



A Web-Based Order Monitoring and Tracking System with RBAC and Agile Scrum at PT Sucofindo's Jambi Branch

Dapit Triandi^{1*}

^{1}Department of Information Systems, Faculty of Science and Technology, Universitas Islam Negeri Sulthan Thaha Saifuddin Jambi, Indonesia*

^{1}dapittriandi65@gmail.com*

Abstract: Order handling at PT SUCOFINDO's Jambi Branch is still done by hand through a shared spreadsheet, even though the Coal (Batubara) portfolio alone averages 125 orders a month, the highest volume among all portfolios. This manual approach creates several issues: there is no access restriction, so every user can alter data without clear control; order status is rarely updated consistently; physical documents are hard to trace; and reporting is still handled in a conventional way. To address these issues, this study designs and builds a web-based Order Monitoring and Tracking System (SIMDOR) fitted with a Role-Based Access Control (RBAC) mechanism. The research is applied in nature, combining descriptive and experimental approaches, with data gathered through interviews and direct observation of the company's business processes. The system was built using the Agile Scrum method over three sprints, with ReactJS as the frontend framework, Firebase as the backend and real-time database, and Cloudinary for storing digital documents. Testing combined Black Box Testing and User Acceptance Testing (UAT); the Black Box results show that every core function performed as expected, while the UAT, involving seven respondents across different user roles, recorded an acceptance rate of 85.46%, placing it in the Very Good category. These results confirm that combining RBAC with Agile Scrum produces an order monitoring system that is secure, responsive to user needs, and ready for operational use, while also offering practical value for the company and academic value for web-based information systems research.

Keywords: *order monitoring system; role-based access control; agile scrum; web-based information system; user acceptance testing*

1. INTRODUCTION

Amid today's rapid digital transformation, an organization's ability to manage and present information quickly, accurately, and systematically has become one of the key determinants of its operational success. When information systems are implemented in an integrated manner, the resulting benefits are considerable — higher productivity, fewer errors caused by human factors, and faster managerial decision-making [1]. Organizations that still rely on manual approaches to record and manage data, on the other hand, tend to face various operational obstacles, including slow service response, weak coordination across work units, and declining customer trust.

As an inspection company serving a wide range of industrial and trade sectors, PT SUCOFINDO is responsible for providing accurate, up-to-date data to support the company's operational and strategic needs as a whole. At the branch level, PT SUCOFINDO's Jambi Branch functions as an operational unit that handles several service portfolios, including Coal, KSP, PIK, Industry, HMPM, AEBT, Mineral, Halal, Laboratory, SERCO, and LSI. Among these portfolios, Coal records the highest order volume, averaging





around 125 orders per month. This high volume points to a considerable degree of data-management complexity within the Coal portfolio, calling for a more structured data-management system — consistent with findings that web-based monitoring systems can improve the effectiveness of real-time operational performance monitoring in organizations with large transaction volumes [2]. This figure was manually compiled from the branch's internal order recap over a twelve-month observation period (approximately October 2024–September 2025), during which the Coal portfolio consistently recorded the highest order volume among all portfolios, making it the primary sample for this study.

Interviews with internal stakeholders directly involved in order management — namely Customer Service (CS), the Finance Admin, and the Operations Admin — revealed several fundamental issues. Order records are still kept on a shared spreadsheet, which makes searching for data increasingly difficult as the number of orders grows. Because anyone with access to the spreadsheet link can edit the data without clear restrictions, this method is also prone to manipulation and data errors. As a result, order status is often not updated consistently, leading to miscommunication during order processing. Other issues include difficulty tracing physical order documents, report preparation that is still done conventionally, and inefficient per-portfolio data calculations.

The absence of a structured access-rights arrangement allows users to access, and even modify, data belonging to other portfolios without clear restrictions, putting the security and integrity of company data at risk. A well-designed access-control mechanism is, in fact, an essential requirement for preserving the confidentiality and integrity of data in an information system, particularly one that must serve dynamic, context-dependent access for a range of user roles [3], [4]. Ironically, PT SUCOFINDO already operates an Enterprise Resource Planning (ERP) system, yet in daily practice order data is still compiled manually on a spreadsheet before being entered into the ERP system — an indication that a gap remains between the company's formal system and the actual needs at the branch level. Research on web-based project monitoring systems shows that this kind of approach can potentially bridge the gap between ERP systems and the more dynamic operational demands at the user level [5].

To address these issues, a web-based order monitoring and tracking system is needed — one that provides order recording, phased status monitoring, real-time tracking of data changes, progress visualization, digital document storage, and automatic report generation. Web-based order tracking systems have been shown to improve both the accuracy and the speed of real-time status updates in industrial operational settings [2]. Such a system also needs to be equipped with a Role-Based Access Control (RBAC) mechanism as a framework for assigning authority according to each user's function and responsibility, so that data security and integrity are better maintained. In terms of development method, the system was built following an Agile Development approach with Scrum as its framework, allowing development to proceed iteratively and flexibly based on user feedback, in line with the official Scrum guide [6]. Agile Scrum was chosen because the problem at hand involves several stakeholders with differing roles and needs, meaning the system's requirements were likely to change as the research progressed.

1.1. Related Work

A number of earlier studies have examined topics related to RBAC implementation and the development of web-based systems. Yuricha and Phan [7] studied the application of Role-Based Access Control in a cloud-based supply chain management system and showed that RBAC effectively strengthens security in multi-user systems, although their work did not address real-time monitoring or order-progress transparency. Sahyudi and Susanto [4], meanwhile, examined RBAC-based database security in an Enterprise Resource Planning application and found that RBAC can restrict access while preserving data confidentiality according to user roles, although order monitoring and tracking features within the ERP system were not discussed. Prasetya and Manongga [8] developed a centralized RBAC-based authorization system using the Flask framework for a company case study and concluded that the RBAC model is well suited to managing organizational access rights, although their research still focused on centralized authorization in general, using a conventional rather than an Agile development





approach. Elsewhere, research on web-based project monitoring systems has shown that process transparency and the speed of status updates are key to improving operational efficiency [5], though this has not yet been combined with a role-based access-control mechanism.

The review above suggests that most existing studies still treat RBAC separately from real-time monitoring and order tracking. No study has yet been found that combines all three aspects — RBAC, real-time monitoring, and order tracking — into a single web-based platform developed specifically to support operations in the inspection and certification services sector, such as at PT SUCOFINDO's Jambi Branch. This is the gap that the present study seeks to fill, while also quantitatively evaluating system acceptance through Black Box Testing and User Acceptance Testing (UAT), an aspect that is relatively rarely addressed in similar studies.

Based on this background and literature review, the research problem addressed in this study is how to design and build a web-based order status monitoring and tracking system capable of managing order data in a structured manner through the implementation of Role-Based Access Control (RBAC) at PT SUCOFINDO's Jambi Branch. Accordingly, this study aims to produce a web-based system that can carry out comprehensive order monitoring and tracking functions, complete with a structured access-control mechanism, for use at PT SUCOFINDO's Jambi Branch.

2. RESEARCH METHOD

This study is classified as applied research, focusing on the application of information-system concepts and technology as a concrete effort to solve operational problems at PT SUCOFINDO's Jambi Branch. The approach used is both descriptive and experimental: it begins with an analysis of the existing manual system, followed by the design and development of a new web-based system, which is then tested to determine its effectiveness. For data collection, this study adopts a qualitative approach through direct observation and in-depth interviews with the company's internal stakeholders.

2.1. Data Collection

Primary data were collected through interviews with stakeholders involved in the business process, namely management, the operations admin, customer service, and the finance admin, together with direct observation of order-recording and monitoring practices, which are still carried out manually with the help of a spreadsheet. Secondary data were drawn from the company's internal official documents, such as spreadsheet files recapping orders, as well as from scientific journal publications and prior studies relevant to the topic of information-system development.

2.2. Requirements Analysis

To systematically break down the problems of the existing system from various operational and business perspectives, the system requirements analysis was carried out using the PIECES framework (Performance, Information, Economy, Control, Efficiency, Service) [9]. A summary of the PIECES analysis is presented in Table 1.

Table 1. Requirements Analysis Based on the PIECES Framework

Aspect	Key Problem	Expected Solution
Performance	Data search and report generation are slow.	The system provides fast search and automatic digital-based reporting.
Information	Order status information is inaccurate and not updated in real time.	The system displays order status automatically and in real time.
Economy	Manual management wastes time and resources.	Automation reduces operational time and cost.



Control	There is no restriction on user access rights in the spreadsheet.	The system applies structured access-rights management based on user roles.
Efficiency	Work is often duplicated with repeated data entry.	The system allows single-entry data to be reused across functions.
Service	Internal information services are unresponsive due to manual processes.	The web-based system provides fast, transparent, and efficient access.

2.3. System Development Method

The Agile Scrum framework [6], [10] was chosen to develop the system for its flexibility in responding to changing requirements, as well as its support for rapid communication and feedback between developers and stakeholders. The development process was divided into three two-week sprints, covering product backlog preparation, sprint planning, system design, implementation, and sprint review and retrospective. Based on the requirements analysis, the resulting product backlog contains 16 system features, each assigned a priority level, as shown in Table 2. Because this research was carried out by a single researcher, the roles of Product Owner, Scrum Master, and Development Team were all performed individually, while Scrum principles such as iteration, backlog management, and periodic evaluation were still applied. A similar iterative approach has also proven effective in other research that developed website-based information systems using the Scrum methodology to improve responsiveness to user needs [11].

Table 2. SIMDOR System Product Backlog

ID	Feature	Description	Feature Code	Priority
PB-01	Login	Role-based user authentication	KF-01	High
PB-02	Forgot Password	User password recovery	KF-02	Medium
PB-03	Dashboard	Displays information according to role	KF-03	High
PB-04	Portfolio Selection	Admin selects a portfolio before entering the system	KF-04	High
PB-05	Add Order	Adds new order data	KF-05	High
PB-06	View & Manage Order	Displays and manages order data	KF-06	High
PB-07	Edit Order	Edits order data	KF-07	High
PB-08	Delete Order	Deletes order data	KF-08	Medium
PB-09	Order Status Monitoring	Displays order status progress	KF-09	High
PB-10	Document Management	Uploads and accesses order documents	KF-10	High
PB-11	Order Search	Searches order data	KF-11	Medium
PB-12	Export Report	Exports data to Excel (.xlsx)	KF-12	Medium
PB-13	Access Rights Management	Restricts features based on role	KF-13	High
PB-14	Activity Log	Displays user activity history	KF-14	High



PB-15	View Profile	Displays user profile information	KF-15	Low
PB-16	Logout	Logs out of the system	KF-16	Low

To visualize the system design, Unified Modeling Language (UML) notation was used in the form of lightweight Use Case Diagrams and Activity Diagrams. These diagrams served as modeling aids that facilitated product backlog preparation and communication with stakeholders, in keeping with the Agile principle of just enough documentation.

Feature priority levels (High/Medium/Low) in Table 2 were determined through discussions with internal stakeholders during the requirements-analysis stage, based on the frequency with which an issue was raised as a complaint and how often a corresponding feature was requested; features tied to the most frequently reported problems and most requested capabilities were assigned High priority, consistent with the problems identified through the PIECES analysis in Table 1.

2.4. Tools and Technology

In terms of technology, the system was built using ReactJS as the frontend framework, TailwindCSS as the utility-first CSS framework, and Firebase, which served the dual role of backend, real-time database, and authentication service. Cloudinary was used for digital document storage, and Vercel served as the deployment platform. The Use Case and Activity Diagrams were designed using Draw.io, while Git and GitHub functioned as the source-code version-control system.

2.5. System Testing Method

System testing combined two complementary approaches. Black Box Testing was used to validate the system's functionality from the end user's perspective, without examining its internal processes [12], covering tests of authentication, order-data management, document handling, and report generation. User Acceptance Testing (UAT), meanwhile, was carried out to determine the extent to which actual users accepted the system, involving seven respondents representing the roles of Customer Service, Operations/Portfolio Admin, Finance Admin, and coordination/management staff. The UAT in this study follows the user-acceptance testing practice applied in the evaluation of a web-based financial and inventory management information system [13], which emphasizes the importance of involving real users from the earliest stage of testing.

The UAT instrument consists of 14 statement items covering five assessment dimensions: ease of use, system security, functionality, system performance, and information accuracy and user satisfaction. To avoid a tendency toward neutral answers, assessment used a four-point Likert scale (1 = Strongly Disagree, 4 = Strongly Agree). The final UAT score was obtained by comparing the total score achieved against the maximum possible score, then classified according to the criteria in Table 3.

2.5.1. Instrument Validity and Reliability

Prior to interpreting the UAT results, the reliability of the 14-item instrument was examined using Cronbach's Alpha, computed from the seven respondents' raw item-level scores. The instrument yielded an Alpha coefficient of 0.749, which falls within the "Reliable" range (0.60-0.80) on the commonly used reliability-interpretation scale [15], indicating that the instrument's items consistently measure the same underlying construct. A corrected item-total correlation was also calculated for each item; most items showed a positive and moderate-to-strong correlation with the overall scale, although three items (login security, role-based access appropriateness, and response speed) showed weak or negative item-total correlations. Given the very small sample size ($n=7$), individual item-level correlation estimates are statistically unstable and should be interpreted with caution; this limitation is further addressed in the Conclusion.

The four-tier percentage classification used in Table 3 (Very Good, Good, Fair, Poor) follows the interval-class convention for interpreting percentage-based questionnaire scores commonly applied in information-systems acceptance research [15].



Table 3. UAT Assessment Categories

Score (%)	Criteria
80 - 100	Very Good (System fully accepted)
70 - 79	Good (System accepted with minor improvements)
60 - 69	Fair (System requires further evaluation)
< 60	Poor (System not accepted)

3. RESULTS AND DISCUSSION

3.1. System Development Results

SIMDOR was developed across three two-week sprints, resulting in a total of 16 features in line with the product backlog. These features include role-based authentication, password recovery, role-specific dashboards, portfolio selection, order-data management (add, edit, delete), order-status monitoring, document management, order search, Excel report export, access-rights management, and user activity logs. High priority was given to core features such as order management, status monitoring, and access-rights management, given their direct role in supporting the company's main business processes.

In line with the RBAC principle, which holds that access rights should be granted based on a user's functional role within the organization rather than individual identity [4], the RBAC mechanism in SIMDOR was implemented by dividing access rights into four roles: Customer Service (CS), Portfolio/Operations Admin, Finance Admin, and Coordinator/Management. How these four roles interact with the system's functionality is depicted in the Use Case Diagram in Figure 1, which shows that each actor is connected only to the use cases within their respective authority.

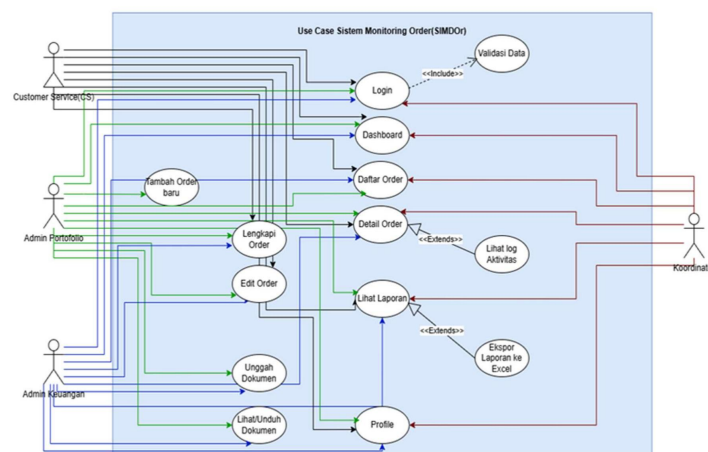


Figure 1. Use Case Diagram of the SIMDOR System

In addition to the Use Case Diagram, an Activity Diagram was developed for each of the four user roles to illustrate the step-by-step interaction flow between the user, the system, and the database. The diagrams were organized by user role rather than by individual feature because RBAC in SIMDOR is fundamentally a role-centric access-control mechanism: each role is granted a distinct, bounded set of permissions, and the practical concern for both design verification and security review is whether a given role's entire end-to-end workflow, from login to logout, stays correctly confined within its authorized scope. A per-feature diagram would fragment this scope across multiple disconnected diagrams and obscure how permissions compose across an actual user session, whereas a per-role

diagram shows the complete, bounded activity space that RBAC is meant to enforce for that role in a single coherent view. Figures 1a-1d present the Activity Diagrams for the Customer Service, Portfolio Admin, Finance Admin, and Coordinator roles, respectively.

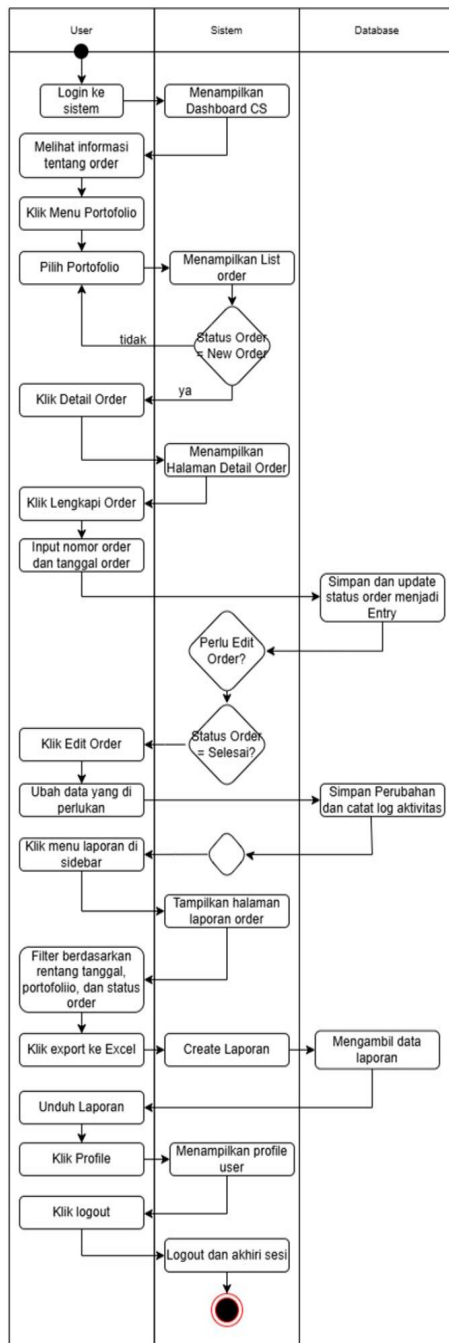


Figure 1a. Activity Diagram for the Customer Service Role

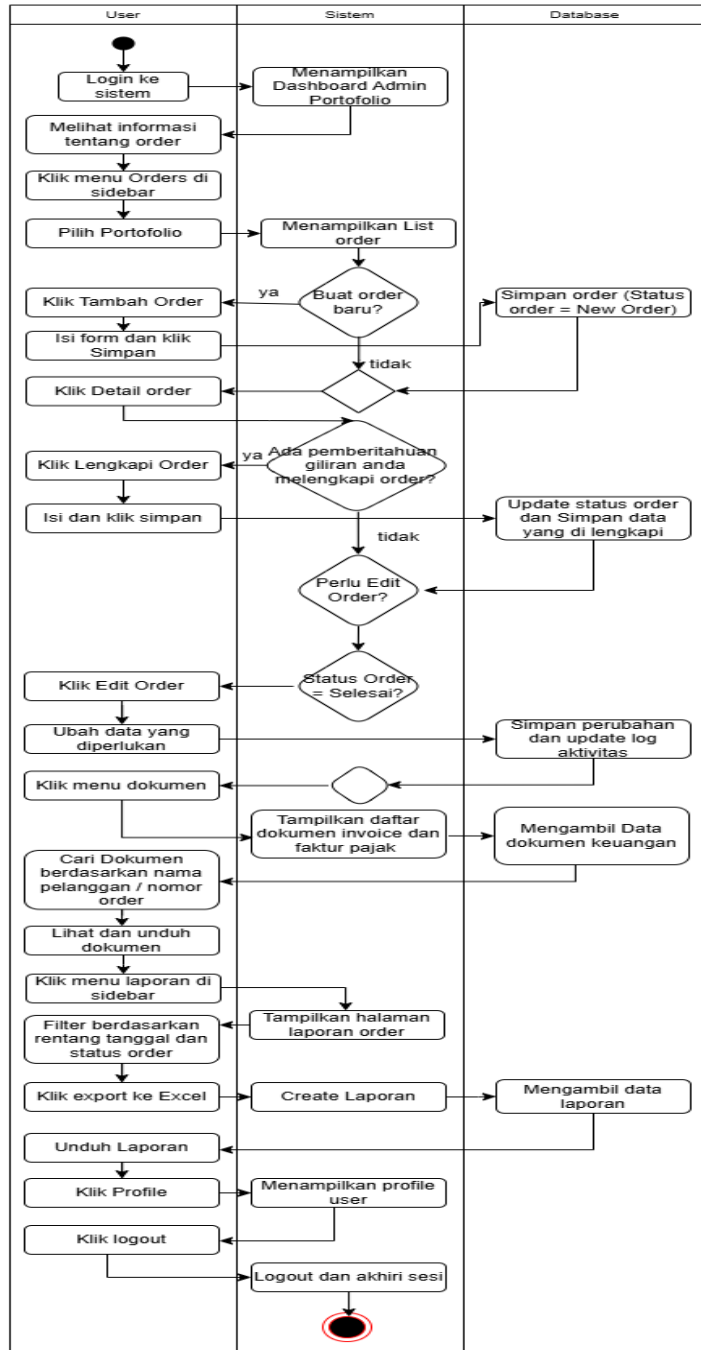


Figure 1b. Activity Diagram for the Portfolio Admin Role

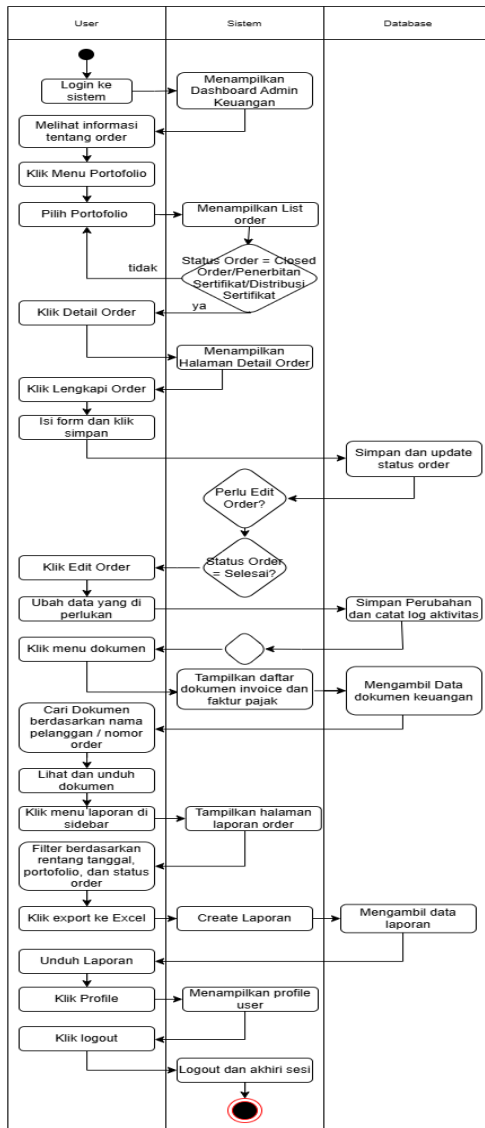


Figure 1c. Activity Diagram for the Finance Admin Role

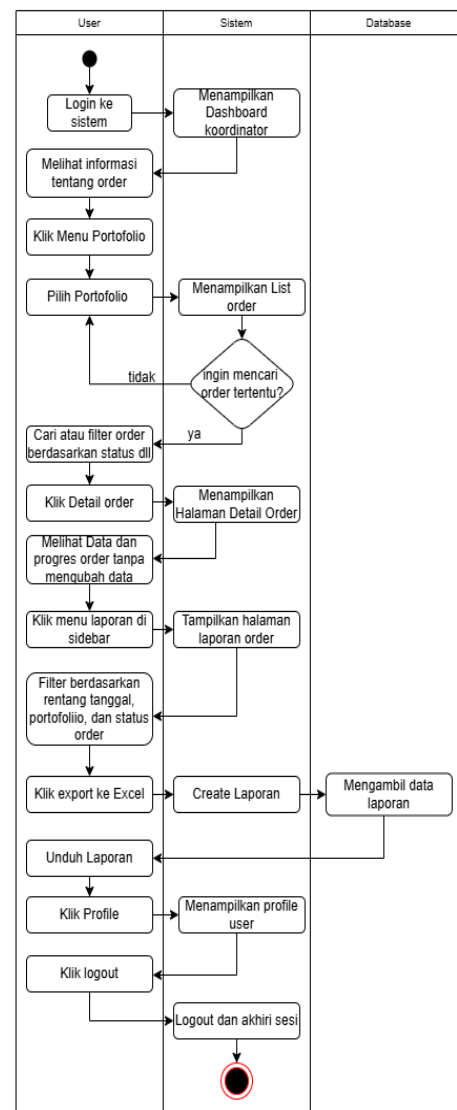


Figure 1d. Activity Diagram for the Coordinator Role

Notably, the Coordinator's Activity Diagram (Figure 1d) contains no edit, delete, or data-entry actions at any step, consistent with its read-only design intent and corroborating the outcome of the RBAC negative-testing scenario in Section 3.2.1, in which a Coordinator's attempt to edit order data was blocked by the system.

As shown in Figure 2, the Order List page presents all order data in tabular form, complete with a summary of order counts by status and search and filter features, allowing users to monitor order volume and progress quickly and efficiently.

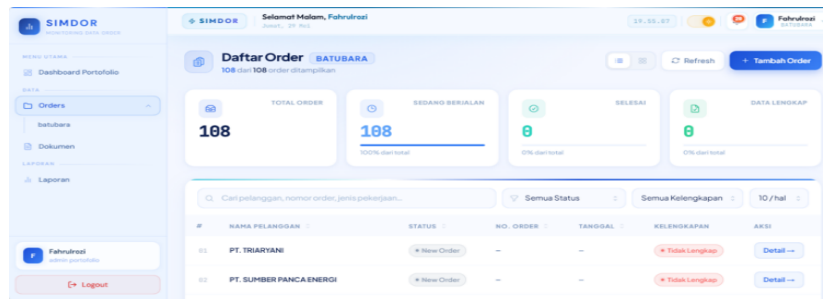
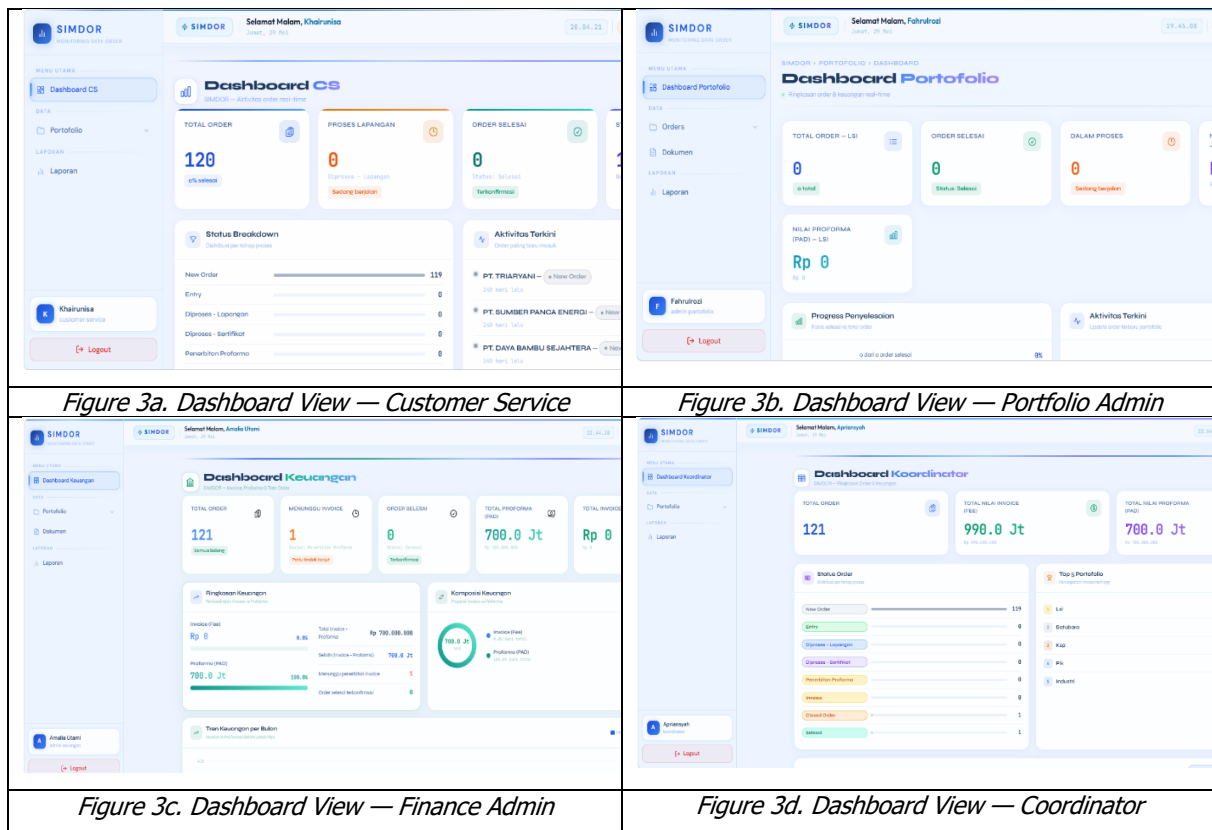


Figure 2. SIMDOR Order List Monitoring Page

Each role has its own dashboard view that presents a summary of information relevant to its needs. For Customer Service, the dashboard displays a summary of total orders, the distribution of order statuses, and the latest order activity in real time. The Portfolio Admin receives a summary of orders along with invoice/proforma values for the portfolios they manage, while the Finance Admin is shown revenue information, invoice status, and a detailed breakdown of financial composition. The Coordinator, meanwhile, is given an overall aggregate view of the status of all orders and invoice/proforma values across portfolios for general operational-performance monitoring purposes. A comparison of these four dashboard views is shown in Figure 3. This division of access ensures that each user can only reach the system functions relevant to their role, thereby reducing the risk of unauthorized access.



One of SIMDOR's main contributions lies in its order-status tracking feature, implemented through a structured status flow from New Order to Completed. Status changes are made in stages by users according to their respective roles, allowing order progress to be followed clearly and in a controlled

manner at every stage. The Order Status Tracking view in Figure 4 visualizes order progress sequentially — from New Order, Entry, Field Processing, Certificate Processing, Closed Order, Proforma Issuance, and Invoice, through to Completed — complete with activity notes for each stage.



Figure 4. SIMDOR Order Status Tracking View

In terms of infrastructure, SIMDOR is deployed by combining three integrated cloud services. The ReactJS-based frontend is hosted through Vercel, allowing continuous system updates. On the backend side, Firebase Firestore serves as the database, enabling real-time data synchronization, while Firebase Authentication handles the entire user-authentication process. Digital documents related to orders — such as work orders, certificates, invoices, and tax invoices — are stored via Cloudinary and automatically linked to their corresponding order data.

3.2. System Testing Results

Black Box Testing focused on verifying the system's core functions, covering user authentication, order-data management, supporting-document handling, and the report generation and export process. A summary of the results is presented in Table 4.

Table 4. Summary of Black Box Testing Results for the SIMDOR System

No	Feature Tested	Expected Result	Status
1	User Login	Dashboard displays according to the logged-in user's role	Passed
2	Forgot Password	Password reset link sent to the user	Passed
3	System Dashboard	System displays an order-data summary matching the user's role	Passed
4	Add Order Data	New order data is successfully saved	Passed
5	View & Manage Order Data	Order list and details are displayed accurately	Passed
5b	Edit Order Data	Order data changes are saved accurately	Passed
6	Upload Document	Document is saved and linked to the system	Passed
7	Order Status Monitoring	Order status is displayed accurately	Passed
8	Order Search	Search results match the keyword entered	Passed
9	Export Report	Report is successfully downloaded in Excel format	Passed

As supporting evidence for the login feature test (Table 4, item 1), Figure 2a shows the system's validation response when an incorrect email or password is submitted.

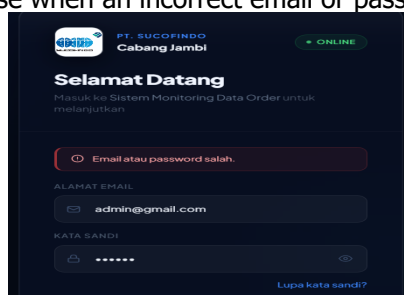


Figure 2a. Login Form Validation — Error Message for Incorrect Email or Password

Since every Black Box test scenario passed validation, it can be concluded that the system meets all the functional requirements defined during the development-planning stage.

Black Box Testing in this study prioritized the ten highest-priority core features identified in Table 2 (login, password recovery, dashboard, order management, document upload, status monitoring, search, and report export); the remaining six lower-priority features (order deletion, portfolio selection, access-rights management, activity logging, profile view, and logout) were not included in this formal Black Box table, though the access-rights management feature was subsequently validated through the dedicated RBAC security testing described in Section 3.2.1.

3.2.1. RBAC Security Testing (Negative Testing)

To provide direct empirical evidence for the claim that RBAC reduces the risk of unauthorized access, rather than relying solely on the mechanism's design, three negative-test scenarios were carried out on the deployed system. Each scenario attempted an action explicitly outside the acting user's authorized scope, either across different roles or across different portfolios within the same role, by directly requesting a URL or action that the user interface does not expose to that user. The scenarios and their outcomes are summarized in Table 4a.

Table 4a. Summary of RBAC Negative Testing Results

No	Scenario	Method	Expected Result	Actual Result	Status
1	Portfolio Admin responsible for the Mineral portfolio attempts to access order data belonging to the KSP portfolio.	Direct URL access to /orders/ksp while logged in as the Mineral Portfolio Admin	Access is denied	System displayed an "Anda tidak memiliki akses!" (access denied) alert; order data remained unrendered.	Passed
2	Finance Admin attempts to complete/edit order data outside their authorized scope.	Direct URL access to the order-completion route (/orders/batubara/detail/edit/...) for a portfolio outside Finance Admin's scope	Access is denied	System displayed an "Anda tidak memiliki akses!" (access denied) alert; no data was modified.	Passed
3	Coordinator (read-only role) attempts to edit order data.	Direct URL access to the order-completion route (/orders/batubara/detail/lengkapi/..) while logged in as Coordinator	Access is denied	Page failed to render (blank page); no data was displayed and no changes were saved.	Passed

All three scenarios were successfully blocked by the system, providing direct evidence that RBAC enforcement operates at the server/route level and not merely by hiding menu options in the user interface. It is worth noting, however, that the mechanism used to deny access was not uniform across scenarios: Scenarios 1 and 2 returned an explicit, user-facing "Anda tidak memiliki akses!" (access denied) alert, whereas Scenario 3 produced a blank, unrendered page with no explanatory feedback. While all three outcomes achieved the intended security objective of preventing unauthorized access, this inconsistent handling of denied-access cases represents a user-experience limitation that is recommended as an area for future improvement, namely standardizing all access-denial responses into a single, informative message rather than a mix of alerts and blank pages.



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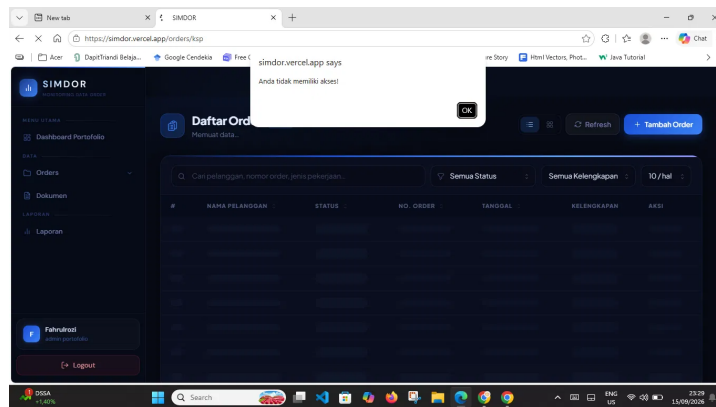


Figure 5a. Negative Testing Evidence — Scenario 1: Portfolio Admin attempting cross-portfolio access to KSP

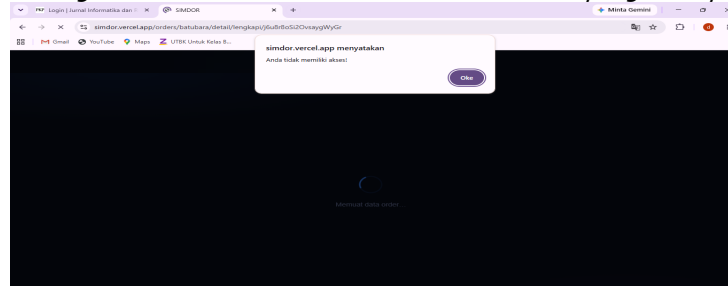


Figure 5b. Negative Testing Evidence — Scenario 2: Finance Admin attempting to edit order data outside scope

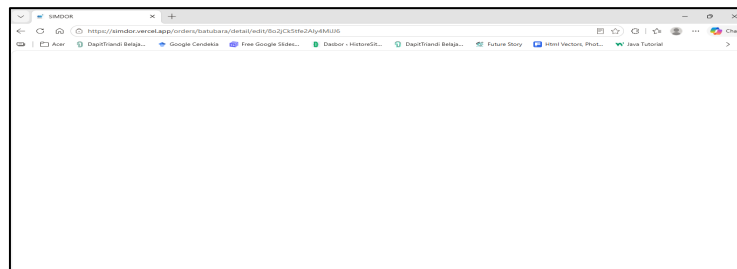


Figure 5c. Negative Testing Evidence — Scenario 3: Coordinator attempting to edit order data

These three outcomes illustrate two distinct access-control enforcement patterns observed in the deployed system: explicit denial (Scenarios 1 and 2), where the server actively evaluates the request against the user's role and returns a rejection with a clear status message, and a fail-safe default (Scenario 3), where the absence of authorization simply results in the requested resource not being rendered rather than an informative error being shown. Both patterns satisfy the fundamental security principle that access should be denied unless explicitly granted; however, only the explicit-denial pattern also satisfies usability expectations, which is consistent with the standardization recommendation made above.

Seven respondents representing the roles of Operations Admin, Customer Service, Finance Admin, and Management were involved in the UAT. Using the scoring formula $\text{Score} = (\text{SA} \times 4) + (\text{A} \times 3) + (\text{D} \times 2) + (\text{SD} \times 1)$, a total score of 335 was obtained out of a possible maximum of 392 (7 respondents $\times$ 14 statements $\times$ a top score of 4), placing the system's acceptance rate at 85.46%, within the Very Good category — consistent with the user-acceptance evaluation approach used in similar research [14]. A detailed breakdown of the evaluation results by assessment variable is shown in Table 5.

For comparison, a similar UAT-based evaluation of a web-based financial and inventory management information system reported an average interpretation score of 87% in the "Very Good" category [13]. SIMDOR's acceptance rate of 85.46% is therefore broadly comparable to, though





marginally lower than, this benchmark, suggesting that the system's level of user acceptance is consistent with findings reported in similar information-systems research.

Table 5. UAT Evaluation Results by Assessment Variable

Assessment Variable	Max Score	Score Obtained	Percentage	Category
Ease of Use	84	72	85.71%	Very Good
Functionality	112	95	84.82%	Very Good
System Performance	56	50	89.29%	Very Good
Security & Accuracy	56	50	89.29%	Very Good
Satisfaction & Benefit	84	68	80.95%	Very Good
Total	392	335	85.46%	Very Good

The highest scores were recorded by the system-performance variable and the security-and-accuracy variable, each at 89.29%, indicating that the system performs reliably and stably while maintaining strong user-access security. The ease-of-use variable scored 85.71% and the functionality variable scored 84.82%, suggesting that the system is considered easy to operate and its features sufficiently relevant. The satisfaction-and-benefit variable stood at 80.95%, indicating that the system is seen as capable of improving work efficiency in day-to-day order-monitoring activities.

3.3. Discussion

The PIECES evaluation revealed several fundamental weaknesses in the previously used spreadsheet-based system, including a high risk of data manipulation with no clear audit trail, the absence of role-based access arrangements, and the lack of an organized order-status monitoring mechanism. SIMDOR's implementation shows that most of these issues can be resolved through the application of authentication mechanisms and role-based access arrangements. Thanks to RBAC, each user account can only reach the system functions relevant to its role, reducing unauthorized access and better preserving data consistency.

The order-management feature is one of SIMDOR's core components, organizing orders according to predefined status stages so that data entry proceeds in phases following the applicable business process flow. This approach reduces the likelihood of incomplete order data while improving information consistency, consistent with findings that web-based real-time tracking systems can significantly improve logistics and operational efficiency [5]. The document-management module, directly linked to the corresponding order data, also greatly simplifies document search and archiving, which had previously been scattered across various storage locations and managed manually.

Agile Scrum proved effective in accommodating the various changes and adjustments to user requirements that emerged during development. In the Sprint 1 retrospective, for example, users suggested that the login and portfolio-selection page be simplified. Moving into Sprint 2, requests emerged for a more informative order-detail page, a more clearly directed data-entry flow aligned with status stages, and clearer access restrictions at each process step. All of this feedback was successfully accommodated in the following iteration, making the system produced in Sprint 3 more closely aligned with user needs. This finding reinforces earlier research stating that the Agile method can improve software-development flexibility while strengthening collaboration between developers and system users [11].

Both the Black Box and UAT results indicate that the developed system has fully met user needs, in terms of both functional completeness and ease of operation. In practical terms, SIMDOR is expected to make a tangible contribution to PT SUCOFINDO's Jambi Branch by boosting the effectiveness and efficiency of its operational processes. Academically, this study contributes empirical evidence that applying Agile Scrum in information-system development can produce systems that are more adaptive and responsive to changing user needs, while also enriching the body of research on RBAC





implementation in web-based information systems within the inspection, testing, and certification services sector.

4. CONCLUSION

This study successfully addresses the research problem through the development of a web-based Order Monitoring and Tracking System (SIMDOR) that manages order data in a structured manner through the implementation of Role-Based Access Control (RBAC) at PT SUCOFINDO's Jambi Branch. RBAC proved effective in resolving the data-security and integrity issues that previously arose from spreadsheet-based data management without access restrictions. Meanwhile, system development using the Agile Scrum method across three sprints proved capable of adaptively accommodating changing user requirements throughout the development process. Black Box Testing results show that all main system functions perform according to the defined scenarios, while User Acceptance Testing involving seven respondents recorded an acceptance rate of 85.46%, in the Very Good category. Unlike previous studies, which tend to address RBAC or order monitoring separately, this study contributes by combining both aspects and quantitatively evaluating them within a single system directly applied to the operational context of the inspection and certification services sector. Based on these results, SIMDOR is considered feasible and fully ready to be implemented in support of order-monitoring and tracking activities at PT SUCOFINDO's Jambi Branch, providing both a practical contribution to the company and an academic contribution to the development of web-based information-systems research.

This study is subject to several limitations that should be considered when interpreting its findings. First, all Scrum roles (Product Owner, Scrum Master, and Development Team) were carried out by a single researcher, which may limit the diversity of perspectives typically achieved through a multi-person development team. Second, the User Acceptance Testing involved only seven respondents; while sufficient to obtain an initial indication of system acceptance, this small sample size limits the statistical generalizability of the findings and contributed to unstable item-level correlation estimates for three UAT items, as noted in Section 2.5. Third, this research was conducted as a single case study at one branch office (PT SUCOFINDO's Jambi Branch), so the order patterns, organizational structure, and user needs observed may not directly generalize to other branches or organizations. Future research is encouraged to involve a larger and more diverse respondent pool, a multi-person development team, and multiple branch locations to strengthen the generalizability of the results.

For future development, it is recommended that SIMDOR be equipped with an automatic notification feature so users can receive up-to-date information on real-time order-status updates, integrated with other information systems already used by the company for smoother cross-system data exchange, developed as a mobile application for greater access flexibility, and enhanced with more comprehensive data-analytics features to support data-driven managerial decision-making.

5. CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Dapit Triandi: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualization, Supervision, Project Administration. As the sole author, I carried out every stage of this research independently, from system design through system testing and manuscript writing.

6. DECLARATION OF COMPETING INTEREST

The author declares that there are no financial, personal, or professional relationships that could potentially influence the research, analysis, or publication of this article.

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During the writing process, the author used Claude (Anthropic) to help draft the initial manuscript, adapt the article structure to the journal template, paraphrase sentences, and refine the manuscript formatting based on data and findings from the author's undergraduate thesis. All output generated by the AI tool was reviewed, verified, and revised by the author, who takes full responsibility for the accuracy, originality, and integrity of the final manuscript content.

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