Development of the SIDEM Application (Advanced Village Information System) as an Administrative Management System for Kedawung Village

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ARTICLE INFO	ABSTRACT
	PPK Ormawa is a community service and empowerment program initiated by student organizations. In particular, PPK Ormawa HMJ Informatics at the Widya Gama Lumajang Institute of Technology and Business devised SIDEM, a village administration system for Kedawung Village. SIDEM utilizes Agile methods, allowing swift and successful software development. The system's outcome is a user-friendly design benefiting both village officials and communities. The application of Agile methods facilitated flexibility, promptly adapting to evolving requirements and incorporating feedback. This approach ensured the system's functionality while aligning with Kedawung Village's specific needs. Agile's rapid development further enabled timely implementation, potentially significantly improving village administration and communication. SIDEM's design emphasis on usability demonstrates a commitment to user-centered development, empowering local stakeholders. Ultimately, the success of SIDEM's Agile-driven development underscores the significance of agility and user-centric design in community service initiatives. This model serves as a valuable example for future technology-based community empowerment projects. Keywords: Application, Administration, Information, PPK Ormawa, SIDEM

INTRODUCTION

Kedawung Village is a village located in Padang District, Lumajang Regency, Indonesian Province. The area of Kedawung Village is 5.75 km2 with a population of 4491 people (BPS Kabupaten Lumajang, 2022). The majority of residents in Kedawung Village work as farmers or planters (BPS Kabupaten Lumajang, 2022). This is because the location of Kedawung Village is located in the highlands, giving Kedawung Village abundant natural wealth.

Currently, Kedawung Village still uses a semi-digital village administration system, where the community is still required to collect administrative data at the village head's office. This method is still less effective because it causes queues. Apart from that, the workforce is still lacking so there

are problems in the process of inputting data into the system. This results in less efficiency in village administration. The long queue for the data collection and input process gave the PPK Ormawa HMJ Informatics group of the Institut Teknologi dan Bisnis Widya Gama Lumajang an idea to develop a village administration system. This system can be used by village officials or officials and also village communities.

PPK Ormawa (Capacity Strengthening Program for Student Organizations) is the implementation of a community service and empowerment program initiated by student organizations. This program is a program of the Ministry of Education, Culture, Research and Technology through the Directorate of Learning and Student Affairs, Directorate General of Higher Education, Research and Technology which provides opportunities for universities to increase the capacity of student organizations through community empowerment. By holding real activities in the community, it is hoped that the capacity and abilities of student organizations will be more meaningful as a forum for students to develop soft skills as expected by the Government to become superior human resources (Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi, 2023).

Based on the previous description, PPK Ormawa Student Association Department of Informatics (HMJ) ITB Widya Gama Lumajang will develop the SIDEM (Advanced Village Information System) application as an administrative management system for Kedawung Village. Information systems are a very important tool in carrying out activities in various fields, including managing data and information at the village level. The Advanced Village Information System (SIDEM) is an integrated information system capable of providing effective and efficient information services to village communities and making it easier for the village government to manage the data and information needed to carry out government and development activities in Kedawung Village. In developing the SIDEM application, it is necessary to pay attention to various factors such as information technology infrastructure, trained human resources, and support from the government and community. The large number of young people who are no longer technologically illiterate in Kedawung Village is a very promising potential to become part of the village's development. With SIDEM, it is hoped that it will make it easier for the government to make the right decisions and make it easier for the community to carry out administration in the village so that it can increase community participation in village development. Apart from that, it is hoped that village administration management can be more effective and can be done from anywhere, it is also hoped that the community can access administrative needs for urgent needs. It is hoped that the village database that will be developed will facilitate and increase the security of information in Kedawung Village.

Village information systems can simplify the work carried out by village officials (Pradana, Andrianto, & Auliya, 2022), (Syaharuddin, 2017). A website-based village information system can make it easier for devices to process village information data to be more effective and efficient in providing information about village government (Supiyandi, Rizal, Fachri, Eka, & Zufria, 2023). The development of an ICT-based Village Information System is expected to provide innovation for villages to improve the performance of village officials in terms of quality of service to the community, productivity, responsiveness, accountability and productivity (Fitri, Asyikin, & Nugroho, 2017), (Mukhsin, 2020), (Pratasik, & Rianto, 2020).

METHODS

The SIDEM application was developed using an agile-based software development method, namely a software development method that is based on an iterative work process consisting of agreed rules and solutions. This method was chosen because it allows developers to carry out development iteratively and adaptively according to user needs. Apart from that, this method also allows developers to carry out regular evaluations and improvements to improve application quality.

System Development Life Cycle (SDLC) is an approach, which consists of several stages for analyzing and designing systems that have been developed through the use of cycles that are more specific to the activities carried out (Kendall & Kendall, 2011). he System Development Life Cycle (SDLC) generally consists of four main phases from start to finish, namely: planning, analysis, design, and implementation (Dennis, Wixom, & Roth, 2012). From the software development phases presented, an approach was then developed to facilitate software development that requires a short time in software development, namely the Agile Development approach. The Agile development approach provides a better level of project development success compared to structured design methods (Alqudah & Razali, 2017). In accordance with the Agile development cycle in Figure 1, it can be seen that at the end of each sprint phase, product functional improvements are delivered. Thus, each new functional is immediately added to the product resulting in gradual growth of the project. With features validated early in development, the chance of a product shipping potentially failing is much lower (Dewi, Ciptayani, & Wijaya, 2018).
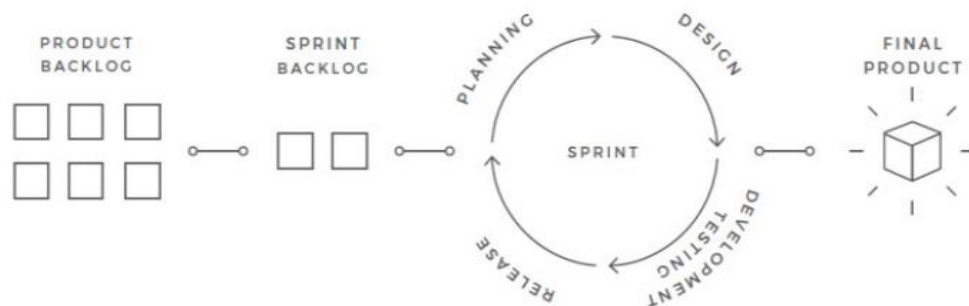

Figure 1. Agile Development Cycle
Source : (Dewi, Ciptayani, & Wijaya, 2018)

SIDEM development uses several development methods, including using the needs identification method to understand what features are needed and what features will be useful for the community, village officials and also for the village. The system design (Front-end and Back-end) uses the development method using HTML, CSS, PHP and Java Script while for database development using the My-Sql language and using the Apache server. Researchers also use testing and evaluation methods to optimize various aspects, both the appearance of the website and the features on the website. For testing we carry out several tests including integration testing, security testing and end user testing. The SIDEM website uses a security system in the form of OTP, NIK, and middle ware security methods.

RESULTS AND DISCUSSION

The result of this research is the design of a system that can be used by village officials and village communities. The use of Agile methods in the development of SIDEM has proven to be effective in achieving a successful outcome. The flexibility and adaptability of Agile methods have allowed the development team to respond to changing requirements and incorporate feedback from village officials and communities in a timely manner. This has resulted in a system that is not only functional but also aligned with the specific needs of Kedawung Village. Furthermore, the rapid development facilitated by Agile methods has allowed for the timely implementation of the system, which can have a significant impact on improving village administration and communication.

Advanced Village Information System (SIDEM) is a system designed and used to collect, manage, analyze and present data and information relating to various aspects of life in a village with the main aim of encouraging progress, development and improving the quality of life of village communities . The Advanced Village Information System includes various types of data, such as population data, economic data, social data, infrastructure data and environmental data. The aim is to provide better

information support to the village government, community and various related parties in making better decisions and in more efficient development planning. The Advanced Village Information System involves the use of information technology, such as special software, databases, and digital communications, to manage data more efficiently. Thus, the Advanced Village Information System helps villages increase transparency, accountability and community participation in resource management and village development programs, which in turn can spur village growth and development towards a more advanced and sustainable level.

The Advanced Village Information System Development Program (SIDEM) has two different websites, namely a website for the community and a website for village officials using a login system on each website as an effort to secure sensitive data which can only be accessed by the community or village officials. On the community SIDEM website there is a home page that anyone can access to facilitate the dissemination of information that is not classified as sensitive to the general public and there is also a background profile of the village and brief information about SIDEM. Figure 2 shows the home page.

Figure 2. Main page of SIDEM (Home)
Source: research results

The home menu has several menus shown in Figure 3.

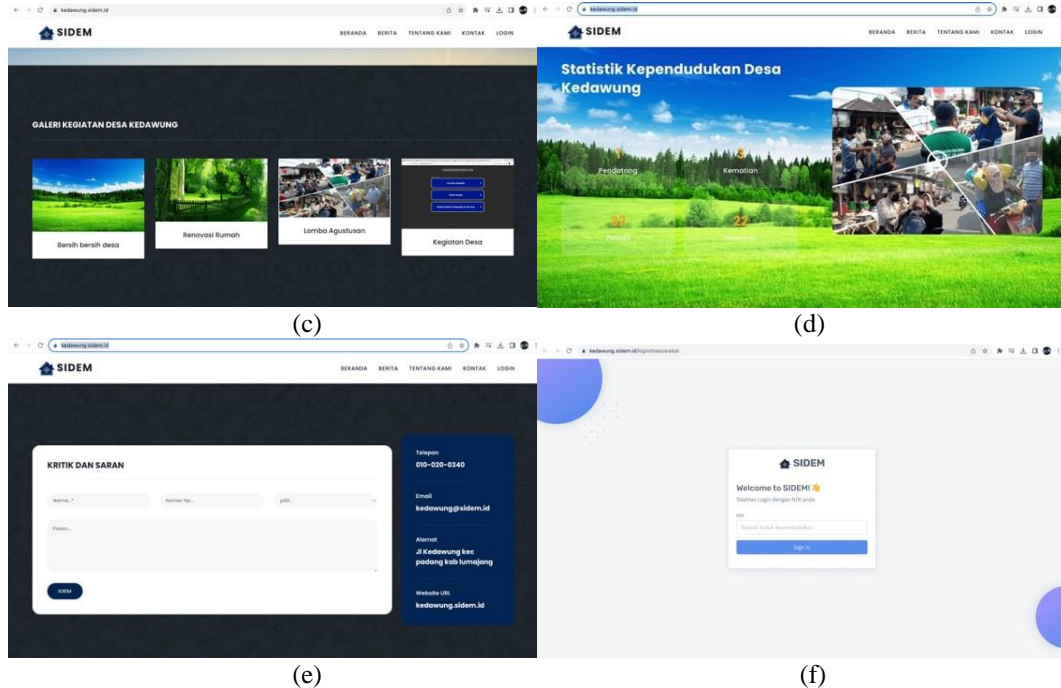(a)   (b)

(c)

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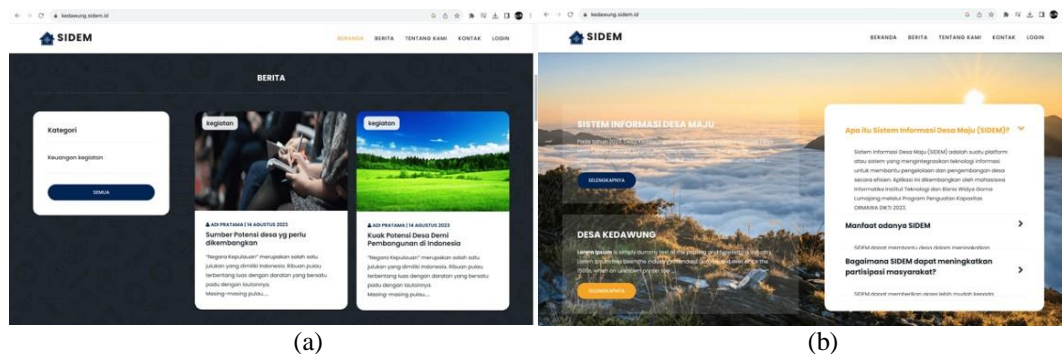
Figure 3. (a) News Menu (b) About us Menu (c) Gallery Menu (d) Village Statistics Menu (e) Contact, Criticism and Suggestions form Menu (f) Login Menu
Source: research results

This login menu functions to sort who will later be able to access sensitive data and can only be accessed by village residents and this menu also uses a security system for login with NIK and verification via email and OTP so that sensitive data in it can only be accessed. access by the Kedawung village community only. After people log in, there are several menus and features shown in Figures 4 dan Figure 5.
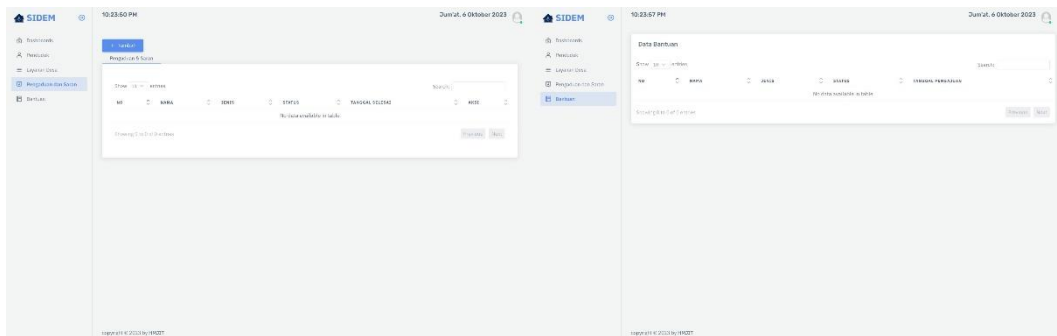

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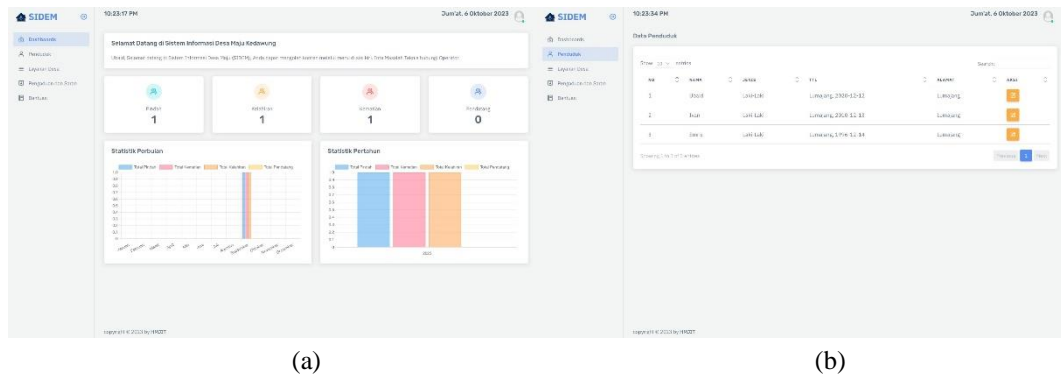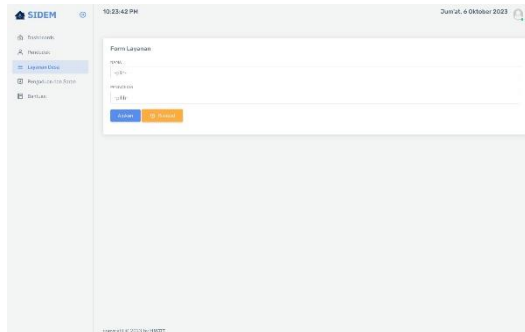
(c)

Figure 4. (a) Dashboard Menu (b) Population Data Menu (c) Village Service Menu
Source: research results

The village service menu contains letter submissions and various other administration, namely SKCK submissions, Domicile Letters, Family Card Changes, Birth and Death Certificate submissions, Transfer Letters, and loss letters.


(a)   (b)

Figure 5. (a) Complaints and Suggestions Menu (b) Help Menu
Source: research results

Meanwhile, SIDEM, which is specifically for village officials, also uses a login system that is even more secure because the data in it is more sensitive and also serves as (Sidem manager for the community). SIDEM for village officials has several menus and features as shown in Figure 6.

(a)   (b)

(c)

(d)

(e)

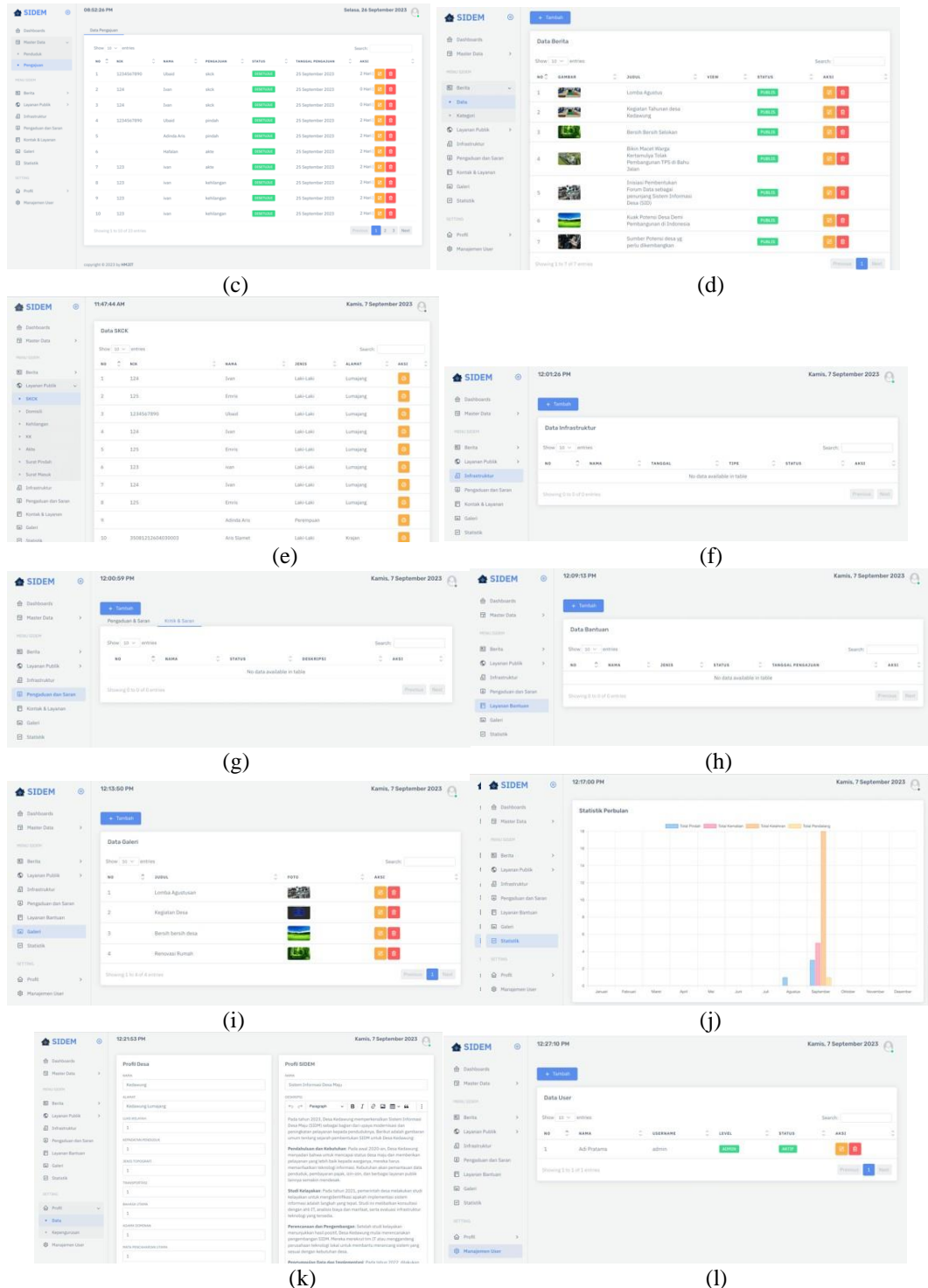(f)

(g)

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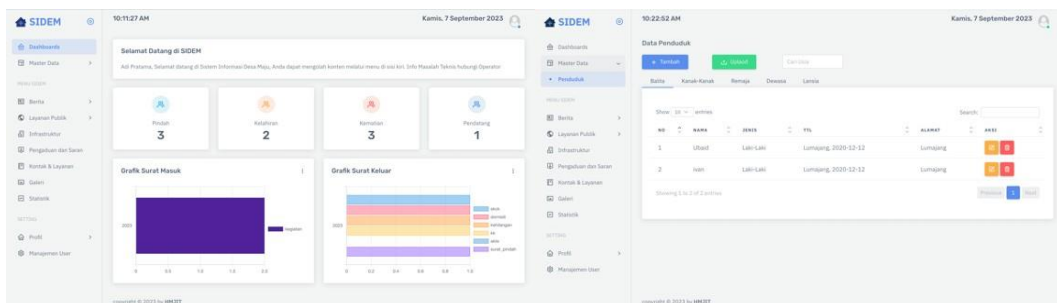
Figure 6. (a) Dashboard Menu for Village Officials (b) Master Data Menu (c) Submission Menu (d) News Writing Menu (e) Public Services Menu (f) Infrastructure Menu (g) Complaints and Suggestions Menu (h) Help Service Menu for Village Officials (i) Gallery Menu for Village Officials (j) Statistics Menu for Village Officials (k) Profile Menu (l) User Management Menu
Source: research results

CONCLUSIONS

Based on the results obtained from this research, the SIDEM application helps village administration services to the community. This application was developed using the agile method which has several advantages. For further application development, you can add features that can provide convenience in the administrative management process, such as business permit registration services, MSMEs in villages and others. In addition, existing data can be analyzed by village officials to assist in making policies using methods such as research (Qori'atunnadyah & Rahmawati, 2022), (Qori'atunnadyah, 2022), and (Qori'atunnadyah, 2023).

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