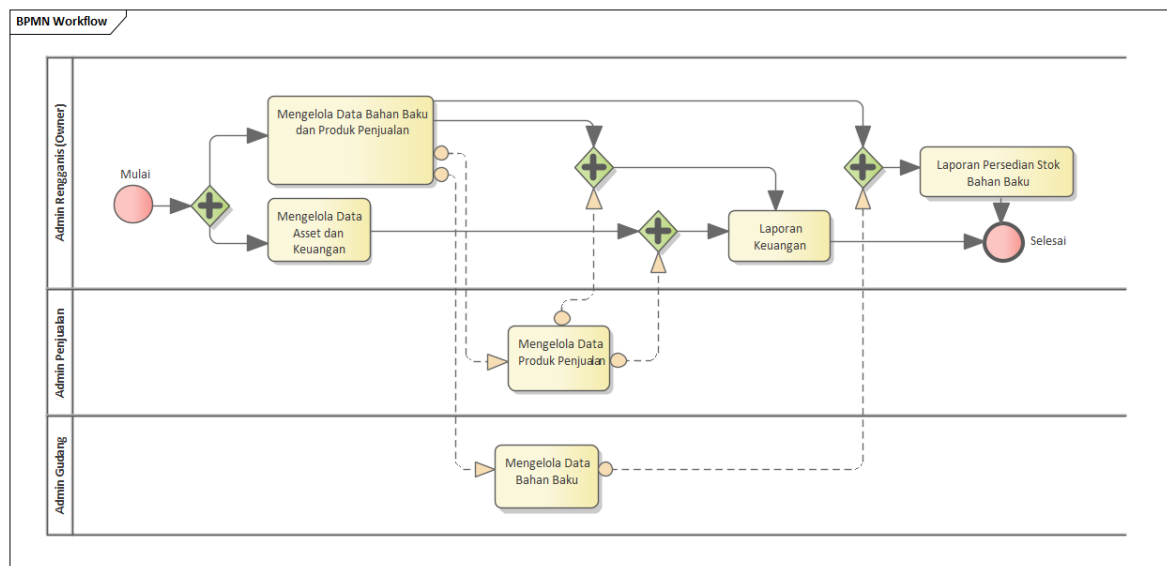


Figure 1. Business Process Modeling Notation (BPMN) Diagram



Figure 2. Frontpage display of SISGANIS (www.rengganis-coffee.com)

In addition, four different training and mentoring sessions were conducted, covering the topics of inventory and marketing management, advanced human resource management, financial management and reporting systems, and practical application of SISGANIS. Finally, to ensure that the community service activities had a positive impact on the Rengganis workspace, monitoring and evaluation (M&E), along with feedback were carried out.

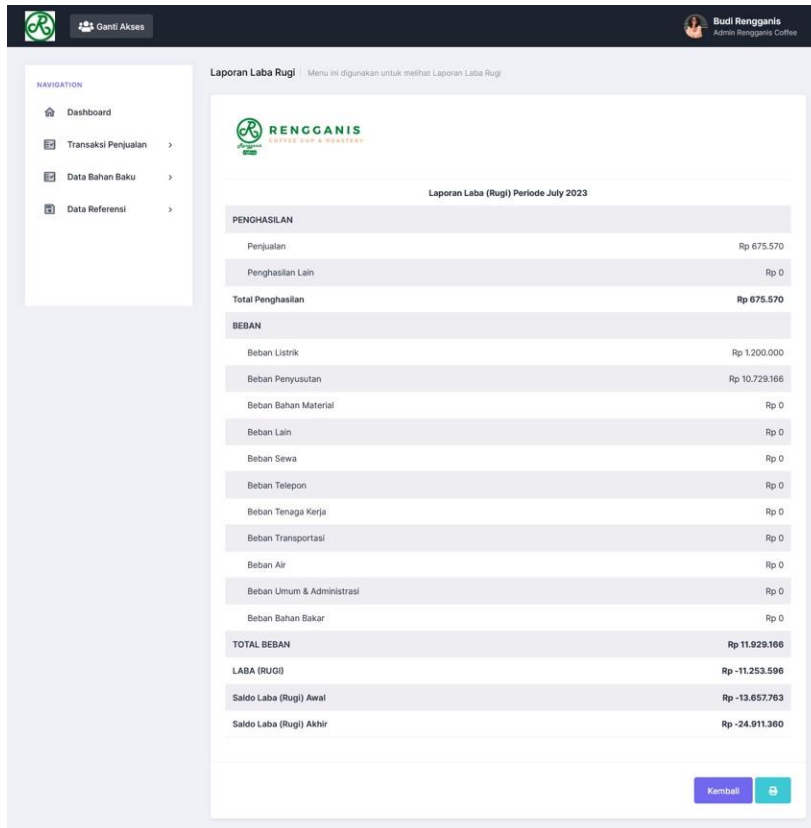


Figure 3. Display of Financial Reports from the SISGANIS Application

Results and Discussion

Implementation of Activities

The approach employed involves training, mentoring, and hands-on practice. The training materials will be provided to the owners and employees of Rengganis Coffee Cup and Roastery. [Table 1](#) shows the profile of the participants in the community service activity.

Table 1. Participant Profile

Gender	Total
Male	6
Female	1
Total	7
Age	Total
<20 years	4
>20 years	3
Total	7

Over approximately three months, the team developed and built SISGANIS, a system designed to manage information and databases related to inventory, record transactions, and generate financial reports such as the Balance Sheet and Income Statement. SISGANIS was developed based on the challenges faced by the Rengganis Café and tailored to their business conditions to ensure its sustainable use in improving business performance in the future. The system allows the owner of Rengganis Café to access comprehensive financial information, thereby facilitating short- and long-term business decision-making. Before being fully

implemented, SISGANIS underwent three testing phases aimed at ensuring its functionality and alignment with the Rengganis Café requirements::

1. Alpha Testing: In this phase, several technical bugs were identified, such as the failure to save data when the internet connection was lost, which was addressed by implementing a temporary storage mechanism. Additionally, there was an error in automatically reducing raw material inventory, as each raw material component had different units of measurement, requiring a careful review of the calculations based on the respective units.
2. Beta Testing: During the beta testing phase, the employees provided feedback regarding the user interface (UI), which was perceived as less intuitive for non-expert users. In response, the development team improved by simplifying the navigation and adding visual icons to enhance usability. Additionally, further feedback suggested the inclusion of descriptions for each financial item, allowing users to enter financial categories not already listed in the existing account list. Furthermore, the date and year filters were refined to be more specific, ensuring more accurate results.
3. User Acceptance Testing (UAT): The final testing phase was conducted to ensure that all system features function properly under daily operational conditions. The results of the User Acceptance Testing (UAT) indicated that the system met the owner and employee's requirements; however, optimization of the response time for the financial report feature was necessary, as it still required a relatively long runtime to enhance the user experience. Additionally, the discount and product barcode menus were also identified as requiring further complexity.

Upon completing the testing phase, the team conducted guidance and hands-on training for the three primary users: the owner, cashier, and warehouse staff. During the training, participants were taught how to record transactions, monitor inventory, and generate financial reports using the system. To ensure the effectiveness of the training, the team provided a user manual designed to assist participants in independently understanding the steps for utilizing SISGANIS. As part of the program's sustainability, SISGANIS was registered as an Intellectual Property (IP) in December 2023. It provides legal protection and adds strategic value to the developed system, enabling further development to support other SMEs in the future.

Based on the results of the system implementation, it can reduce errors in recording and measuring raw material inventory, accelerate transaction times from the previous 60 seconds to 48 seconds, and reduce the time required for preparing financial reports from five hours to just three hours (Sari et al., 2024). The team implemented guidance and hands-on training for the three primary users—owner, cashier, and warehouse staff—with the training sessions supported by a user manual, which facilitated the participants' understanding of the system.

Implementing SISGANIS has proven to generate high-quality information for decision-making, save time, reduce administrative staff, and improve inventory turnover. (Teplicka, 2019). A sustainable management information system can serve as a measurement, management, and innovation tool, supporting the ongoing development of small and medium-sized enterprises (Nowduri & DBA, 2012). SISGANIS provides a comprehensive solution for inventory management, real-time transaction recording, and rapid, accurate financial reporting.

With features that ensure transparency and accountability, the system is designed to reduce human errors in managing raw materials and daily transactions while accelerating the financial decision-making process (Sari et al., 2024).

Subsequently, training and guidance were provided regarding the owner and employees' business management, including digital marketing training, which involved practising the creation of engaging promotional videos and content. Digital marketing not only reduces marketing costs but also meets the current demands of consumers. Through digital marketing training for SMEs, the importance of utilizing technology to market products is emphasized, reflected in improved branding and product packaging (Atmojo et al., 2023). SMEs with financial management and digital marketing knowledge can enhance their performance and make their businesses more competitive (Sari et al., 2022). This training material also covers the importance of product and company branding, intellectual property and business identification number registration, various digital marketing media, and the utilization of digital promotion and e-commerce platforms to enhance product sales.

The optimal utilization of technology can enhance a community's economy and human resources (Atmojo, 2022). In addition, SMEs that implement information technology can enhance their product sales and promotional activities (Manongga et al., 2022; Sari, 2021). Human resource management training is conducted to improve work motivation and professionalism, while inventory management mentoring covers topics on inventory management for SMEs, including inventory objectives, the importance of inventory control, and cost analysis of goods management. Employee initiative and the owner's strategy in human resource management can be enhanced through HR management training. Employee involvement in the company can boost organizational performance, making it crucial for companies to establish a work culture that supports achieving organizational goals (Pratiwi et al., 2023).

The impact of inventory management mentoring enables the Rengganis to manage inventory more effectively and efficiently by optimizing inventory management. This results in improved operational efficiency, reduced risks of stockouts or shortages, and optimized financial performance (Amirrudin et al., 2023; Bocharova & Velichko, 2023; Chen et al., 2023). The mentoring on financial statement preparation aims to provide accurate financial information for the owners. The training covers the basic accounting cycle, accounting processes in SMEs, SAK EMKM, transaction recording in accounting, financial statement preparation, decision-making analysis using accounting information, and financial management. Implementing accounting-based systems and financial reporting applications enhances decision-making effectiveness and transparency in business management (Sari, 2021; Sari et al., 2024; Widaninggar & Sari, 2018). The performance of SMEs is further optimized through mentoring in the preparation of financial statements (Sharon et al., 2024). Financial statements are crucial for decision-making and business development (Nida et al., 2023; Rumambi et al., 2021). According to Sharon et al. (2024), enhancing the understanding of financial statements can improve the performance of SMEs and Village-Owned Enterprises (BUMDES) in Moncongloe District, Maros Regency. In addition to assisting in business decision-making, the development of a basic web-based

accounting system application for KPRI Kencana Situbondo has been able to increase members' trust in financial reporting (Widaninggar & Sari, 2018).

The final phase of the implementation involves conducting monitoring and evaluation, as well as the handover of SISGANIS to the owner's Rengganis (see Figure 4). The team also evaluated the program to obtain feedback from partners. The monitoring and evaluation aimed to comprehensively assess the use of SISGANIS and the impact of the training on the employees. The results of the monitoring and evaluation indicated an improvement in employees' skills in inventory recording and measurement, thereby minimizing errors made by employees and enhancing the efficiency of the Rengganis Café business (Bocharova & Velichko, 2023; Chen et al., 2023).



Figure 4. Training and Mentoring Documentation

Trainee Capability Evaluation

To determine the improvement in participants' abilities and understanding of the material and guidance provided, we evaluated pre-tests, post-tests, and N-Gain scores. The data collection method for the evaluation assessment was carried out by distributing questionnaires using a 5-point Likert scale. This evaluation was designed to demonstrate the improvement in participants' understanding, with the following indicators used to measure it: 1) participants' understanding of digital marketing, 2) participants' understanding of branding and promotion, 3) participants' understanding of motivation and work professionalism, 4) participants' understanding of inventory management, 5) participants' understanding of income statement preparation, 6) participants' understanding of balance sheet preparation, and 7) participants' understanding of the application of SISGANIS. Figure 5 shows the evaluation results of participants' abilities.

Based on Figure 5, it is evident that the average pre-test score of the training participants was 60%. After receiving the training and guidance, their post-test scores increased to 96%, with an N-Gain of 82%. The value of N-Gain is greater than 76%, indicating that the training effectively improved participants' understanding of SISGANIS (Hake, 1999). The training covered SISGANIS, inventory management, marketing management, human resource management, and financial statement preparation. Before the training, participants took a pre-test of questions related to inventory, marketing, work professionalism, information system usage, and financial reporting. The participants, who were predominantly aged between 18 and

22 years old, with 71% having completed high school education and an average of 2 years of work experience, lacked knowledge in business management. After the training, a post-test was administered, and the results showed a significant improvement, reaching 96%. This achievement was attributed to the active participation of the trainees during the session, and it demonstrates that the training was effective, enabling participants to enhance their knowledge and understanding of the previously discussed aspects.

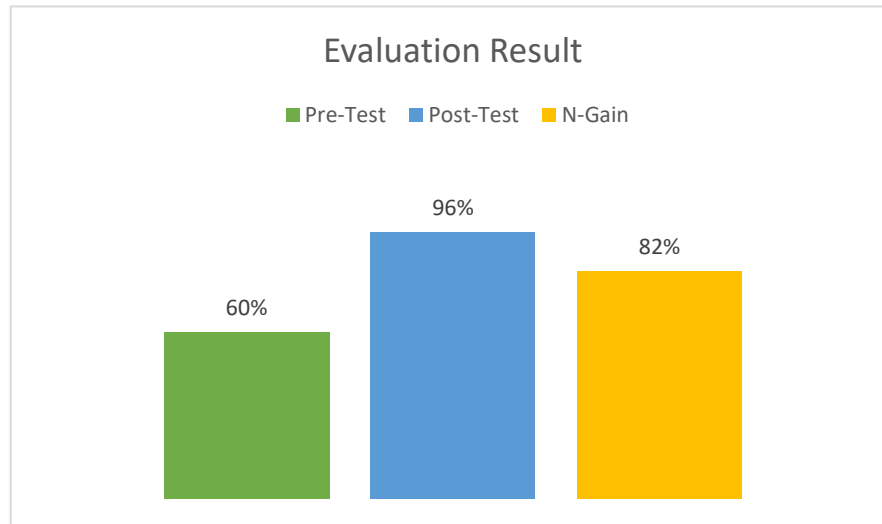


Figure 5. Evaluation Result

Participant's Satisfaction Level

We conducted monitoring and evaluation to assess the community service program and the implementation of the SISGANIS system used by our partners. Additionally, we distributed a survey to measure participant satisfaction with the execution of this program. The survey measurement items include: 1) training and mentoring materials, 2) trainers and mentors, 3) training facilities, and 4) program implementation and sustainability. Figure 6 illustrates the results of the survey.

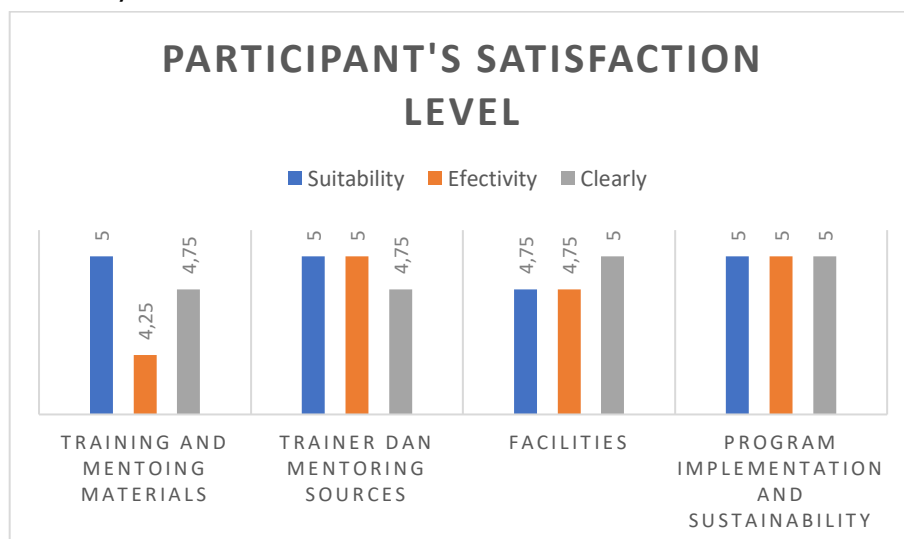


Figure 6. Participant's Satisfaction Level Response

Based on the results of the satisfaction survey in [Figure 6](#), it can be concluded that the average participants gave scores ranging from 4.25 to 5.00 for the four satisfaction items evaluated. Their assessment of the relevance of the training materials, the appropriateness of the trainers, and the alignment of the program's initial objectives with the activities conducted all received a score of 5.00 (very satisfied). The effectiveness of the training implementation and the changes or innovations resulting from it also received a score of 5.00 (very satisfied). Meanwhile, evaluating the ease of access to the training location and future collaboration opportunities also received a score of 5.00 (very satisfied). However, there is still an area that needs improvement, namely the effectiveness of the training materials to ensure they are more easily accepted and applied, which received a score of 4.25.

Conclusion

The results of the community service activities at Rengganis Coffee Cup and Roastery have significantly impacted the partner, ranging from more efficient business management to the increased capacity and skills of employees. Additionally, implementing a management information system has addressed the partner's needs. The management information system developed by the team to support the partner's business activities, along with guidance and hands-on practice, has enhanced the partner's ability to manage their business more effectively. SISGANIS is now accessible via the website www.rengganis-coffee.com, where inventory data, financial transactions, and company assets can be easily accessed by users and utilized as a basis for business decision-making, particularly in inventory management and financial reporting.

The enhancement of the skills of the owners and employees in managing business operations related to the use of SISGANIS in the partner's business activities, inventory management, marketing management, human resource management, and financial reporting has led to improved efficiency in data processing and business decision-making. The SISGANIS system, developed and implemented by the team for the partner, aims to reduce inventory waste, accelerate the recording of financial transactions, and streamline financial report generation. After the program, the partner has effectively utilized this system. The limitation of this community service program lies in the scope of the SISGANIS features, which currently only support raw material inventory management, transaction recording, and financial reporting. There is potential for further development to accommodate other information systems, such as payroll systems, employee attendance automation, and more. A recommendation for future PKM activities is to develop a management information system that can address the diverse needs of SMEs related to business management and internal control, enabling them to make more efficient and accurate business decisions.

Acknowledgements

We would like to express our sincere gratitude to the Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi (Kemdikbudristek) through the Direktorat Jenderal

Pendidikan Tinggi for funding the program under the 2023 Community Empowerment Program scheme, to the Institute of Technology and Science Mandala, and the Community Service partners involved in this initiative.

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