

Development of the DriMe (Drive in Merauke) Application Based on Community Participation to Support Sustainable Business Management and Service Marketing for Courier and Driver Operators

(Pengembangan Aplikasi DriMe (Drive in Merauke) Berbasis Partisipasi Masyarakat untuk Mendukung Manajemen Bisnis Berkelanjutan dan Pemasaran Jasa bagi Operator Kurir dan Pengemudi)



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Abstract: Informal transport services in Merauke face challenges in business management, service promotion, and digital access. A growing tension has emerged between existing app-based platforms and manual systems operated via WhatsApp, particularly regarding inconsistent fare structures and lack of transparency. This community service program addresses these issues by empowering local couriers and drivers through digital innovation. The objective is to develop and implement the DRIME application to improve operational efficiency, unify fare systems, and strengthen community-based digital literacy. Using a Participation Action Research (PAR) approach, the study involved drivers and couriers from the initial needs assessment through application design, testing, training, and evaluation. The program produced three mobile applications and one admin website. Training reached 48 participants, and participatory evaluation led to feature improvements, such as automated tax deduction and the official launch of the application on the Play Store.

Keywords: application; community participation; development; management; sustainable business.

Abstrak: Jasa transportasi informal di Merauke menghadapi tantangan dalam manajemen bisnis, promosi layanan, dan akses digital. Ketegangan yang meningkat telah muncul antara platform berbasis aplikasi yang ada dan sistem manual yang dioperasikan melalui WhatsApp, khususnya terkait struktur tarif yang tidak konsisten dan kurangnya transparansi. Program pengabdian kepada masyarakat ini mengatasi masalah tersebut dengan memberdayakan kurir dan pengemudi lokal melalui inovasi digital. Tujuannya adalah untuk mengembangkan dan mengimplementasikan aplikasi DRIME guna meningkatkan efisiensi operasional, menyatukan sistem tarif, dan memperkuat literasi digital berbasis masyarakat. Dengan menggunakan pendekatan Penelitian Aksi Partisipatif (PAR), studi ini melibatkan pengemudi dan kurir mulai dari penilaian kebutuhan awal hingga desain aplikasi, pengujian, pelatihan, dan evaluasi. Program ini menghasilkan tiga aplikasi seluler dan satu situs web admin. Pelatihan menjangkau 48 peserta, dan evaluasi partisipatif menghasilkan peningkatan fitur, seperti pemotongan pajak otomatis serta peluncuran resmi aplikasi di Play Store.

Kata kunci: aplikasi; bisnis berkelanjutan; manajemen; partisipasi masyarakat; pembangunan.

Introduction

Merauke, as one of Indonesia's strategic regions located at the easternmost point of the archipelago, presents a unique social and economic dynamic. Amid the growing public demand for transportation and delivery services, informal sectors such as local couriers and drivers play



a crucial role in supporting daily mobility and economic activity.

However, entrepreneurs in this sector continue to face various challenges, including limited access to technology, low levels of digital literacy, underdeveloped business record-keeping systems, and a lack of sustainable marketing strategies. On the other hand, the advancement of digital technology offers significant opportunities to improve the efficiency and competitiveness of local businesses (Kreuzer et al., 2022). The DriMe (Drive in Merauke) application was designed as a community-based digital platform aimed at addressing these challenges. Through a collaborative approach involving academics, local communities, and transport service providers, DriMe is expected to serve not only as a tool to facilitate access to courier and motorcycle taxi services, but also as a means to strengthen the long-term capacity of these businesses.

Community participation is a key element in the development of this application. By directly involving both users and service providers in the design and implementation process, DriMe is expected to be more relevant to local needs, foster a sense of ownership, and encourage innovation based on real-life experience. This community service initiative also serves as a medium for knowledge transfer, digital literacy enhancement, and inclusive local economic empowerment. Recent scholarship emphasizes that community engagement improves contextual fit, legitimacy, and long-term sustainability in digital innovation, especially when local actors are involved as co-creators rather than passive recipients (Anthony Jr. et al., 2024)

To ensure that the application genuinely reflects the lived realities of its users, the development process was grounded in the principles of Participation Action Research (PAR). This approach positions community members as co-creators in every phase of the initiative, from problem identification to solution design and evaluation. The importance of PAR in community service initiatives has been widely documented, particularly for strengthening contextual relevance, shared ownership, and actionable learning in collaborative innovation processes (Dedding et al., 2021). Previous studies have documented the use of the Participation Action Research (PAR) method in improving the quality of digitally based micro, small, and medium enterprises (MSMEs). A similar approach was also applied in the development of the Trash Management application. The PAR method has likewise been used in the context of rural tourism development. Moreover, this approach is not limited to projects in Indonesia; it has also been implemented in international initiatives. At the same time, recent reviews note that participatory digital interventions often suffer from heterogeneous implementation and weak reporting, which makes evaluative rigor and transparent documentation especially important (Doerwald et al., 2024).

The objective of this community service activity is to develop DriMe as a courier and driver platform that is community-driven and responsive to the needs of Merauke's population. The program aims to improve the capacity of informal transport entrepreneurs in managing their businesses digitally, including transaction recording, customer service, and business promotion. In addition, the initiative seeks to facilitate training and mentoring for the local community to enable independent and sustainable technology adoption. Through strengthened collaboration between universities, communities, and local business actors, the development of DRIME is expected to create a transport service ecosystem that is inclusive, adaptive, and directly contributes to improving community welfare.

Despite the growing literature on participatory innovation and community-based digital interventions, at least three gaps remain relevant to the present study. First, evidence is still limited on participatory platform development for informal transport workers in peripheral regions. Second, many intervention reports emphasize implementation stages but provide limited explanation of measurable outcomes and reporting standards. Third, the transport sector continues to face digital inclusion challenges, especially regarding usability, accessibility, and the alignment of digital systems with local service practices (Durand et al., 2023; Pucci et

al., 2025). Accordingly, this study contributes by documenting the participatory development of the DriMe platform in Merauke while also emphasizing training, early outcome evaluation, and community-grounded feature refinement as part of a more explicit evidence-based narrative (Anthony Jr. et al., 2024; Opola et al., 2025).

Methods

This community service initiative employed the Participation Action Research (PAR) approach, a participatory research method that integrates inquiry with concrete action to generate socially relevant and sustainable change. PAR positions the community as active agents throughout all stages of the program, including problem identification, solution planning, implementation, and outcome evaluation(Arsyad et al., 2023). In the context of developing the DriMe (Drive in Merauke) application, PAR was applied to ensure that the design and implementation of the digital platform genuinely reflected the needs, aspirations, and lived realities of local transport service providers, particularly couriers and motorcycle taxi drivers. This process was carried out through a series of participatory activities such as focus group discussions, needs assessments, co-design workshops, field trials, and community-based reflection sessions. Through PAR, the initiative not only produced a technological product in the form of a mobile application but also strengthened community capacity in digital literacy, business management, and service marketing. The approach fostered collaboration among academics, service providers, and users, contributing to the creation of an inclusive, adaptive, and sustainable transport ecosystem. This operationalization is consistent with recent PAR scholarship that highlights collaboration, reflexivity, and transparent reporting as central requirements for participatory studies involving digital innovation (Dedding et al., 2021; Feekery, 2024; Weirauch et al., 2026)

The PAR stages in this program included (1) identifying and mapping community needs through field observations and open discussions with courier and motorcycle taxi operators, (2) co-planning digital solutions by involving community members in designing the features and workflow of the DriMe application, (3) implementing the application, conducting field trials, and delivering training sessions, and (4) facilitating participatory reflection and evaluation to assess the application's effectiveness and its impact on business operations and service promotion. This sequence is aligned with current recommendations for participatory digital intervention development, which stress the need to document the context of participation, the forms of stakeholder engagement, and the criteria used to assess intervention outcomes (Doerwald et al., 2024; Messina et al., 2025). This community service program therefore aims not only to deliver contextually appropriate technological innovation but also to enhance the autonomy and resilience of the Merauke community in navigating the challenges of the digital economy by adopting the PAR approach.

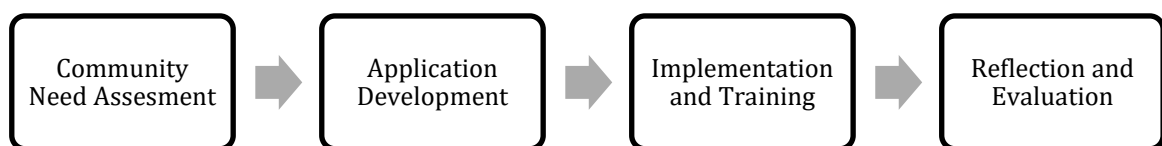


Figure 1. Step of Implementation

Results

The implementation of this community service program, which adopted a participatory approach through the development of the DriMe(Drive in Merauke) application, generated a series of structured and impactful outcomes.

Community Needs Assessment

In July 2025, the project team conducted eight structured field surveys aimed at

capturing the lived experiences and operational realities of courier drivers and vendor partners in Merauke. These surveys served not only as instruments for data collection but also as participatory platforms that enabled stakeholders to articulate the core challenges they faced. The findings revealed a range of issues, including inconsistent fare systems, limited access to digital tools, and growing tensions between manual service coordination via WhatsApp and the emergence of commercial app-based platforms. Participants also conveyed their expectations for a digital solution that would be transparent, locally adaptable, and capable of enhancing service coordination and income stability.



Figure 2. Survey as Community Need Assessment Stage

Digital Application Development

Drawing upon the insights gathered during the needs assessment, the development phase was carried out throughout August 2025. This stage involved close collaboration between the technical team and community representatives to ensure that the resulting digital tools were contextually appropriate and user-friendly. The process resulted in the creation of three distinct mobile applications, each designed to meet the specific needs of drivers, service users, and vendor partners. Additionally, a web-based administrative platform was developed to support system oversight, transaction monitoring, and data management. These digital products underwent iterative testing with local partners to refine their functionality and ensure alignment with community expectations.



Figure 3. Digital App Development Stage

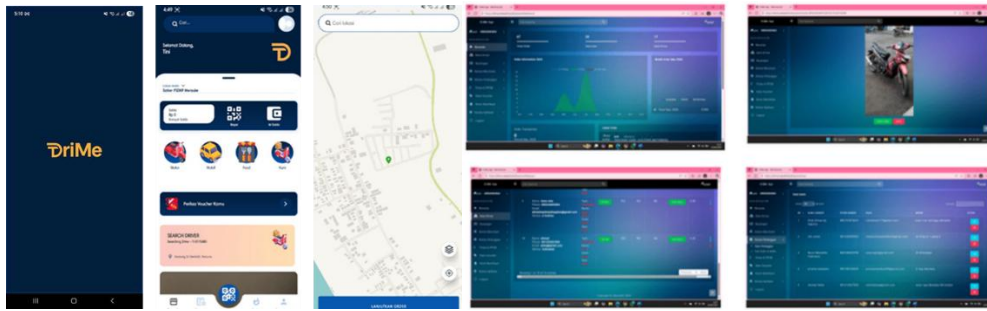


Figure 4. Digital App

Implementation and Training

Throughout September 2025, the implementation phase focused on equipping stakeholders with the necessary skills and knowledge to effectively adopt and operate the DRIME application. Training sessions were delivered to six administrative team members representing partner organizations. These sessions covered system navigation, fare configuration based on collective agreements among drivers and couriers, and basic troubleshooting techniques. Further training was extended to a broader group of 48 participants, including drivers, couriers, and service users from diverse backgrounds. The objective of these sessions was to promote inclusive digital literacy, enhance operational readiness, and foster a strong sense of ownership and accountability within the user community. In line with community-based digital training studies that use pretest-posttest logic to assess readiness and learning gains, the training outcome in this manuscript should be interpreted not only descriptively but also through measurable score changes between the pretest and posttest phases (Miller et al., 2024).



Figure 5. Implementation and Training Stage

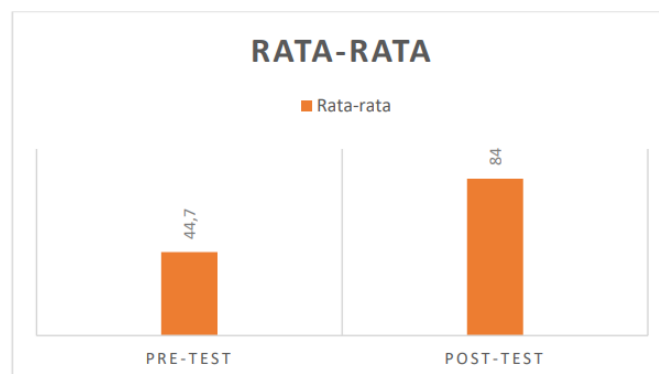


Figure 6. Post Test-Pretest Result

Descriptive evaluation of the training outcomes indicates a substantial improvement in participant scores. The mean pretest score was 44.7, while the mean posttest score increased to 84.0, showing an absolute gain of 39.3 points. This corresponds to an increase of approximately 87.9% relative to the initial average score. These results suggest that the implementation and training phase contributed meaningfully to participants' digital understanding and operational readiness in using the DriMe application. Because the manuscript currently documents only the average scores presented in Figure 6, this study reports the pretest-posttest outcome as descriptive statistical evidence; inferential testing such as a paired-samples t-test or Wilcoxon signed-rank test should be added if the individual-level score data remain available.

Participatory Reflection and Evaluation

Following the initial implementation, a participatory reflection and evaluation session was conducted with members of the user community. This session provided a structured forum for assessing the effectiveness of the application and gathering constructive feedback on its features. Participants proposed several enhancements, including the integration of an automatic tax deduction feature to streamline financial reporting and compliance. In response to this input, the development team implemented targeted improvements. The refined version of the DriMe application was subsequently published on the PlayStore, marking a significant milestone in the project's commitment to community-driven digital transformation.



Figure 7. Monitoring and Evaluation Stage

Discussion

This community service initiative was guided by the principles of Participation Action Research (PAR), which integrates inquiry with action to produce socially embedded and sustainable change. The original objective was to empower informal transport workers in Merauke through the co-development of a digital platform that reflects their operational realities and aspirations. The results demonstrate that this objective was achieved through a series of participatory stages, each contributing to both technological innovation and social transformation.

The needs assessment phase, involving eight field surveys, directly addressed the research question of what challenges and expectations exist within the local transport community. Scientifically, this phase validated the PAR principle that knowledge is best constructed through dialogue and lived experience. The tension between manual WhatsApp-based coordination and commercial app platforms revealed a gap in digital equity and trust, which the DriMe initiative sought to bridge. This finding is in line with studies showing that meaningful participation improves the identification of community requirements and supports more socially sustainable innovation processes (Anthony Jr. et al., 2024; Dedding et al., 2021).

The application development phase responded to the question of how digital tools can

be designed to reflect community needs (Mehdipour et al., 2025). The iterative and inclusive design process aligns with findings that community involvement in technology development enhances system relevance and adoption. The creation of three mobile applications and one admin website illustrate how co-design fosters ownership and accelerates validation, particularly when users are involved in interface layout, fare logic, and service simulation. Similar evidence from digital participatory platform studies indicates that iterative co-design improves usability, contextual relevance, and acceptance among intended users

The implementation and training phase addressed why capacity-building is essential for sustainable digital transformation. Training 48 participants across stakeholder groups not only transferred technical skills but also cultivated a shared understanding of digital workflows and economic potential. Descriptively, the average participant score increased from 44.7 in the pretest to 84.0 in the posttest, equivalent to an absolute gain of 39.3 points or an increase of about 87.9%. This pattern indicates a strong practical improvement in participants' readiness to use the application, even though the present manuscript can only report descriptive statistics because the dispersion measures and individual-level scores required for inferential testing are not yet presented. The reflection and evaluation phase provided insights into how communities interpret and improve digital systems. Feedback such as the request for automatic tax deduction features demonstrates that users are capable of shaping innovation beyond initial deployment. This also resonates with research demonstrating that digital literacy training can strengthen users' confidence and functional readiness to adopt technology in community-based settings (Sierra-Martínez, 2025).

Theoretically, the DriMe initiative reinforces PAR's core tenets: co-production of knowledge, disruption of researcher–subject hierarchies, and empowerment through action. It also contributes to the literature on community-based technology development by showing that informal workers, often excluded from digital ecosystems, can become co-creators of context-sensitive innovation. Compared to previous studies, DriMe's emphasis on transport service providers as design partners marks a shift from passive adoption to active authorship. While many digital inclusion efforts focus on access, this initiative demonstrates that design agency is equally critical. The integration of local fare logic and service ethics into the app's architecture is a novel contribution that distinguishes DRIME from top-down digital interventions. In this respect, the present study also speaks to broader debates on digital inclusion by showing that socially inclusive innovation depends not only on infrastructure or access, but also on participation in design, governance, and adaptation to local practice (Rijal, 2023).

Implications extend beyond Merauke. The model can inform future community service programs targeting informal sectors, especially in regions where digital infrastructure is uneven. Future research may explore longitudinal impacts of DRIME on income stability, service quality, and community cohesion, as well as its adaptability to other service domains such as agriculture or health. DriMe App initiative exemplifies how PAR can be operationalized to produce both technological and social outcomes. It affirms that digital transformation is most effective when rooted in community agency, iterative learning, and cross-sector collaboration. Future implementations would also benefit from more standardized reporting of stakeholder participation, intervention refinement, and evaluation indicators, as recommended in recent participatory digital intervention guidelines.

Conclusion

This section presents a summary of the main research findings and/or the outcomes of research-based activities implemented with partner institutions or target communities, with a focus on the changes, benefits, or improvements achieved. Describe how the research-based approaches or interventions contributed to addressing the identified problems, enhancing capacity, efficiency, or providing new insights for the partners or target communities. The

conclusion section may also include relevant recommendations for the development of future research or for strengthening the implementation of similar programs in comparable partner or community contexts.

This community service initiative focused on developing the DriMe (Drive in Merauke) application was successfully implemented using the Participation Action Research (PAR) approach, which positioned the community as active partners throughout every stage of the program. The direct involvement of drivers, couriers, and vendor partners from the outset was a key factor in the success of this participatory process. Through dialogue, surveys, and collective reflection, the community's real needs were effectively identified and used as the foundation for designing a relevant and context-sensitive technological solution.

The application was developed collaboratively and resulted in three mobile applications, each tailored for drivers, service users, and vendor partners, along with one administrative website for system management. Training and mentoring provided to admin teams, partners, and users helped strengthen the community's capacity to adopt technology independently and productively. A participatory evaluation conducted at the end of the program generated several important suggestions, which were promptly addressed through feature improvements and the public launch of the application.

This initiative demonstrates that the PAR approach can be effectively applied in the development of community-based technology. The DRIME application functions not only as an operational tool but also as a representation of the empowerment process of the Merauke community, achieved through cross-sector collaboration, enhanced digital capacity, and the integration of sustainable local knowledge.

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Conflict of Interests

The authors declare no conflict of interest.

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