



COMMUNITY ENGAGEMENT ARTICLE

Implementation of Customer Relationship Management (CRM) in Agribusiness to Enhance Students' Competency: A Participatory Action Research at SMKN PP Lembang

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Abstract

This community service program aimed to enhance students' understanding of Customer Relationship Management (CRM) in agribusiness at SMKN PP Lembang using the Asset-Based Community Development (ABCD) approach. The program involved 120 grade XII students and included a pre-test, material presentation, discussions, and a post-test to evaluate knowledge improvement. The pre-test average score was 58%, while the post-test average rose to 85%, showing a 27% improvement in comprehension. The most notable improvements were seen in topics such as CRM tools, customer segmentation, and digital marketing strategies. The findings highlight the effectiveness of integrating CRM education into vocational training to equip students with practical business skills and decision-making capabilities.

Keywords

Customer Relationship Management; Vocational Education; Agribusiness.

Abstrak

Program pengabdian kepada masyarakat ini bertujuan untuk meningkatkan pemahaman siswa SMKN PP Lembang mengenai Customer Relationship Management (CRM) dalam agribisnis dengan pendekatan Asset-Based Community Development (ABCD). Program ini melibatkan 120 siswa kelas XII dan mencakup pre-test, penyampaian materi, diskusi, dan post-test untuk mengevaluasi peningkatan pengetahuan. Rata-rata nilai pre-test sebesar 58%, meningkat menjadi 85% pada post-test, menunjukkan peningkatan pemahaman sebesar 27%. Peningkatan paling signifikan terjadi pada materi terkait alat bantu CRM, segmentasi pelanggan, dan strategi pemasaran digital. Temuan ini menunjukkan efektivitas integrasi pendidikan CRM dalam pelatihan vokasi untuk membekali siswa dengan keterampilan bisnis praktis dan kemampuan pengambilan keputusan.

Kata Kunci

Customer Relationship Management; Pendidikan Vokasi; Agribisnis.

1 | INTRODUCTION

The agricultural sector has undergone significant transformations in recent years due to globalization and technological advancements (Islam, 2024). Businesses are no longer solely dependent on production efficiency but must also integrate Customer Relationship Management (CRM) strategies to maintain customer loyalty and ensure sustainability in a highly competitive market (Alhawamdeh *et al.*, 2024). CRM enables businesses to gather customer data, analyze purchasing behavior, and develop targeted marketing strategies to enhance customer satisfaction and loyalty (Eslami *et al.*, 2024). However, despite its importance, the adoption of CRM in agribusiness remains low, particularly among small-scale farmers and agricultural enterprises (Singhal and Singh, 2024). One of the main barriers to CRM implementation in agribusiness is the lack of awareness and knowledge among young agricultural professionals (Espinosa-Curiel and de Alba-Chávez, 2024). SMKN PP Lembang, a vocational school specializing in agricultural education, plays a vital role in preparing future agribusiness professionals. However, a preliminary survey conducted before this community service program revealed that over 70% of students had little to no understanding of CRM principles and their applications in agribusiness. This gap in knowledge can hinder their ability to engage with modern business strategies, reducing their competitiveness in the market (Rubio-Andrés *et al.*, 2024). Furthermore, there is limited integration of CRM concepts into the existing vocational curriculum, making it essential to introduce students to practical CRM applications. The main problem addressed in this community service activity is the limited understanding and practical skills of students at SMKN PP Lembang regarding the implementation of Customer Relationship Management (CRM) in agribusiness. Therefore, the specific research question posed in this program is: "How can the understanding and skills of SMKN PP Lembang students regarding CRM implementation in agribusiness be improved through the Participatory Action Research (PAR) approach?" The objective of this community service is to increase students' knowledge and competencies in applying CRM strategies, particularly in customer segmentation, digital communication, and agribusiness marketing practices. The significance of this activity lies not only in improving students' academic insight, but also in equipping them with practical business tools to prepare them for the demands of a competitive agricultural sector.

- 1) For students, the program helps develop their entrepreneurial mindset and mastery of digital CRM tools.
- 2) For the school, this activity enriches the curriculum with relevant and contextual learning content.
- 3) For the advancement of science, the program contributes to applied knowledge development in CRM education using Participatory Action Research and Asset-Based Community Development (ABCD) approaches within vocational contexts.

Moreover, the growing shift towards digital transformation in agriculture necessitates the integration of modern business intelligence and customer engagement strategies (Rahmatika *et al.*, 2023). The use of data-driven decision-making, predictive analytics, and automated customer interactions has proven to enhance business performance and market competitiveness across various industries, including agribusiness (Alamsyah *et al.*, 2024). As consumer preferences evolve, agribusinesses must adapt by leveraging CRM tools to improve customer segmentation, personalized marketing, and data-driven forecasting (Farias, de Fatima Missio and Seifert, 2024). Given these developments, vocational education and community training programs play a critical role in equipping future agribusiness professionals with the necessary knowledge and skills to implement CRM strategies effectively (Osumba, Recha and Oroma, 2021). SMKN PP Lembang was chosen as the primary location for this community service initiative due to its role in educating future agricultural entrepreneurs. As agribusiness increasingly relies on digital platforms and customer engagement strategies, vocational students must be equipped with the skills necessary to leverage CRM tools for business success. By implementing CRM training at the vocational education level, students can gain a competitive edge in the labor market and contribute to the modernization of agribusiness practices in Indonesia. Moreover, the school administration expressed interest in integrating CRM education into their curriculum, ensuring the sustainability of this initiative beyond the community service program.

2 | METHOD

This community service program adopted a Participatory Action Research (PAR) approach combined with the Asset-Based Community Development (ABCD) model to empower students through active involvement and localized potential. The PAR approach was applied through a four-phase cycle:

1) Planning

Identification of students' knowledge gaps regarding CRM in agribusiness was conducted through coordination with teachers and preliminary surveys.

- 2) **Action**
Activities were implemented, including CRM training through lectures, discussions, and hands-on learning.
- 3) **Observation:** The participants' engagement, responses, and performance during sessions were observed and documented.
- 4) **Reflection**
After the program, the facilitators conducted reflective evaluation sessions, analyzing test results and collecting feedback to improve future training modules.

In the ABCD approach, we emphasized recognizing and leveraging existing student assets such as digital literacy, curiosity about entrepreneurship, and their background knowledge in agriculture. These assets were nurtured through interactive activities tailored to local contexts. The program was conducted on February 13, 2025, and involved 120 students from grade XII at SMKN PP Lembang, selected based on their enrollment in agribusiness-related subjects. These students were chosen in coordination with school staff to represent various competency levels. The methodology consists of a cyclical four-stage learning approach, as illustrated in Figure 1 the process diagram. The stages are as follows:

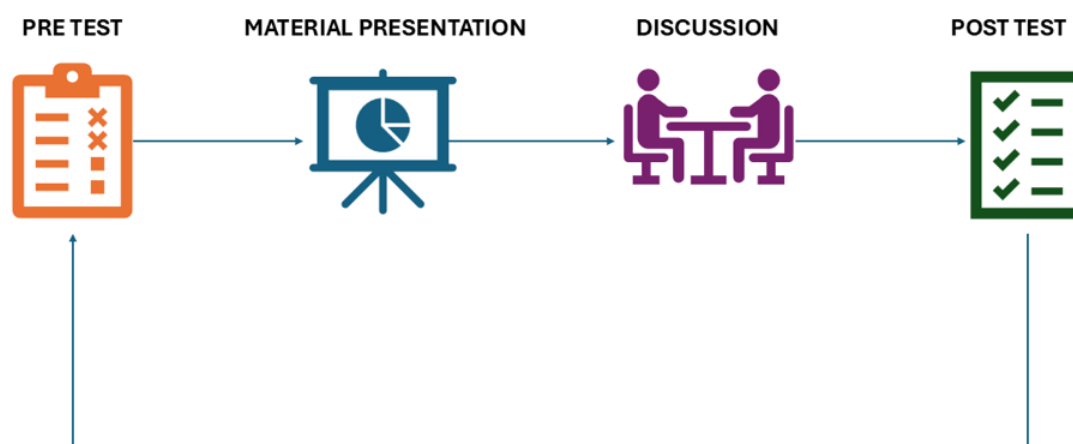


Figure 1. Process Diagram

- 1) **Pre-Test**
 - a) The program began with a pre-test to assess students' initial understanding of CRM concepts.
 - b) The test included fundamental questions on CRM functions, benefits, and applications in agribusiness.
 - c) The results were analyzed to identify knowledge gaps and tailor the learning materials accordingly.
- 2) **Material Presentation**
 - a) A structured learning session was conducted to introduce students to CRM principles, digital tools, and real-world applications in agribusiness.
 - b) This phase involved lectures, multimedia presentations, and case study discussions to ensure comprehensive knowledge transfer.
 - c) The use of practical examples enabled students to relate CRM strategies to real agribusiness scenarios.
- 3) **Discussion and Interactive Engagement**
 - a) This phase was designed to foster critical thinking and active participation by engaging students in discussions about CRM strategies.
 - b) Group activities and scenario-based learning were incorporated to simulate real-world CRM decision-making.
 - c) Students were encouraged to ask questions and share insights, creating an interactive learning environment.
- 4) **Post-Test and Evaluation**
 - a) The program concluded with a post-test to measure students' knowledge improvement after the learning sessions.
 - b) The results were compared with the pre-test scores to evaluate the effectiveness of the training.
 - c) A feedback session was conducted to collect students' opinions and suggestions for future improvements.

The methodology follows a continuous improvement model, ensuring that insights from the post-test and discussions are reintegrated into future learning activities. The cyclical approach fosters a dynamic and evolving learning process, making CRM education more effective and applicable for students pursuing careers in agribusiness.

3 | RESULTS AND DISCUSSION

3.1 Results

On February 13, 2025, a community service activity was conducted at SMKN PP Lembang, focusing on Customer Relationship Management (CRM) in agribusiness. The event was attended by 120 students from grade XII, who showed great enthusiasm for learning CRM concepts. The program began with a pre-test to measure students' initial knowledge levels, followed by a material presentation delivered by expert facilitators. The learning session covered fundamental CRM principles, real-world applications, and technological tools used in CRM.

Table 1. Pre-Test Questions

No	Pre-Test Questions
1	What is CRM?
2	Name three key components of CRM.
3	How does CRM help businesses?
4	What industries typically use CRM?
5	What are the challenges in implementing CRM?

Following the presentation, an interactive discussion session took place, where students actively participated by asking questions and engaging in discussions related to CRM implementation in agribusiness. Figure 2 illustrates a session where the facilitator delivered CRM material using a visual presentation to enhance students' understanding.



Figure 2. Speaker delivering CRM material

Table 2. Post-Test Questions

No	Post-Test Questions
1	Explain how CRM benefits agribusiness.
2	What are the key elements in CRM strategy?
3	Describe how CRM influences customer retention.
4	How can CRM be integrated with social media marketing?
5	What CRM tools are commonly used in agribusiness?



Figure 3. Interactive session during CRM training

Table 3. Pre-Test and Post-Test Results

Test	Average Score (%)
Pre-Test	58%
Post-Test	85%

The CRM training program was attended by 120 students from grade XII at SMKN PP Lembang. The pre-test was conducted to assess students' initial knowledge of Customer Relationship Management (CRM). The test consisted of 5 items that evaluated understanding of CRM concepts, functions, benefits, and tools. The average pre-test score was 58%, indicating a relatively low baseline knowledge. After the material delivery and interactive discussion sessions, a post-test was administered to measure students' learning gains. The post-test average score increased to 85%, showing a 27% improvement in overall understanding. The most significant gains were noted in topics related to customer segmentation and CRM digital tools, where the average item accuracy increased by more than 40%.

Table 4. Pre-Test and Post-Test Results

Indicator	Pre-Test (%)	Post-Test (%)	Difference (%)
CRM Definition & Purpose	62%	87%	25%
CRM Components & Strategy	55%	82%	27%
CRM Tools & Application in Agribusiness	49%	90%	41%
Overall Average	58%	85%	27%

In addition to the test scores, facilitators conducted observations during the training activities. Most students showed high engagement levels, actively participated in group discussions, and expressed curiosity through questions. Group dynamics during discussions were lively, and students were able to relate CRM strategies to their real-world experiences in agriculture. The reflection phase of the Participatory Action Research (PAR) cycle revealed several key insights:

- 1) Students reported increased confidence in explaining CRM-related terms and strategies.
- 2) They expressed interest in applying CRM in future entrepreneurial projects.
- 3) Some students suggested the inclusion of simulation tools or demo CRM software to deepen understanding.

Teachers and facilitators noted that students were more aware of the importance of customer-oriented strategies in agribusiness, and several groups were able to draft simple CRM flowcharts as part of their discussion outputs. These results affirm the effectiveness of the learning process and indicate that integrating CRM concepts into vocational education can substantially improve students' readiness for the agribusiness workforce. The 27% improvement in test scores demonstrates the effectiveness of the interactive learning approach. At the end of the event, a group photo session

was conducted to commemorate the successful completion of the training. Figure 4 shows the participants, facilitators, and lecturers celebrating the knowledge-sharing experience.



Figure 4. Group photo with participants and facilitators

3.2 Discussion

The Customer Relationship Management (CRM) training conducted at SMKN PP Lembang has made a significant contribution to improving students' understanding of CRM concepts in agribusiness. CRM is a strategic approach that allows businesses to manage interactions with customers, enhance relationships, and optimize business growth. The training introduced students to key CRM principles, such as customer segmentation, value propositions, communication channels, and revenue streams, which will equip them with the knowledge necessary to develop effective business strategies in agribusiness. The importance of CRM education in vocational schools is becoming increasingly relevant, given the rapid digital transformation in the agricultural sector. According to research by Payne and Frow (2005), implementing CRM in agribusiness can significantly improve customer retention and business sustainability. However, a preliminary survey before the training showed that more than 70% of students had minimal exposure to CRM concepts. This indicates that integrating CRM into the vocational curriculum is crucial to prepare students for the demands of modern agribusiness. During the training, students were provided with theoretical knowledge about CRM and were directly involved in practical applications. As explained by Mitra (Mitra, 2024), experiential learning plays a vital role in reinforcing theoretical concepts, as it allows students to analyze, evaluate, and implement CRM strategies in real-life business scenarios. The mentoring process carried out by the facilitators during the training ensured that students properly understood and applied each CRM element in an agribusiness context. This is in line with research by Ioannou (Ioannou and Retalis, 2025), which highlights that effective mentoring significantly enhances students' business planning abilities. The results of the training demonstrated a positive impact on students' competencies. The 27% increase in post-test scores indicates that the training was highly effective in improving students' understanding of CRM. This knowledge will not only benefit students academically but will also equip them with essential business skills to support entrepreneurial initiatives after graduation. The training was also designed to help students recognize business opportunities and apply CRM to strengthen customer relations, ensuring long-term business sustainability.

The CRM training program is not only beneficial for students but can also be applied to small agribusiness enterprises (SMEs) and farmer groups to help them optimize their customer management strategies. As stated by Zhang and Wu (2016), CRM is an essential tool for increasing competitiveness in the agricultural sector, particularly in ensuring better communication with customers, effective distribution channels, and stronger value propositions. Overall, this community service program has successfully empowered students with essential CRM knowledge and practical skills. However, some students suggested more hands-on training with CRM software in future programs. To further enhance learning effectiveness, future programs should include more interactive case studies, direct engagement with agribusiness practitioners, and hands-on CRM software training. By incorporating these elements, CRM education can play a critical role in shaping future agribusiness professionals, ensuring that they are well-equipped to navigate the complexities of modern agribusiness management.

4 | CONCLUSION

This community service program has demonstrated that integrating Customer Relationship Management (CRM) training into vocational education can significantly improve students' knowledge and readiness for agribusiness careers. The 27% increase in post-test scores reflects a measurable enhancement in student comprehension, particularly in the areas of customer segmentation, digital marketing, and CRM tools. Practically, this program model can be replicated in

other vocational schools to strengthen entrepreneurship education with a customer-oriented mindset. Schools can adopt similar training frameworks using the Participatory Action Research (PAR) approach combined with Asset-Based Community Development (ABCD) to leverage students' existing strengths and contextual knowledge. To scale this initiative, schools are encouraged to incorporate CRM software such as Zoho CRM, HubSpot, or Salesforce Education Cloud, allowing students to gain hands-on experience with industry-standard platforms. In addition, involving local agribusiness actors such as smallholder farmers, cooperatives, or agritech startups—as guest speakers or collaborators in project-based learning could enrich the learning experience and foster industry linkage. For future development, this program could be expanded to include longer-term mentoring, CRM simulation tools, and real-world case studies to improve retention and application. The success of this activity provides a solid foundation for advancing CRM-based entrepreneurial education across vocational institutions.

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