DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

Waste Bank Digitalization: Towards a Waste-Free Meruya Selatan Village

Digitalisasi Bank Sampah: Menuju Kelurahan Meruya Selatan Bebas Sampah

Yulis Alfia *[1], Puji Rahayu[2], Suzan Bernadetha Stephani[3]
[1,2,3] Universitas Mercu Buana
E-mail: yulis.diana@mercubuana.ac.id[1], puji.rahayu@mercubuana.ac.id [2], suzan.bernadetha@mercubuana.ac.id [3]

Abstract

This Community Service activity aims to improve the effectiveness of waste bank management through a mobile-based application in Meruya Selatan Village. A participatory action research approach is used to design and implement applications that can improve transparency, efficiency, and effectiveness of management through community involvement. The involvement starts from the planning and design stages of the application system. Socialization activities were part of the pre-implementation activities aimed at exploring user knowledge and capabilities, as well as evaluating the pre-design of the system. The survey results confirmed the level of intention to use gadgets among the community, the importance of 4R education, and the need for scheduling waste pickup to support the effectiveness of waste bank management. The evaluation results were analyzed and used as the basis for developing business process system designs and digital applications as part of the action of this PKM program. The expected contribution of this activity is the formation of an appropriate management digitization system that can be used by the community in answering the objectives of economic and environmental benefits.

Keywords: *Waste Bank Unit Management, Mobile-based Application, Economic Benefits, Participatory Action Research.*

Abstrak

Kegiatan Pengabdian kepada Masyarakat ini bertujuan untuk meningkatkan efektivitas pengelolaan bank sampah melalui aplikasi berbasis mobile di Kelurahan Meruya Selatan. Pendekatan penelitian aksi partisipatif digunakan untuk merancang dan mengimplementasikan aplikasi yang dapat meningkatkan transparansi, efisiensi, dan efektifitas pengelolaan melalui keterlibatan masyarakat. Keterlibatannya dimulai dari tahapan perencanaan dan perancangan sistem aplikasi. Kegiatan sosialisasi merupakan bagian dari kegiatan pre implementasi yang ditujukan untuk mendalami pengetahuan dan kemampuan pengguna, serta mengevaluasi pra desain sistem. Hasil survei mengkonfirmasi tingkat intensi penggunaan gawai di kalangan masyarakat, pentingnya edukasi 4R, dan perlunya penjadwalan penjemputan sampah untuk menunjang efektifitas pengelolaan bank sampah. Hasil evaluasi dianalisis dan dijadikan dasar pengembangan desain sistem proses bisnis dan aplikasi digital, sebagai bagian aksi dari program PKM ini. Kontribusi yang diharapkan dari kegiatan ini adalah terbentuknya sistem digitalisasi pengelolaan yang tepat dan dapat digunakan oleh masyarakat dalam menjawab tujuan manfaat ekonomi dan lingkungan.

Kata kunci: *Pengelolaan Bank Sampah Unit, Aplikasi Berbasis Mobile, Manfaat Ekonomi, Penelitian Aksi Partisipatif*

1. INTRODUCTION

Urban communities are identified as modern societies characterized by individualism, consumerism, hedonism, practicality, and instant gratification. These patterns lead to common waste problems in urban areas, aside from urban movement and population density (Wiraseptya and Suardi, 2019; Nurlina, 2019). This social picture can be seen in the Bantar Gebang problem (Saragih et al, 2018). Environmental and climate change issues have been widely discussed in recent times. Several efforts and concepts have been proposed to address these issues, such as the implementation of a zero-waste lifestyle (Alfia and Tarmidi, 2023) or the concept of a circular

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

economy (Nikmatul et al., 2022; Arifin et al., 2021). Paradigmatically, *zero waste* is not only about managing waste, such as recycling plastic waste into ecobricks (Munadian et al., 2024); but how households can be managed from upstream to downstream (Alfia and Tarmidi, 2023), so that the goal of being free of waste (toxic) can be achieved. Waste is not just about *garbage*, but includes systems (processes) that are not environmentally friendly, resources and products that are not toxic-free (Alfia and Tarmidi, 2023). Achieving the ideal management goal requires a long time and the right management system, and cannot be done individually, except through a systemic effort. However, small and partial efforts are necessary to get there.

The Minister of Environment and Forestry Regulation (Permen KLHK) Number 14 of 2021 concerning Waste Bank Management aims to encourage comprehensive upstream to downstream waste management with a circular economy approach. This concept is expected to provide economic benefits in addition to environmental ones. The waste bank itself is a social engineering effort to encourage the community to sort household waste so that the effectiveness of the 3R (Reuse, Reduce, and Recycle) approach can be achieved (Lobes et al., 2024), and reducing waste accumulation in landfills and avoiding greenhouse gas emissions (Kustiasih et al., 2014).

The Administrative City of West Jakarta is one of the cities in DKI Jakarta Province that already has waste management and recycling businesses. Their value is still very low at 1.13%, and the amount of waste management and recycling production has decreased from 1.13% in 2018 to 0.57% in 2022 (BPS, 2023). This decrease may be due to poor upstream waste management, the inefficient operation of waste banks, and not by a decrease in the amount of waste. This is also shown in the data that the transported waste from 2021 to 2023 increased by 9.1% in 2022 and by 33.6% in 2023 (BPS, 2024; BPS, 2023; KLHK Ditjen PSLB3). On the other hand, the KLHK's SIPSN (National Waste Management Information System) shows data on waste collection of 11.25 million tons in DKI Jakarta during the 2019-2023 period. Based on Table 1, it is known that the Administrative City of West Jakarta has the second-highest waste collection (KLHK Ditjen PSLB3). So, existence requires a joint solution.

Table 1. Waste Collection in DKI Jakarta in 2023

Administrative City/Regency	Daily Waste Collected (tons)	Annual Waste Collected (tons)
Adm. Regency of Kep. Seribu	18.18	6,634.27
Adm. City of Central Jakarta	852.72	311,242.80
Adm. City of North Jakarta	1,382.36	504,560.46
Adm. City of West Jakarta	2,049.69	748,135.24
Adm. City of South Jakarta	1,971.13	719,463.79
Adm. City of East Jakarta	2,333.18	851,611.46

Source: SIPSN KLHK 2023

The Meruya Selatan Village in Kembangan Subdistrict, West Jakarta, has implemented a Waste Bank program gradually (Stephani et al., 2022). This management is overseen by the Village Economic and Development Section. According to the provisions of Permen KLHK Number 14 of 2021, the waste bank in the village area is managed in each Neighborhood Association (RT/RW) by forming BSU (Waste Bank Unit). Meruya Selatan has 11 RWs and 23 BSU groups managed by the community. The existing BSUs have partnerships with the BSI (Main Waste Bank) under the West Jakarta City Government.

Based on the situation analysis survey, several problems were encountered. First, the management is still voluntary (self-help), does not have a clear management system including evaluation and control. Second, residents do not have a binding obligation to save their waste, and

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

there is a lack of transparency of BSU data and information to residents. Third, for the urban village, reporting and evaluation issues are not well coordinated and recorded. The solution to this problem can be overcome by applying the right information system (Fitriani, Rahayu et al., 2016). Based on the above problems, the focus of the objectives of this PKM activity is to create a *mobile-based* BSU application program. The application is expected to improve the management system, data and information. The *mobile* system is expected to increase people's intention to save waste (Rahayu et al., 2020).

2. METHOD

The approach in this research and community service is Participatory Action Research (PAR), a model that connects research processes with social change. PAR aims to define a problem and apply information into action as a solution to the defined problem (Boari et al., 2024 and Afandi et al., 2022). The PAR paradigm emphasizes collaboration, active involvement, and joint action. The use of PAR may provide better support for program sustainability, since the development of systems and application programs designed together with the community, it will be more appropriate in responding to the needs and characteristics of the users. There are four stages in the implementation of this activity: planning, implementation, analysis, action, and sustainability of action (Boari et al., 2024).

Determining the theme and collecting secondary statistical data are part of the initial planning of this activity. In the planning stage, the research and community service team identifies the problem or issue being investigated by gathering supporting data, such as statistics related to waste and its management, as well as data on the existence of waste bank units (BSU) in the urban village area. The research team determines relevant collaborators, in this case, the urban village authorities (as partners), the Kembangan Sub-District KLHK officials, and several managers of the 19 BSUs in the Meruya Selatan Urban Village. Together with the collaborators, the team discusses and conducts interviews to identify the specific issues faced to develop a framework and select appropriate methods for organizing collaboration with the community. This stage aims to understand the community situation (Afandi et al., 2022).

Implementation is carried out in two stages: socialization and system implementation training. In this part of the article, only the socialization stage will be discussed. The socialization stage aims to collect data through various participatory methods, by gathering community members as holders and managers of BSUs. Data is obtained through interviews, observations, and the completion of questionnaires with semi-open questions. The purpose of this socialization is to ensure and understand the details of the system and technical problems faced by the community in the field, which according to PAR theory is part of the "to understand" stage (Affandi et al., 2022). Some of the questions raised are related to the general understanding of waste and its management; the waste bank unit; the use of mobile-based applications; as well as specific problems faced both by customers and managers and their future expectations.

Based on the results of the socialization, an evaluation will be conducted through system analysis and design processes to determine appropriate actions. The action in this case is to develop a mobile-based BSU application. System evaluation and analysis are related to the needs of the system environment, determination of technical specifications, interface design, urgency of waste management and sorting education materials, and cost evaluation. The action method was determined in accordance with the stages of the system development cycle (Romney et al., 2015) including determining the maintenance and system development scheme in the long term for the sustainability of actions (not discussed in this article). Table 2 is presented below to summarize the stages of the method.

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

Table 2. Method Details

No	Stages	Activity Details	The Partisipants	Result
1	Planning	Initial observation	The head of Meruya Selatan Village	Problem Determination
		Situation Analysis	Kasie Ekbang Kelurahan	↓
		Theme Determination	KLHK Kembangan	Theme Determination & Alternative Solution Offered
		Observation	BSU Managers & Society	↓
2	Execution/Implementation	Seminar	Society	Socialization of BSU Digitalization Program
		Survey	BSU Managers	↓
				Feedback and Program Planning & System Development Evaluation
				↓
3	Analysis & Evaluation	Group Discussion	Research & Community Service Team	Business Process System Design
			Kasie Ekbang Kelurahan	↓
			KLHK Kembangan	Application program preparation

Source: As referenced in Boari (2024)

3. RESULTS AND DISCUSSION

The determination of the theme of this PKM program based on Alfia and Tarmidi's (2023) previous study on zero waste household management in the context of implementing green managerial accounting shows the results that there are several stages related to zero waste management. These stages include changing the paradigm; simplifying and decluttering; and recording. It takes a process and enough time to change and form a person's awareness of zero waste behavior. The waste bank social engineering process can encourage people's habits to care about their waste. Waste management through waste banks is included in the second and third stages of the zero-waste pattern, decluttering and recording. Through the digital implementation of waste banks, it is hoped that it can accelerate the achievement of environmentally friendly and zero waste-oriented living, as programmed by the Government through existing statutory provisions.

This program refers to the PKM activities of Stephani, Arief, and Sulistyowati (2022) on the concept of a sustainable support management system for the formation and assistance of waste banks in the Meruya Selatan Village area. The activity provides insight and builds management and linkages between waste banks in the village area with the Ministry of Environment & Forestry and Bank Mandiri. Based on this supporting management concept, the research and service team developed a more appropriate system design to be implemented in waste bank management.

The plan to use mobile-based in the development and implementation of this digital application system refers to Fitriani, Rahayu, et al. (2016) on citizen's behavioral intention to use smart city system (QLUE) based on the extended social cognitive theory (SCT) model. The research shows that behavioral intention is influenced by affection and social influence. The community's high affection for the use of gadgets is the basis for its development. Through the use of digital technology, it is expected to increase the affection of the community to participate and encourage their awareness to manage their waste through BSU. In addition, the development of a waste management system, Rahayu, et al. (2020) in their research provide recommendations in the use of information technology related to waste management in the context of medical waste during Covid 19 occurred. The use of information technology in BSU management in the RT/RW

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

neighborhood is expected to provide a database for waste mapping and management.

Program planning began by raising the issue of themes in a discussion forum with partners, namely the Head of Meruya Selatan Village and several village officials; conducting interviews with the village community and BSU managers; conducting field observations of waste weighing and depositing; and technical discussions (technical meeting) with the Head of the Economy and Development Section of Meruya Selatan Village and the Head of KLHK in the Kembangan area of West Jakarta. Based on initial meetings and discussions with village officials, Pak Lurah conveyed the problems that exist in the BSU management system:

> "We already have many waste banks, but the recording is still manual. The obstacle is when recapitulating the data, there is always a difference, and it is troublesome to have to repeat the calculation. Although it is not much, it is the right of the community. One more thing that is problematic is the scheduling of waste weighing with BSI, which needs to be arranged" (discussion on March 15, 2024).

The head of KLHK Kembangan stated that waste management and waste banks at the city level already have their own information system that recapitulates the amount of waste generated, the number of BSUs and BSIs, the amount of managed waste and so on. However, the database at the kelurahan or kecamatan level does not yet exist, as stated by the Kasie Ekbang Kelurahan as follows:

> "Will the digitalization of the waste bank allow us to know the mapping of waste in the kelurahan, for example the amount of waste or the type of waste... We need that data, because so far the data cannot be recorded properly" (discussion with KLHK Coordinator Kembangan 2 May 2024).

Separate interviews were also conducted with residents, both customers and non-customers. There were responses indicating low enthusiasm and solidarity of residents in saving waste. This can be confirmed from the rough data provided by the Head of the Economic and Development Section of Meruya Selatan Urban Village, where there are 19 active BSUs operating in 11 neighborhood units (RW) with an average number of customers per BSU being 30-50 customers. Whereas, the total population of Meruya Selatan Urban Village in 2023 is 42,455 people (BPS, 2024). The number of registered customers is relatively low compared to the total population. Here is an excerpt from an interview with one of the community members:

> "I am not a holder, because I think that the waste collection mechanism is not effective, sometimes it is difficult to align schedules with the BSU manager at the household level, and the waste storage space is limited. So, I prefer to give my (dry) waste to scavengers, as a kind of donation. Besides, I sometimes feel uneasy because in this area there are waste collectors who have already received waste from residents. Another problem with the household level management is the difference of opinion, and we often do not know how much waste has been deposited and how much money has been earned. Although here, the waste savings are used collectively for village needs, like buying uniforms for household level groups or for other social activities, it's uncomfortable if it's not transparent even though there are results." (Mrs. DY, resident of RW 002, interview on March 16, 2024).

In addition to the provision where saving waste is not binding and residents still have the freedom to dispose of their daily waste without having to sort it first, the above interview results can be part of explaining the limitations for residents not to sort and save their waste through BSU. Although it is possible that different problems can be found in other residents, this situation can sufficiently explain why BSU has not been running efficiently. This was also underlined by one of the active BSU managers, Mrs. RS.

> "Residents awareness is still lacking, many still do not understand about waste segregation. I myself hope that there will be a reduction in waste in the kelurahan through the utilization of waste banks. We are also waiting for example for a program or application that can help facilitate our work, so we don't have to wait anymore for the weighing results, we can immediately know the amount of savings". (interview July 22,

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

2024, RPTRA Mahkota Meruya Selatan)

Based on Mrs. DY's statement above, besides the issues of individual awareness and solidarity, data and information transparency are an issue that hinders residents from saving in BSU. In the study of management and information systems, data issues, transparency, and information access can be resolved through system development (Romney et al., 2015) which will ultimately drive changes and improvements in management (Hall, 2013). These improvements ultimately become a platform that is planned to encourage the effective use of BSU.

BSU managers are the main collaborators in running the waste bank units at the neighborhood level. Based on field observation data, BSU is managed and formed based on joint policy and deliberation among neighborhood units. In several neighborhood units, BSU is formed based on the existence of household-level groups or voluntary groups of community members. The problems faced by managers include the low level of community understanding about the types and methods of waste sorting; storage space issues; and management issues, such as limited human resources, difficulty in scheduling waste deposits and weighing from customers, and human error in recording. Based on the observation results, it was found that recording is done manually during the weighing process between BSU and BSI Cengkareng, which includes the recap of waste deposits from each customer, including name, type of waste, weight, and price (Figure 1).

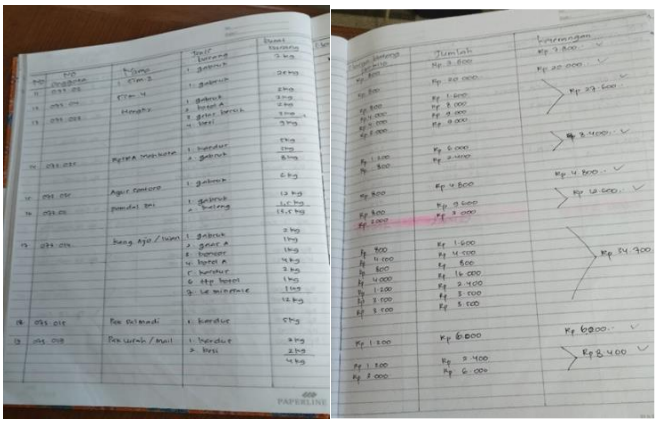

Figure 1. Recapitulation Book of Waste Deposit and Weighing

For this process, waste must be properly separated according to its type. After that, the waste is transported, and each party verifies the record's accuracy until BSI sends an invoice within 24 hours (Figure 2). When the invoice is sent via WhatsApp, BSI also transfers funds to the BSU according to the verified value. Based on the recap notes made by the BSU management admin, a record is then made in each customer's savings book, which is brought and kept by the manager. In the customer's savings book, the amount after a certain deduction by the manager will be listed (Figure 3).

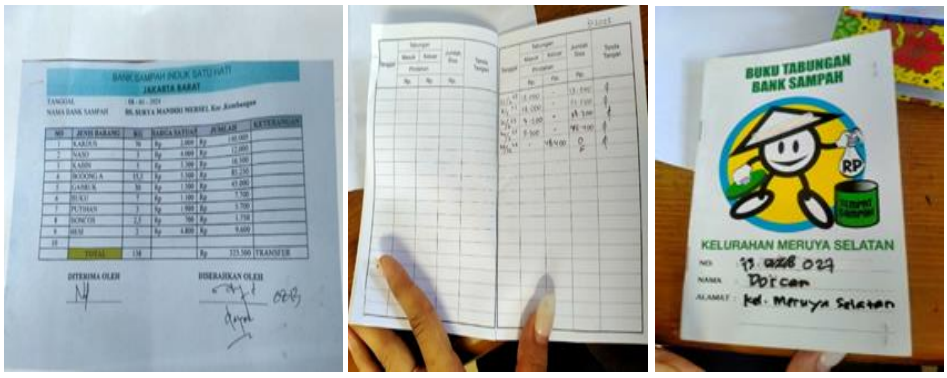

Figure 2 and 3. The invoice from BSI and the customer's savings book.

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

Based on the observation results, it can be analyzed that the use of manual recording can cause issues during the synchronization of internal reporting data or with the data recorded in the customer savings books, especially related to the calculation of the rupiah amounts. This was an issue raised during the initial discussion of ideas and themes. Manual recording leads to inefficiency, longer time consumption, and is prone to errors, as it is conducted simultaneously with the weighing process. On the other hand, limited resources must also be taken into consideration, as BSU managers are voluntary. Delay between the weighing process and the receipt of invoices and payments poses a risk. The issues of resource limitations, time efficiency, and data errors are part of the concerns for developing an information system to address management and service constraints.

The final discussion session in the program planning stage was held with the Head of the Economic and Development Section of Meruya Urban Village and KLHK officials from the Kembangan Jakarta Barat region. This meeting discussed the clarification of objectives, identification of the environment and positioning of BSU management within the sub-district – city environment, and its connection with BSI, as well as the technical specifications plan for program application development. The goal of this discussion was to align perceptions so that the plan for implementing the BSU application in Meruya Selatan Urban Village could be consistent with the program already run by KLHK in the city area. The result of this stage was the program planning for the BSU application, which was outlined in the initial system design and presented during the socialization of the Mobile-Based Waste Bank Unit Application to Improve Environmental and Economic Quality of the Community, named Bank IMAM. Bank IMAM is an acronym for Meruya Selatan Unit Waste Bank.

The socialization was carried out on July 22, 2024 at RPTRA (Child Friendly Open Public Space) Mahkota, Meruya Selatan Urban Village. There were several series of events in the socialization activity. The event was attended by Meruya Selatan Urban Village Officials, Vice Rector 2 of Mercubuana University, Head of LPPM (Institute for Research and Community Service) of Mercubuana University, and residents, consisting of PKK representatives, BSU managers, customer residents and the public (Figure 4).

Figure 4. The photo of Socialization of Implementation (Presentation & questionnaire filling)

The material for the BSU application system development plan was prepared based on the results of observations, discussions, and interviews with collaborators that have been described previously. The draft system design was prepared as an initial process to provide an overview in this socialization activity. The aim was to provide an overview of the Bank IMAM application, to find out how much the residents reacted, and to get more input from the participants. In addition to the material presentation, the PKM team conducted interviews, questions and answers, and distributed questionnaires. Based on the feedback obtained from the participants, the team will narrow down and finalize the design of the application program to be developed (Boari et al., 2024).

Based on the results of the survey and interviews, generally it shows, the community understands the missmanaged waste can endanger health and the environment. However, few residents can and do manage their waste properly, such as sorting waste (30%), composting (1%), or avoiding the use of disposable items (1%). Generally, the community understands that the

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

waste bank program can address waste problems, providing additional income, but only few people willing to be a customer. 15% of the attendees are customers and their reasons are solidarity and provide additional income benefit even though at small amount. The remaining 85% stated that they were not customers and still had the desire to become one.

Regarding BSU's digitalization program, the community generally agreed that the use of an application would facilitate transactions. 97% of participants were mobile phone users, 80% of them were users of mobile-based applications, such as gojek or other online shopping. 75% of digital application users stated that they had no difficulties in utilizing them. The active BSU managers stated that the program was viable. Some of the obstacles faced are a lack of personnel (volunteers), not having enough space as a warehouse, ineffective coordination of waste pickup, limited knowledge of residents about sorting waste, complicated administration and recording processes. One of the hopes conveyed by the manager is that with this digitalization, the recording and reporting process can be fast and customers are also not waiting around.

The purpose of developing the BSU application is to encourage public intention to sort and deposit their waste at BSU. This intention is built through the development of a mobile-based application, as the public generally has a high intention of using gadgets (Fitriani et al., 2016). Through gadgets, the customers will be able to access information more easily. The information includes savings transaction data, access to waste weighing information, or educational data about the environment and waste sorting, as well as other service benefits. With this ease of data and information access, customers will feel that their savings data is secured (Dewi and Suyanto, 2022). Based on feedback data obtained during the socialization process, 98% community (both customers and non-customers) are mobile phone users and are already familiar with using mobile-based applications, such as Gojek, Tokopedia, Alfamart, and others. Ease of use in mobile-based applications and information access are among the community's preferences (Siswoyo and Irianto, 2023). This development is expected to increase public awareness and intention to reduce waste, while also providing economic benefits, as intended by legal regulations. Below is the interface of the Bank IMAM application (Figure 5).

Figure 5. Infographics and interface of Bank IMAM

The goal of system design for managers lies in the utility value of the application program (Dewi and Suryanto, 2021). As previously discussed, storage warehouse limitations are a common problem for managers. This application's feature offers a more effective information network, namely a waste pickup feature. Managers can schedule with BSI more effectively, as networking information between BSUs is also possible, thus allowing for more flexible scheduling and waste pickup or weighing between BSU and BSI to be adjusted more effectively and efficiently. So that the manager does not need to store the waste deposited by customers, but is directly sent to BSU through this scheduling. Through proper identification of management needs, as stated by Hikmatullah et all (2024), the implementation of waste bank digitalization will support

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

management efficiency and effectiveness. The problem of citizens' lack of knowledge in sorting waste will be more easily. The application program will provide an educational feature primarily related to sorting waste by type and so on. This will encourage the acceleration of waste-free living (Alfia & Tarmidi, 2023). Citizens can sort their waste more independently and deposit it according to the most updated scheduled day. This will significantly reduce the waste storage problem at BSU.

The recording process during weighing will also be more effectively carried out, as it only requires using the application on a gadget and the results will be automatically obtained and verified by both or three parties, customer – BSU – BSI. Managers only need to record transaction data once through the application form. Through this data input, the savings data will be updated in real-time in the customer's data. Savings recapitulation and necessary reports can be accessed immediately, without repeatedly recording the same data for different purposes. As an addition, to support the ease of data management for managers, the application can also be accessed through the website (mobile-friendly website). Customers, on the other hand, can immediately access their savings data, which will increase customer trust (Siswoyo and Irianto, 2023; Romney and Steintbart, 2013).

4. CONCLUSION

Based on the results of socialization, several evaluation processes were conducted, one of which was related to determining the system's technical specifications, simplifying modules (systems and procedures), and several features. In the next stage, the application system development process will begin in preparation for the subsequent activities, namely training and implementation. This writing is limited to the scope of socialization activities, so the effectiveness of the program cannot be measured yet. Another limitation is the random sample survey, which is not representative of the managers and customers. The PKM team, in this case as the system analyst, needs to examine more details during simulation and implementation, so that the program developed is in accordance with the needs in the field and can be optimally utilized.

ACKNOWLEDGEMENT

The author would like to express sincere gratitude to LPPM Universitas Mercu Buana for their invaluable support throughout this research. Special thanks go to the Kelurahan Meruya Selatan for providing community service facilities and to the Ministry of Education, Culture, Research, and Technology (Kemristekdikti) for their generous funding support through Grant No. 01-1-4/704/SPK/VII/2024. Finally, the author would like to acknowledge the collaboration and partnership among stakeholders.

REFERENCES

Afandi, A., et al. (2022). Metodologi Pengabdian Masyarakat. Direktorat Pendidikan Tinggi Keagamaan Islam, Direktorat Jenderal Pendidikan Islam, Kementerian Agama RI.

Alfia, Yulis Diana and D., Tarmidi. (2023). Akuntansi Manajemen Hijau Untuk Rumah Tangga Bebas Sampah Menggunakan Etnoekologi (Studi Pada Komunitas Green Mommy), *Laporan Akhir Penelitian Internal*, Universitas Mercubuana Jakarta, Jakarta.

Alfia, Yulis Diana and D., Tarmidi. (2023). The Main Step In Zero-Waste Household Management: Environment Management Accounting Perspective, *American Research Journal of Humanities and Social Science (ARJHSS)*, Vol. 6 (9), 74-80.

Badan Pusat Statistik (BPS) Kota Administratif Jakarta Barat. (2023). Kota Jakarta Barat dalam Angka Tahun 2022, Jakarta Barat: BPS Kota Administratif Jakarta Barat.

Badan Pusat Statistik (BPS) Kota Administratif Jakarta Barat. (2024). Kota Jakarta Barat dalam Angka Tahun 2023, Jakarta Barat: BPS Kota Administratif Jakarta Barat.

Boari, Y., et al. (2024). Pengantar Metodologi Pengabdian Masyarakat. Aceh: Yayasan Muhammad Zaini/ Anggota IKAPI.

Dewi, B. P., & Suyanto, A. (2022). Analysis Positioning Mobile Banking According to Community Perception in Indonesia Based on Perceived Usefulness, Perceived Ease of Use, Security and Trust (Case Study on Mobile Banking BCA, BRI, BNI, Mandiri). https://doi.org/10.33258/birci.v5i3.6672.

Fitriani, W., R.; I., T., Handoyo; P., Rahayu; D., I., Sensuse. (2016). Intention to Use Smart City System Based on Social Cognitive Theory, *IEEE, 2016 International Conference on Advanced Computer Science and Information Systems (ICACSIS)*, 181-188. https://doi.org/10.1109/ICACSIS.2016.7872747

Hall, James A. (2013). Accounting Information Systems, 8th Edition, South Western Cengage Learning, USA.

Herdiman, Lobes; E., Rusdiyana; W., Winarto; Y., Yudistira; K., Khatimah. (2024). Rekayasa Sosial Pada Program Bank Sampah Melalui Teknologi Tepat Guna Untuk Akselerasi Ekonomi Sirkular Di Desa Kutamendala Kabupaten Brebes - Jawa Tengah, *Jurnal Pengabdian kepada Masyarakat Martabe*, Vol. 7, No. 2, 682-702. http://dx.doi.org/10.31604/jpm.v7i2.682-702.

Hikmatulloh; Susilawati; A., Oktaviani; Normah. (2024). Pengembangan Sistem Informasi Bank Sampah untuk Efektivitas Peran Administrator, *Evolusi: Jurnal Sains dan Manajemen*, Vol. 12, No. 1, 67-77. https://doi.org/10.31294/evolusi.v12i1.21892

Kementerian Lingkungan Hidup dan Kehutanan Direktorat Jenderal Pengelolaan Sampah, Limbah dan B3 Direktorat Penanganan Sampah; Sistem Informasi Pengelolaan Sampah Nasional; diakses pada 20 Maret 2024.

Masruroh, Nikmatul, et al. (2022). Ekonomi Sirkular dan Pembangunan Berkelanjutan, Yogyakarta: Jejak Pustaka.

Munadian, et al. (2024). Ecobrick Sebagai Upaya Mengurangi Limbah Plastik Di Desa Cipta Karya Kabupaten Bengkayang. *Jurnal Pengabdian Kepada Masyarakat*, 8(3), 632–639. https://doi.org/10.31849/dinamisia.v8i3.20129.

Peraturan Menteri Lingkungan Hidup dan Kehutanan (Permen KLHK) Nomor 14 Tahun 2021 tentang Pengelolaan Bank Sampah.

P., Rahayu; S., Rohajawati; S., Fairus; H., Saragih and H., Akbar. (2020). Challenges and Recommendation of the Information Technologies Application in Hazardous Medical Waste Management amidst Pandemic Covid-19, *Journal of Physics: Conference Series, 2nd International Conference on Science & Technology (2020 2nd ICoST)*. https://doi.org/10.1088/1742-6596/1844/1/012029.

Romney, Marshall B. and P., J., Steintbart. 2015. Accounting Information Systems, edisi-13, Pearson Education Limited, England.

Rudiyanto, Arifin, et al. (2021). Memperkuat Implementasi Ekonomi Sirkular di Indonesia, Jakarta, Indonesia: Publikasi Kementerian PPN/Bappenas.

Saragih, B., R.; S., R., H., Siregar; and A., Surjosatyo. (2018). Evaluation of Waste Potential in TPST Bantargebang Through Modified Triangular Method, E3S Web Conf., Volume 67, 2018, The 3rd International Tropical Renewable Energy Conference "Sustainable Development of Tropical Renewable Energy" (i-TREC 2018). https://doi.org/10.1051/e3sconf/20186702040.

S., B., Stephani; H., Arief; N., Sulistyowati. (2022). Pembentukan Dan Pendampingan Bank Sampah Menggunakan Sistem Manajemen Pendukung Keberlanjutan Di Meruya Selatan, Jakarta Barat, *Batara Wisnu Journal: Indonesian Journal of Community Services*, Vol. 2, No. 1, 97-104. https://doi.org/10.53363/bw.v2i1.75.

Subair, Nurlina. (2019). Dinamika Sosial Masyarakat Urban, Makassar: Yayasan Intelegensia Indonesia.

Siswoyo, A., & Irianto, B. S. (2023). Analisis Technology Acceptance Model (TAM) Terhadap Pengguna Aplikasi Mobile Banking, *Owner: Riset & Jurnal Akuntansi*, 7(2), 1196–1205. https://doi.org/10.33395/owner.v7i2.1440.

DOI: https://doi.org/10.31849/dinamisia.v9i4.22250

T., Kustiasih; L., M., Setyawati; F., Anggraeni; S., Darwati. (2014). Faktor Penentu Emisi Gas Rumah Kaca dalam Pengelolaan Sampah Perkotaan*, Jurnal Permukiman*, Vol. 9, No. 2, 78-90. https://doi.org/10.31815/jp.2014.9.78-90.

Wiraseptya, T., & M., S. (2019). Pengaruh Budaya Konsumerisme terhadap Masyarakat. *Majalah Ilmiah UPI YPTK*, Vol. 26, No. 1, 1-6. https://doi.org/10.35134/jmi.v26i1.16.