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# Improving the Efficiency of Insurance Claim Process with Agile-Based Claim Management System in Cargo Companies

**Denny Jean Cross Sihombing**
Information System Study Program, Atma Jaya Catholic University of Indonesia

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**ABSTRACT**
This research identified efficiency issues in the insurance claims process at a freight forwarding company, including the lack of system responsiveness, the complexity of claims handling, and the need for a more adaptive and transparent system. The applied research method focused on developing an Agile-based claims management system, including requirements definition, project planning, system development based on requirements specifications, phased implementation, functional, performance, security, and end-user testing, and analysis of test results. The results showed that implementing the Agile-based system successfully improved the efficiency of the claims process, optimized claims handling, reduced response time, and improved user satisfaction. This research contributes to developing a system that can be applied across industries, improving operational efficiency, customer service, and competitiveness in a competitive market.

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**Corresponding Author:**
Denny Jean Cross Sihombing
Atma Jaya Catholic University of Indonesia
Jakarta, Indonesia
denny.jean@atmajaya.ac.id

## INTRODUCTION

Insurance claims management is a critical aspect of the rapidly growing insurance industry. An insurance claim refers to the process undertaken by a policyholder or eligible party to obtain payment or benefits by the insurance policy terms. In the context of freight forwarding companies, the insurance claim process plays a vital role as it is often related to losses or damages that may occur during the delivery of goods. Therefore, this research will discuss the importance of improving the efficiency of the insurance claims process in freight forwarding companies by implementing an Agile-based claims management system. In the context of freight forwarding companies, the insurance claim process often involves various complex stages. For example, when there is damage or loss of goods during the shipping process, the owner of the goods has to file a claim with the insurance company to get the appropriate reimbursement or compensation. This process can involve various documents, evidence, and investigations to verify the claim's validity(du Plessis et al., 2024; Hunt et al., 2023; Kim et al., 2021; Li et al., 2021; Malik et al., 2023; Park et al., 2023; Tseremoglou et al., 2022; Yang et al., 2023). These complexities are often a significant obstacle to achieving efficiency in the insurance claims process.

One of the main problems in the insurance claims process is the need for more efficiency in handling claims. A slow and complicated claims process can result in delays in

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claim payments, customer dissatisfaction, and additional costs for the company. It can also affect the company's reputation in the eyes of customers and business partners. Therefore, strategic measures are needed to improve the efficiency of the insurance claims process in freight forwarding companies(Camacho-Muñoz et al., 2023; Gonzalez-Calderon et al., 2022; Jörgensen et al., 2023; Njoya et al., 2023; Park et al., 2023; Romero-Silva & Mujica Mota, 2022; Tseremoglou et al., 2022; Vinje Kramer & Steen, 2022). To address efficiency issues in the insurance claims process, the Agile concept in claims management can be an effective solution. Agile is a management approach that emphasizes team collaboration, responsiveness to change, and continuous value delivery. By applying Agile principles in claims management, freight forwarders can increase flexibility, transparency, and speed in handling insurance claims.

Several previous studies have reviewed the importance of applying Agile concepts in various industries(Alami et al., 2022, 2023; Al-Saqqa et al., 2020; Bomström et al., 2023; Dingsoeyr et al., 2019; Dingsøyr et al., 2012; Estrada-Esponda et al., 2024; Rindell et al., 2021; Serrador & Pinto, 2015; Shrivastava & Rathod, 2014), including insurance. These studies show that using Agile methods in claims management can improve process efficiency, reduce operational costs, and increase customer satisfaction. However, only a few specifically discuss Agile's application in the context of insurance claims management in freight forwarding companies. The main objective of this research is to identify the potential and benefits of implementing an Agile-based claims management system in improving the efficiency of the insurance claims process in freight forwarding companies. By conducting this research, a solution can be found to optimize the claims process, reduce claim settlement time, improve customer satisfaction, and reduce operational costs for the company.

The conceptual framework of this research includes integrating an Agile-based claims management system with the insurance claims process in a freight forwarding company. Key components in this framework include responsive product development, rapid iteration, collaboration between claim owners, insurance companies, and freight forwarders, and adequate information technology to support the claims process. Concerning the aforementioned conceptual framework, the proposed research hypothesis is that implementing an Agile-based claims management system will improve the efficiency of the insurance claims process in freight forwarding companies. This is expected to be reflected in an increase in the speed of claim settlement, reduced errors in claim verification, and increased customer satisfaction. This study underscores the urgency and relevance of this research in the context of the insurance industry, particularly in freight forwarding companies. By identifying problems, recognizing the potential of Agile concepts, and formulating research hypotheses, this research is expected to significantly contribute to improving the efficiency of the insurance claims process and improving the overall performance of freight forwarders.

## METHODS

The research process began with the requirements definition stage, where the needs of an Agile-based claims management system were identified through surveys, interviews, and

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document analysis. The planning stage compiled a comprehensive project plan, including resource allocation and risk mitigation strategies. Next, the development stage involves design, prototype development, and phased system implementation, accompanied by user training. The final stage is testing, which includes functional, performance, security, and end-user testing to ensure optimal performance and user satisfaction using the Agile-based claims management system implemented in the freight forwarding company.

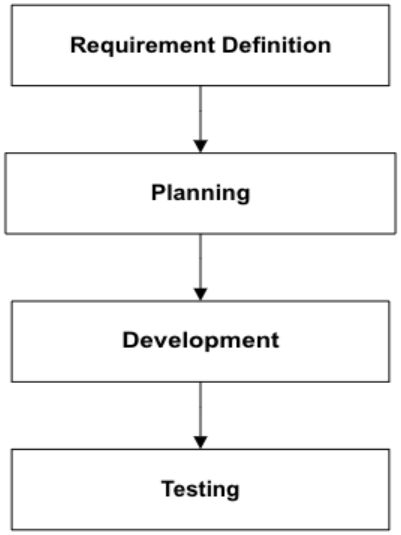


**Figure 1.** Research Stages

### Definition of need

The first stage in this research was requirements definition, where the main focus was to identify the essential needs that an Agile-based claims management system should fulfill. This process began by conducting in-depth surveys and interviews with relevant stakeholders, such as customers, insurance companies, and freight forwarders. In addition, document and data analysis related to the existing insurance claims process is also an essential part of this stage. The result of this activity will produce a clear and detailed specification document regarding the system's needs to be developed.

### Planning

Once the system requirements are clearly defined, the next stage is planning. A comprehensive project plan will be developed that includes the schedule, budget, and resource allocation required for system implementation. Identifying the project team and the roles of each team member is also done in this stage. In addition, risk planning and mitigation strategies will be developed to anticipate possible obstacles or challenges during the implementation process. A communication plan will also be made so that all stakeholders are actively involved and support the smooth running of the project.

### Development

Then, the development stage will be to realize an Agile-based claims management system based on the previously defined requirement specifications. This process includes system design, proto-type development for initial testing, and phased implementation of the system according to the project plan drawn up earlier. In addition, training for users is

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also an essential part of this stage to ensure that they can use the system effectively and efficiently.

**Testing**

Finally, the testing phase will be conducted to validate the performance and reliability of the developed Agile-based claims management system. Testing will include functional, performance, security, and end-user testing. The results of these tests will provide a clear picture of the system's responsiveness, speed in handling claims, data security, and user satisfaction in using the new system. Thus, all these stages will lead to a successful and effective implementation of an Agile-based claims management system in a freight forwarding company.

## RESULTS AND DISCUSSION

**Definition of need**

The results of the requirements definition stage in this study show detailed steps in identifying the needs of an Agile-based claims management system in a freight forwarding company. Identifying the company's needs related to the insurance claims process was carried out through various methods, including surveys, interviews, and careful document analysis of the existing claims process. Through surveys and interviews with stakeholders such as customers, insurance companies, and receivers, a deep understanding of each party's concrete needs and expectations was obtained. Analysis of documents and data related to the existing insurance claims process helped identify possible bottlenecks and opportunities to improve the efficiency of the claims process. The result of this stage is a detailed and elaborate Agile-based claims management system requirement specification document, which will be the primary foundation in the next stage of developing and implementing an Agile-based solution that meets the identified needs.

**Table 1**. Results of Needs Definition

| Data Source | Kebutuhan Pengguna |
|---|---|
| Customer Surveys and Interviews | 1. Intuitive and easy-to-use user interface<br>2. Ability to submit claims online<br>3. Real-time notification of claim status<br>4. System accessibility from various devices |
| Survey and Interview with Insurance Companies | 1. Fast and accurate claim verification process<br>2. Availability of historical claims data for analysis<br>3. Data security and user privacy |
| Survey and Interview with Delivery Team | 1. Ability to track delivery status<br>2. Integration of claims management system with other systems<br>3. Reporting and analysis of system performance |

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Table 1 illustrates the results of surveys, interviews, and analysis conducted to identify user needs related to Agile-based claims management systems in freight forwarding companies. These needs include an intuitive user interface, the ability to submit claims online, a fast claim verification process, tracking shipment status, etc.

**Planning**

The results of the planning stage in this study include several vital aspects that form the basis for the smooth implementation of an Agile-based claims management system in a freight forwarding company. First, a comprehensive project plan was developed, including an implementation schedule, budget allocation, and required resource determination. This project plan is the leading guide to ensure that all project stages and activities run according to the target and within the predetermined budget limits. Next, identify the project team involved and each team member's role. This is important to ensure that the team has the appropriate expertise and competence for the tasks that will be carried out in the project. Each team member has clear responsibilities according to their areas of expertise so that they can contribute maximally to achieving project goals.

Not only that, the planning stage also includes the preparation of risk plans and mitigation strategies. Risks that may arise during project implementation are carefully identified, both technical and non-technical. After identification, effective mitigation strategies are formulated to reduce the impact of possible risks. These measures are essential to maintain the smoothness and success of the project amidst the challenges that may be faced. Finally, in the planning stage, an effective communication plan is also developed to engage all stakeholders in the project. This communication plan includes communication strategies, meeting schedules, and communication channels that will be used to interact and coordinate with all relevant parties. With a good communication plan, all stakeholders are expected to be well-informed about project developments, understand their respective roles and responsibilities, and actively participate in achieving overall project goals.

Figure 2 shows the planning stages of a project, from developing the overall project plan, identifying the project team, developing the risk and mitigation plan, to developing the communication plan. This diagram uses the fork concept to show activities performed concurrently, such as preparing the implementation schedule, budget allocation, and determining resources. In addition, the fork is used again to show activities carried out in parallel, such as identifying team members and project risks and developing a communication strategy. This diagram provides a clear visual representation of the stages and activities performed in the project planning stage.

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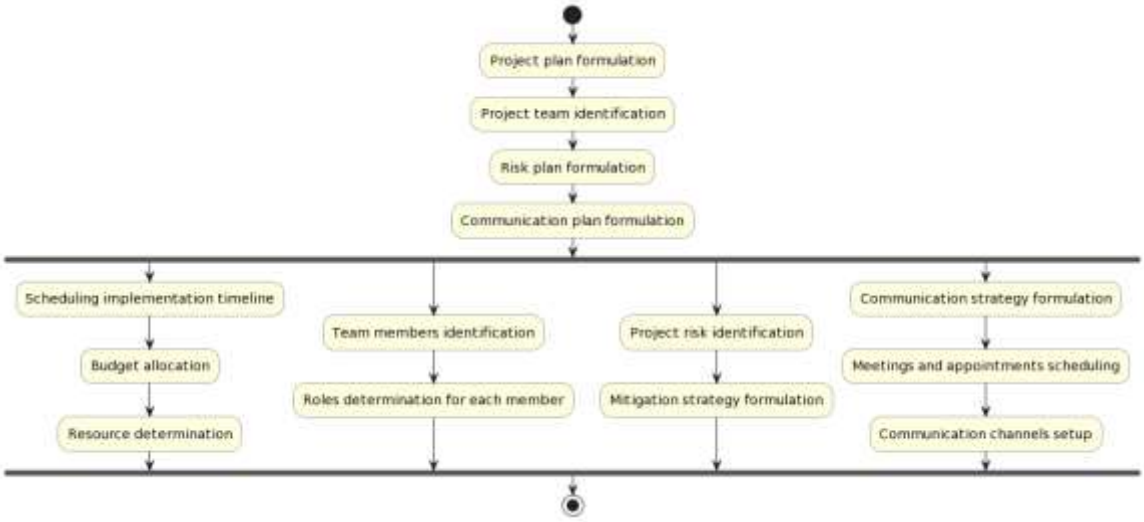


**Figure 2** The Planning Phase

## Development

The results of the development phase in this study include several vital activities that form the basis for the successful implementation of an Agile-based claims management system in a freight forwarding company. First, a system design was conducted based on the specifications of the previously defined requirements. This design includes the user interface, claims workflow, integration with other systems, data security, and expected performance assessment criteria. This design is the leading guide in further development.

Next, a system prototype is developed for initial testing and getting feedback from stakeholders, such as customers, insurance companies, and dispatch teams. The prototype helps in testing the concept and critical functions of the system before full implementation, allowing for any necessary improvements or adjustments based on the feedback received. Once the prototype has been tested and refined, the next stage is implementing the Agile-based claims management system in stages according to the project plan that has been prepared previously. This implementation includes system configuration, data migration, functionality testing, and integration testing with other existing systems in the company. The phased implementation helped reduce risks and ensure a smooth transition to the new system.

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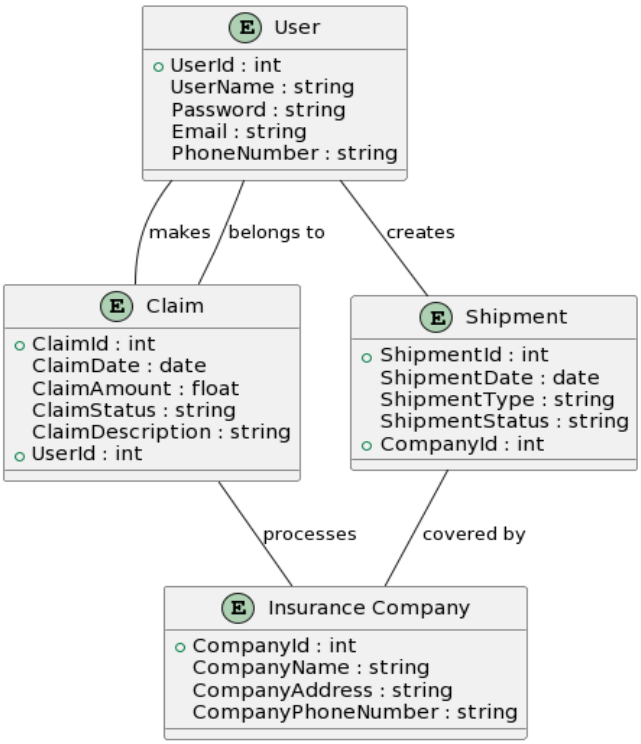


**Figure 3** Model Data

The data model in Figure 3 represents the entities and relationships used in the Agile-based claims management application at a freight forwarding company. The first entity is "User," which represents the system user with attributes such as UserId, UserName, Password, Email, and PhoneNumber. System users can make insurance claims and manage goods delivery through the application. The second entity is "Claim," which represents insurance claims submitted by users with attributes such as ClaimId, ClaimDate, ClaimAmount, ClaimStatus, and ClaimDescription. The claim has a "belongs to" relationship with the "User" entity, indicating ownership of the claim by a particular user. Furthermore, an "Insurance Company" entity represents an insurance company with attributes such as CompanyId, CompanyName, CompanyAddress, and CompanyPhoneNumber. This insurance company is involved in the claims process and has a "process" relationship with the "Claim" entity. Finally, the "Shipment" entity represents a shipment of goods with attributes such as ShipmentId, ShipmentDate, ShipmentType, and ShipmentStatus. This shipment has a "creates" relationship with the "User" entity, which indicates that the user created the shipment. In addition, the shipment also has a "covered by" relationship with the "Insurance Company" entity, indicating that a specific insurance company covers the shipment. This data model diagram provides a comprehensive overview of the entities, attributes, and relationships involved in a claims management application at a freight forwarding company.

Finally, the development stage also includes training for users using the new system. This training is conducted to ensure that users understand the features of the system, correct usage procedures, and can optimally utilize the system in their daily activities. This

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training can also increase the adoption rate of the new system and reduce barriers to use. Thus, this development stage is crucial in ensuring the successful implementation of an Agile-based claims management system in a freight forwarding company.

**Testing**

The testing phase results in this study include several essential aspects that are carried out to ensure the quality and reliability of the Agile-based claims management system in freight forwarding companies. First, functional testing was conducted to ensure the system worked according to the earlier requirements. These tests involved test scenarios covering various system functions, such as claim submission, claim verification, payment processing, and claim reporting. The results of this functional testing are used to ensure that the system can operate effectively and produce outputs that meet expectations. Next, performance testing was conducted to measure the responsiveness and speed of the system in handling claims. This involves simulating high workloads and test scenarios that emphasize system performance in different situations, such as during peak usage or massive claims. The performance testing results were used to identify potential bottlenecks or performance gaps in the system so that necessary improvements could be made.

In addition, security testing was conducted to ensure that claims data and sensitive user information were adequately protected. Security testing involves evaluating the security mechanisms implemented in the system, such as data encryption, access control, and protection against security attacks such as SQL injection or cross-site scripting (XSS). The results of the security testing ensure that the system has a high level of security and can protect the claims data from unauthorized access or other security threats. Finally, end-user testing is conducted to obtain direct feedback from users on using the system. This testing involves using beta testers or test users who represent different groups of users who will use the system in real life. The results of end-user testing are used to evaluate user experience, get feedback and suggestions for improvement from users, and ensure that end users can use the system quickly and effectively. Thus, the results of this testing phase are an essential foundation in ensuring the success and acceptance of Agile-based claims management systems in freight forwarding companies.

## CONCLUSION

This study aims to improve the efficiency of the insurance claim process in a freight forwarding company by implementing an Agile-based claim management system. The main steps included identifying the company's needs with surveys, interviews, and document analysis, which were then used as the basis for preparing the system specification document. The next stage was planning, which included the development of a project plan, team identification, and risk mitigation strategies. This was followed by system development based on the specifications, including prototyping, phased implementation, and user training. The final stage involves functional, performance, security, and end-user testing to ensure the system is responsive, secure, and usable. The implementation of this system can make a significant contribution to improving the efficiency and quality of service in freight forwarding companies.

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