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Implementation of the Scrum Framework in the Agile Methodology for Developing Move-in Services on the Website of the Department of Population and Civil Registration of Lamongan Regency

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ABSTRACT

Digital transformation in public services has become an essential need to improve the effectiveness, efficiency, and accessibility of population administration services. The official website of the Department of Population and Civil Registration of Lamongan Regency has been established; however, the available services are still dominated by one-way information delivery and have not yet supported end-to-end administrative processes, particularly for population move-in services. This study aimed to implement the Scrum framework within the Agile methodology to develop a website-based prototype of move-in services that is more responsive to public needs.

This study employed a descriptive qualitative approach using the Agile development model with the Scrum framework. The research stages included identifying user requirements, preparing a product backlog, conducting sprint planning, developing the prototype, evaluating through sprint reviews, and making continuous improvements through sprint retrospectives. Data were collected through observation, interviews, documentation, and literature review related to digital public services and population administration.

The results showed that the implementation of Scrum was able to support a structured , adaptive, and collaborative system development process. The resulting prototype contained main features such as online applications for move-in services , document upload facilities, application status tracking, and service process notifications. The system was considered capable of simplifying manual administrative procedures, accelerating service time, increasing transparency, and enabling citizens to access services anytime and anywhere.

In conclusion, the implementation of the Scrum framework within the Agile methodology was effective for developing website-based public administrative services. The iterative approach allowed the system to be continuously adjusted according to user needs and organizational dynamics. The developed prototype of move-in services has the potential to become a model of digital innovation for improving the quality of population administration services at the local government level.

Keywords: Scrum Framework, Agile Methodology, Move-in Services, Digital Transformation, Prototype

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INTRODUCTION

Digital transformation in public service delivery has become an important demand for local governments in improving service quality for the community. The development of information technology has encouraged a shift from conventional service systems to digital systems that are faster, more efficient, transparent, and easily accessible. In the context of modern governance, the digitalization of public services is no longer an option, but a strategic necessity to meet increasing public expectations for convenience and service speed. One of the sectors that requires accelerated digital transformation is population administration services.

Population administration services play an important role because they are directly related to citizens' legal identity, demographic data, and access to various other public services. The Department of Population and Civil Registration of Lamongan Regency, as the institution responsible for managing population administration, has provided an official website as a source of serv ice information. However, the available services are still dominated by one-way information delivery, such as document requirements, service procedures, and operating schedules. The system has not fully supported comprehensive digital services, particularly for move-in and population services.

Move-in and services are one form of population administration service that requires data verification, domicile transfer, family card updates, and synchronization of demographic records. This process is often still carried out manually through direct visits to service offices. Such conditions create queues, long waiting times, the potential for administrative errors, and limited access for citizens who face time and distance constraints. Many citizens still experience difficulties due to complicated procedures and lengthy administrative processes (Meuleman, 2021). On the other hand, increasing internet penetration and the widespread use of digital devices indicate that website-based administrative services are highly feasible to be implemented more broadly.

The implementation of digital systems for move-in services requires a development method that is flexible and able to adapt to changing user needs. One relevant approach is the Agile methodology. Agile is a software development approach that emphasizes collaboration, iterative development, and adaptability to changing requirements (Adriana N Dugbartey & Olalekan Kehinde, 2025). In practice, Agile often uses the Scrum framework as a structured project management tool through sprint cycles. Scrum enables development teams to prioritize tasks, conduct regular evaluations, and deliver products incrementally according to user needs (Choetkiertikul et al., 2025). The use of Scrum in the public sector has significant potential because public bureaucracy requires systems that are adaptive yet measurable. Through sprint planning, daily scrum, sprint review, and sprint retrospective, system development can be carried out collaboratively between developers and stakeholders. This approach is important to ensure that the developed system truly meets the needs of both the organization and the community as end users. Scrum also supports continuous improvement in every development cycle (Werewka & Spiechowicz, 2017).

Previous studies have shown that the Agile methodology can improve the effectiveness of information system development and the quality of digital public services. Research by Arifin and Nallappan (2023) found that Agile implementation in e-government can increase transparency and accountability in public services. Meanwhile, Prabowo and Harsono (2025) stated that Agile-based web systems can improve the efficiency of public administrative services. However, studies specifically discussing the implementation of the Scrum framework in population administration services, especially move-in services at the local government level, remain limited. This indicates both contextual and methodological research gaps.

Based on these issues, this study focuses on developing a website-based prototype for move-in services at the Department of Population and Civil Registration of Lamongan Regency using the Scrum framework within the Agile methodology. The developed prototype is designed to include features such as online applications, document uploads, service status tracking, and administrative process notifications. The presence of this system is expected to make it easier for citizens to process population transfers without having to visit the service office directly.

The purpose of this study was to analyze and implement the Scrum framework within the Agile methodology for developing move-in services on the website of the Department of Population and Civil Registration of Lamongan Regency in order to produce a digital service model that is effective, efficient, and aligned with public needs.

METHOD

Study participants

This study employed a descriptive qualitative approach focusing on the development of a website-based prototype for move-in services at the Department of Population and Civil Registration of Lamongan Regency. Research participants were selected using purposive sampling, in which

informants were intentionally chosen based on their relevance, knowledge, experience, and direct involvement in population administration services.

The participants consisted of internal and external groups. Internal participants included officials responsible for population administration services, service operators, and staff who understood the service information system. External participants consisted of community members who had used or intended to use move-in services. The involvement of both groups aimed to obtain system requirements from both service providers and end users.

Table 1. Research Participants

No	Participants	Total	Role
1	Service management officials	1	Policy and service supervision
2	Population service operators	2	Administrative implementers
3	Information technology staff	1	Technical support
4	Community members / users	4	End users
Total		**8**	

Study organization

This study was conducted at the Department of Population and Civil Registration of Lamongan Regency. The research design applied the Agile methodology using the Scrum framework as the system development approach. Agile emphasizes flexibility, collaboration, and incremental product delivery according to changing user needs (Adriana N Dugbartey & Olalekan Kehinde, 2025). Scrum was selected because it provides a structured framework through sprint cycles and continuous evaluation (Choetkiertikul et al., 2025).

The study began with preliminary observation of the existing service system, identification of problems in move-in services, and collection of user requirements through interviews and documentation. The identified requirements were then arranged into a *product backlog* containing a prioritized list of system features.

The next stage was *sprint planning*, which determined the development targets for each sprint. The main features developed included online application forms, document upload facilities, application status tracking, and service process notifications. After development, each sprint result was evaluated through a *sprint review* with research participants. Furthermore, a *sprint retrospective* was conducted to identify obstacles and improvements for the next iteration until the final prototype was completed. This iterative cycle supports continuous improvement during system development (Werewka & Spiechowicz, 2017).

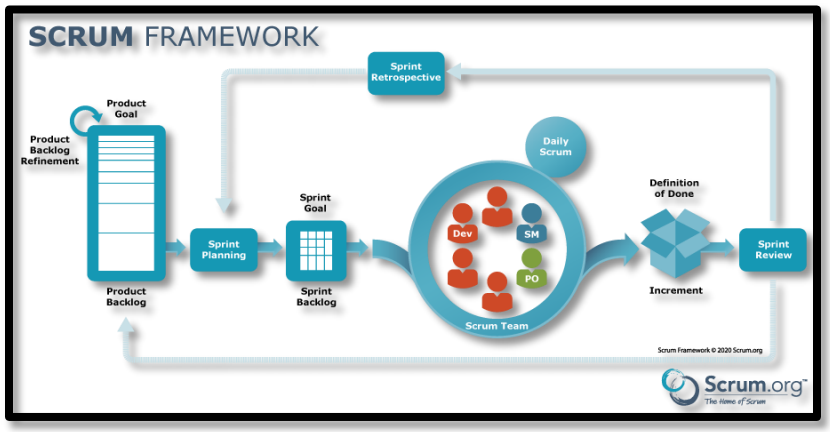


Figure 1. Research Flow Using Scrum Framework

Statistical analysis

The research data were analyzed using descriptive qualitative analysis techniques to obtain a comprehensive understanding of the implementation of the Scrum framework in developing a website-based move-in service. Qualitative analysis was considered appropriate because it enables the

researcher to interpret social phenomena, organizational processes, and user needs within the context of public service innovation. The analysis process followed three main stages: data reduction, data display, and conclusion drawing. Data reduction was conducted by selecting, classifying, and simplifying information obtained from interviews, observations, and documentation based on the research objectives. Subsequently, the data were systematically presented in the form of narratives, matrices, and tables to facilitate interpretation and identification of recurring patterns. The final stage involved drawing conclusions and verifying findings throughout the research process to ensure consistency and validity of the results.

To strengthen the analysis, data triangulation was applied by comparing information from different sources, including service officials, operators, technical staff, and community users. Method triangulation was also used through the combination of interviews, direct observation, and document review. This process was intended to improve data credibility and minimize subjective bias in interpreting research findings.

In addition, prototype evaluation was conducted through limited user testing involving selected participants. The evaluation focused on several indicators, namely ease of use, interface clarity, accessibility, feature suitability, responsiveness, and the perceived usefulness of the system in supporting move-in administrative services. User responses were then tabulated and presented descriptively in percentages to illustrate the level of acceptance and satisfaction with the developed prototype.

The analytical approach was also aligned with the iterative principles of Agile and Scrum, where feedback from each evaluation cycle was used as input for subsequent improvements. Therefore, the analysis did not only examine the final prototype, but also assessed the effectiveness of each sprint in addressing user requirements and organizational needs (Adriana N Dugbartey & Olalekan Kehinde, 2025; Choetkiertikul et al., 2025; Werewka & Spiechowicz, 2017).

Overall, this analytical framework was used to provide a thorough overview of the effectiveness, adaptability, and practicality of implementing the Scrum framework in developing a website-based move-in service within a local government environment.

FINDING AND DISCUSSION

This study produced a website-based prototype for move-in services developed using the Scrum framework within the Agile methodology at the Department of Population and Civil Registration of Lamongan Regency. The main findings indicate that the previous service system was still focused on delivering service information and had not yet provided fully digital administrative processes. As a result, citizens were still required to visit the service office directly to submit documents, complete verification, and wait for manual administrative procedures. This condition is consistent with the finding that manual public services tend to create queues, delays, and administrative errors (Meuleman, 2021).

Based on observations and interviews, the community expected a service system that was accessible online, simple, fast, and transparent. From the organizational perspective, service officers also required a system capable of facilitating document verification, data recording, and monitoring application status. These needs were translated into a *product backlog* as the basis for prototype development using Scrum.

Table 2. Priority Product Backlog of the Prototype System

No	Feature	Priority	Description
1	Online application form	High	Digital submission of move-in requests
2	Document upload	High	Uploading required administrative documents
3	Status tracking	High	Monitoring application progress in real time
4	Notification system	Medium	Informing users about service progress
5	Admin dashboard	Medium	Managing and verifying submitted applications

The development results showed that the use of Scrum provided a more systematic and adaptive workflow. Each sprint focused on completing priority features, which were then evaluated together with users and stakeholders. This approach enabled immediate responses to changing needs

without waiting for the entire system to be fully completed. These findings support the view that Scrum is effective for projects requiring flexibility and incremental development (Choetkiertikul et al., 2025).

During the first sprint, the team developed the online application form and document upload feature. The second sprint focused on status tracking and notification features. The third sprint was used for interface refinement, system functionality testing, and user experience evaluation. Each sprint demonstrated gradual improvements in prototype quality.

Table 3. Sprint Development Results

Sprint	Main Output	Evaluation Result
Sprint 1	Online form and document upload	Functional and usable
Sprint 2	Status tracking and notification	Improved transparency
Sprint 3	Interface refinement and testing	Better usability and responsiveness

In addition to improving development efficiency, the resulting prototype also provided direct benefits to public service quality. The system enables citizens to submit applications anytime without visiting the office, reduces service queues, and improves transparency in administrative processes. This is consistent with the concept of e-government, which emphasizes efficiency, accessibility, and accountability through digital technology (Heeks, 2012).

From limited user testing, most respondents considered the prototype easy to use and helpful for move-in administrative services. The most appreciated feature was service status tracking, as users were able to monitor application progress in real time.

Table 4. User Evaluation Results

Evaluation Aspect	Positive Response
Ease of use	88%
Interface clarity	84%
Feature suitability	90%
Service usefulness	92%

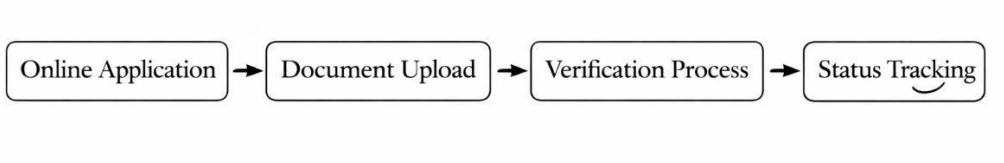


Figure 2. Main Features of the Developed Prototype

In the perspective of public administration, the findings indicate that digital transformation is not only related to technology, but also to changing bureaucratic work patterns to become more responsive and citizen-oriented. The Scrum framework proved capable of bridging organizational needs with user expectations through an iterative and collaborative process. This supports previous studies stating that Agile methods can improve digital public service quality and accelerate organizational innovation (Prabowo & Harsono, 2025).

However, the implementation of this prototype still faces several challenges, such as human resource readiness, integration with population databases, and personal data protection. Therefore, further development should focus on strengthening system security, training service operators, and integrating the platform into electronic government systems.

Overall, this study demonstrates that implementing Scrum within the Agile methodology is effective for developing website-based move-in services in a local government environment. The resulting prototype has the potential to become a model of innovation in population administration services that is more efficient, transparent, and accessible to the public.

CONCLUSIONS

This study concludes that the implementation of the Scrum framework within the Agile methodology was effective in developing a website-based move-in service at the Department of Population and Civil Registration of Lamongan Regency. The use of Scrum enabled the development process to be carried out systematically, collaboratively, and adaptively through iterative sprint cycles. This approach allowed system improvements to be made continuously based on stakeholder feedback and user needs.

The developed prototype successfully provided several important service features, including online application forms, document upload facilities, application status tracking, and service notifications. These features were able to simplify conventional administrative procedures, reduce queues, improve transparency, and increase public accessibility to population administration services. The findings also indicate that digital transformation in public services is not only related to technological adoption, but also to organizational readiness, service responsiveness, and continuous innovation.

Therefore, the Scrum framework can be considered an appropriate alternative model for developing digital public services in local government institutions.

However, this study was limited to prototype development and limited user testing. Future studies are recommended to conduct full-scale system implementation, broader usability testing, integration with population databases, and evaluation of long-term service effectiveness. Overall, the resulting prototype has strong potential to support the modernization of population administration services that are more efficient, transparent, and citizen-oriented.

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