

Implementation of a Sales-Driving Factors Feature Based on Sales Data (5S) on the OneDirection Monitoring Website

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Abstract

The Monitoring Onedirection website at PT XYZ does not yet provide a sales data analysis feature based on the 5S components, namely Sales Out (SO), Sales Acquisition (SA), Sales Through (ST), Sales Renewal (SR), and SBP DD Warehouse Stock (SD). As a result, employees still calculate business performance indicators manually using Microsoft Excel, which is prone to errors and inefficient. This study aims to develop a 5S-based Sales Driver feature for the Monitoring Onedirection website at PT XYZ and evaluate its level of user acceptance. The research employs the Rapid Application Development (RAD) method using the Laravel framework. The developed feature consists of six main pages equipped with daily trend charts, four-level hierarchical regional tables, and automatic calculations of Month to Date (MTD), Month over Month (MoM), Year over Year (YoY), and Delta MoM metrics. The Black Box Testing results showed a 100% success rate across 68 test scenarios, while User Acceptance Testing (UAT) involving eight respondents achieved an average score of 92.73%, categorized as Highly Feasible. Therefore, the Sales Driver feature was successfully implemented and proven effective in supporting data-driven monitoring and analysis of sales performance.

Keywords: Sales Driver, Sales Monitoring, RAD Method, Web-Based System, User Acceptance Testing

INTRODUCTION

The rapid development of information technology has driven various business sectors to undergo digital transformation (Kraus et al., 2021; Kusmaryanto & Santoso, 2025; Susilawati Sugiana & Musty, 2023). Along with this development, advances in information systems have increasingly emphasized automation, monitoring systems, Internet of Things (IoT), and intelligent data processing, enabling organizations to perform monitoring activities more efficiently and in real time (Cobantoro et al., 2019; Khotib & Sutikno, 2019; Siskandar, Santosa, et al., 2022; Siskandar, Wiyoto, Santosa, Sari, et al., 2023; Siskandar et al., 2024). Digital transformation enables companies to manage sales data more quickly, accurately, and in a data-driven manner (Irpani, 2025). In the context of increasingly competitive business environments, the ability to monitor and analyze sales performance effectively has become a key factor in strategic decision-making (Putra et al., 2025). Web-based monitoring systems have proven to be an efficient solution for improving the effectiveness of sales data management, as they can be accessed by various levels of management without relying on time-consuming manual procedures (Rahman et al., 2022). A monitoring system not only provides data visualization but also supports monitoring, supervising, controlling, and analyzing data to maximize the utilization of available resources, enabling organizations to obtain timely and accurate information for decision-making (Radita Febrianti et al., 2023; Santosa et al., 2023; Siskandar, Mandang, Hermawan, & Irzaman, 2023; Wiyoto et al., 2023). However, the effectiveness of such systems is not solely determined by their ability to display data, but also by their capacity to process and integrate data systematically in order to produce comprehensive and easily analyzable information (Alves Souza, 2026).

In the context of PT XYZ, sales data is grouped into five main components known as 5S, namely Sales Acquisition (SA), Sales Through (ST), Sales Out (SO), Sales Renewal (SR), and SBP DD Warehouse Stock (SD), which represent the overall flow of the sales business process. Previous studies such as (Fadly et al., 2020) and (Gustianto & Thantawi, 2024) have developed web-based sales monitoring and visualization features, however, these studies generally remain focused on visual data presentation and have not accommodated the management of data based on internal business components such as 5S. Previous monitoring system studies have also emphasized the importance of integrating monitoring with data analysis to provide timely information that facilitates operational monitoring and decision-making.(Siskandar, Wiyoto, et al., 2022).This indicates a research gap that needs to be addressed.

Unlike these previous studies, which primarily focus on visual data presentation without addressing internal business-based data structuring (Fadly et al., 2020; Gustianto & Thantawi, 2024), this study proposes a novel contribution through the development of the Sales Driver feature, which integrates the management of sales data based on five internal business components (5S: Sales Acquisition, Sales Through, Sales Out, Sales Renewal, and SBP DD Warehouse Stock) within a single structured monitoring platform. Beyond visual presentation, this feature provides comparative analytical indicators, including Month to Date (MTD), Month on Month (MoM), Year on Year (YoY), and Delta MoM, allowing users to track sales performance trends and fluctuations in greater detail. In addition, Sales Driver supports performance analysis based on regional hierarchy and provides a target-versus-actual tracking mechanism for each 5S component. The integration of 5S-based data management, multi-period analytical indicators, regional hierarchy analysis, and target-versus-actual tracking within a single platform constitutes the novelty of this study, which has not been accommodated by prior web-based sales monitoring systems.

This gap is also found in the Onedirection Monitoring Website used by PT XYZ, where the existing system does not yet provide a structured 5S based data management feature. As a result, the analysis process is still carried out manually using spreadsheets from merging data from various sources to calculating indicators such as Month to Date (MTD), Month on Month (MoM), Delta MoM, and Year on Year (YoY) thereby increasing the risk of errors, data inconsistencies, and delayed insights that may hinder strategic decision-making. To address these limitations, monitoring platforms must evolve beyond basic data compilation by integrating systematic processing models that automatically classify and determine the status of specific metrics, thereby reducing analytical ambiguity for decision-makers (Siskandar, Wiyoto, Santosa, Hidayat, et al., 2023). Furthermore, securing a well-structured system architecture is essential in such monitoring frameworks to ensure high tracking stability and prevent synchronization errors when capturing fluctuating parameter data continuously (Siskandar, Mandang, Hermawan, & Irzawan, 2023). Based on these problems, it is necessary to develop a Sales Driver feature on the Onedirection Monitoring Website that is capable of managing and presenting 5S based sales data, while also evaluating the level of user acceptance.

METHODS

This study employs the Rapid Application Development (RAD) method in the implementation of system development. This method offers advantages in accelerating the development process through flexible iterative cycles. RAD emphasizes intensive collaboration between developers and users, where the features being built can be evaluated incrementally, thereby producing system features that align with actual user needs (Risandi et al., 2025). In general, system development research is carried out through several stages, including system design, implementation, and testing to ensure that the developed system functions according to the intended objectives (Siskandar & Kusumah, 2019).The RAD process is illustrated in Figure 1.

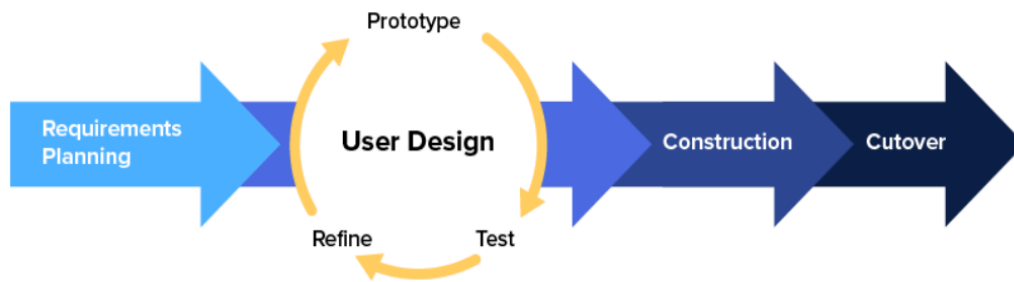


Figure 1 Rapid Application Development

Based on Figure 1 above, the Rapid Application Development method consists of development stages that must be carried out iteratively and continuously, namely Requirements Planning, User Design, Construction, and Cutover. The stages to be conducted in this study are as follows:

A. System Design

1) Requirements Planning

At this stage, users and analysts play a role in identifying the objectives of the application or system, as well as determining the information requirements that arise from those objectives (Fadilah & Safitri, 2022). This stage began with direct observation of the sales data management process on the Onedirection Monitoring Website, conducted over one week (3–7 November 2025) at PT XYZ, focusing on the activities of the Campaign Personalization and Operation Analyst Eastern Division in managing 5S sales data using Microsoft Excel. In this study, interviews were conducted with the Campaign Personalization and Operation Analyst Eastern Division to collect data and understand user needs related to the Sales Driver feature.

The interviews were conducted over three days (10–12 November 2025) with four informants: three employees from the Campaign Personalization and Operation Analyst Eastern Division and one Regional Eastern admin, selected because they are directly involved in the daily process of collecting, processing, and reporting 5S sales data, as well as in managing sales targets used as a benchmark for performance evaluation. The interviews used a structured question guide covering the current data management workflow, difficulties encountered in the manual process, and expected features of the Sales Driver. This stage is considered complete when users and developers have reached an agreement on the main issues and have obtained approval to proceed to the next development stage.

Based on the interview results, the sales data management process is still carried out manually, starting from collecting 5S data, processing data using spreadsheets, calculating business indicators, and generating sales reports. The needs identified from the observation and interviews were analyzed qualitatively by identifying recurring needs and issues mentioned across informants, which were then grouped based on shared functional characteristics to derive the functional requirements presented in Table 1. This process is deemed inefficient, error-prone, and time-consuming, thus requiring a system capable of managing and presenting sales data in an integrated manner. The manual business process flow is presented in Figure 2.

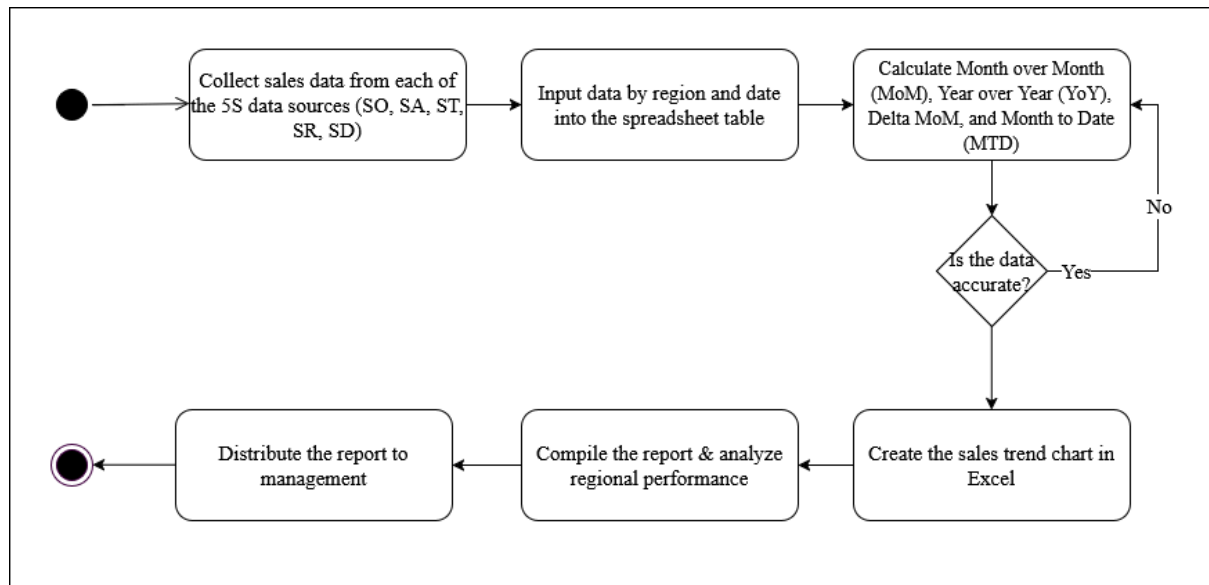


Figure 2 manual workflow

Based on interviews conducted with users from the Campaign Personalization and Operation Analyst Eastern Division, several user requirements were identified as follows. These requirements were then translated into functional requirements to serve as the basis for system development, as presented in Table 1.

Table 1 Functional Requirements

Code	Functional Name	Functional Requirements Description
KF-01	Sales Driver	The system must provide a Sales Driver feature with 5S pages that display sales data including Sales Out (SO), Sales Acquisition (SA), Sales Renewal (SR), Sales Through (ST), and SBP DD Warehouse Stock (SD), equipped with trend charts, regional tables, and analytical indicators
KF-02	Sales Driver Summary	The system must provide a Sales Driver Summary Dashboard that displays an overall performance summary of the 5S data
KF-03	Date and Regional Filter	The system must provide date and regional filters applicable across all views
KF-04	Regional Sales Table	The system must display a sales data table based on regional breakdown
KF-05	Excel Data Export	The system must provide a data export feature in Excel format (.xlsx) according to the filters selected by the employee
KF-06	Sales Analytical Indicators	The system must calculate and display analytical indicators including Month to Date (MtD), Month over Month (MoM), Year over Year (YoY), and Delta MoM
KF-07	Last Update Information	The system must record and display the timestamp of the last data update (last update)
KF-08	Regional Performance Comparison	The system must display a sales performance comparison across regions on the Summary Dashboard
KF-09	Sales Target	The system must display sales target data as a reference for comparison against actual sales data
KF-10	Sales Target Management	The system must provide a sales target management feature that allows the Admin to add, edit, and delete sales target data

2) User Design

This stage involves creating designs to be proposed that align with requirements, run according to plan, and are expected to resolve existing problems (Hidayat & Hati, 2021). The design stage also serves as a planning and problem-solving process to produce an appropriate solution before system implementation. It includes designing the system workflow, application architecture, and database

structure as the foundation for developing a functional system (Akbar et al., 2019; Irzaman et al., 2017; Siskandar et al., 2020). At this stage, system modeling was carried out using Unified Modeling Language (UML), which includes Use Case Diagrams, Activity Diagrams, and an Entity Relationship Diagram (ERD), followed by iterative prototype design refinement with users until the design was approved and ready to enter the Construction stage.

A Use Case Diagram is used to illustrate the functional interactions between actors and the system, describing what the system does from the user's perspective rather than how it is implemented internally (Beimel & Kedmi-Shahar, 2019; Hendini, 2016; Muhammad Abdullah Alwahdi et al., 2023). The Use Case Diagram illustrates the interaction between actors and the system being developed Figure 3. This diagram shows two main actors: admin and user. The admin is responsible for managing sales target data based on period and region, covering activities of adding, editing, deleting, and exporting data. Meanwhile, the user can access analytical features such as the Sales Driver summary, the 5S detail pages consisting of Sales Out (SO), Sales Acquisition (SA), Sales Renewal (SR), Sales Through (ST), and Stock Gudang SBP DD (SD), trend charts, filters by time and region, regional performance tables, and data export features for reporting purposes.

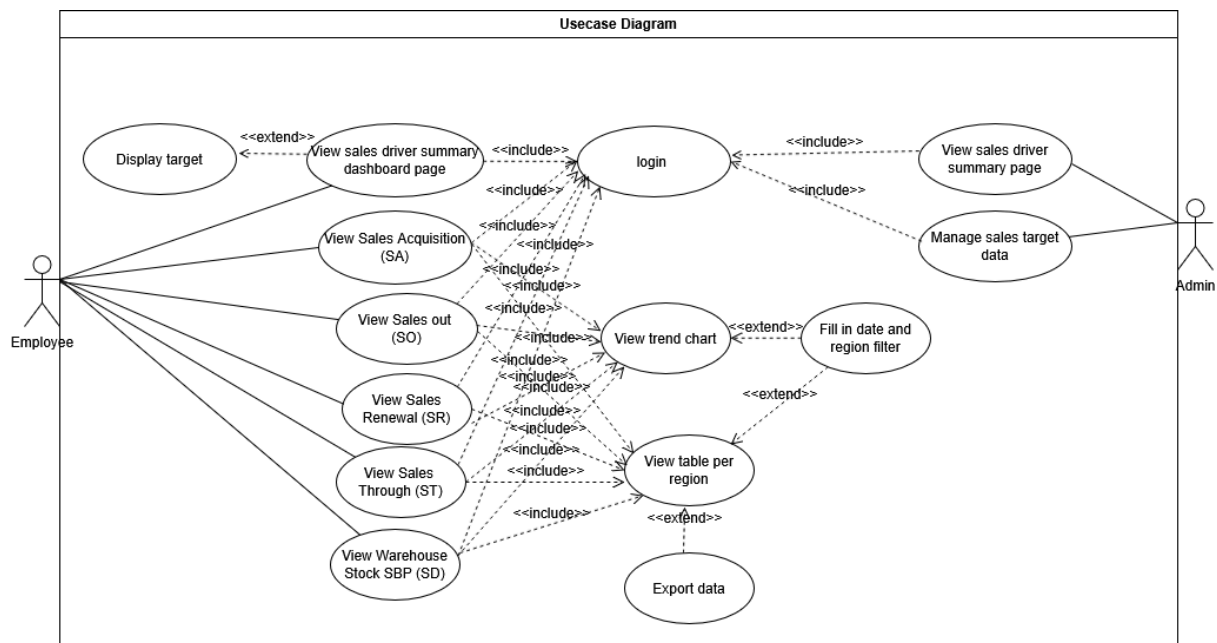


Figure 3 Usecase Diagram

Entities along with their attributes are depicted in the form of an Entity Relationship Diagram (ERD), thereby forming the Database Component, which represents an early stage in system development based on the System Development Life Cycle (SDLC) (Iskandar, 2020). The ERD is used to describe the database structure and relationships between entities in the system (Anisah Mohd Saad & Muniandi, 2020). Relationships between tables are built using regional dimension and time period attributes, where the sales_target table has a one-to-many relationship with the actual transaction tables because one target data can have many realization records for a specific region and period. With this design, the system can automatically compare targets and actual data, producing accurate sales performance information while supporting the processing of analysis indicators such as Month to Date (MTD), Month over Month (MoM), Year over Year (YoY), and Delta MoM, as illustrated in Figure 4.

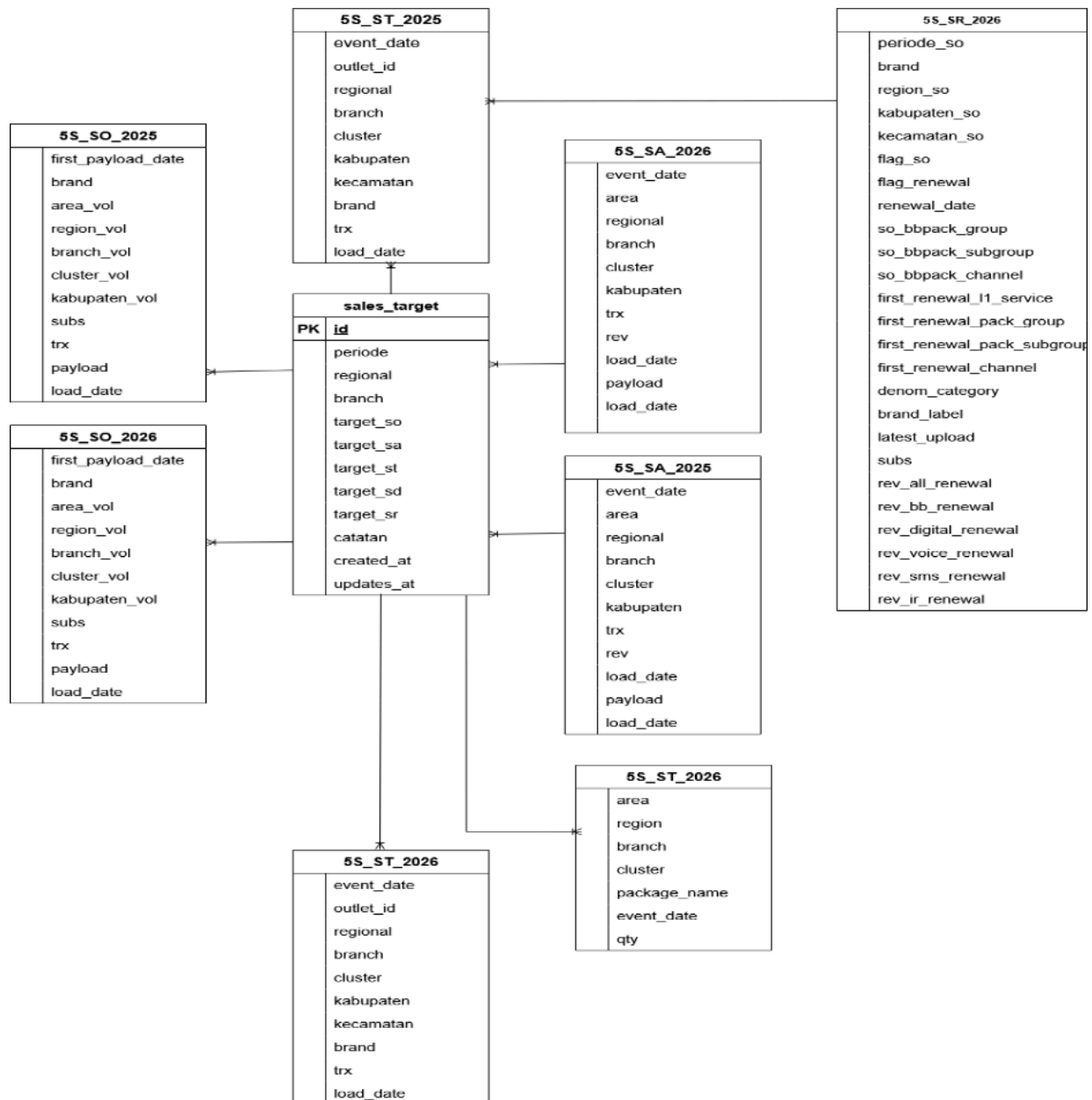


Figure 4 ERD

The User Activity Diagram describes the interaction flow starting from website access and the login process until the system displays the Sales Driver page. After logging in, the user can select the Sales Driver summary menu or the 5S details (SO, SA, ST, SR, SD), use filters based on time and region, view trend charts, performance tables (MTD, MoM, YoY, Delta MoM), and last update information, then export data in Excel format before logging out. Meanwhile, the Admin Activity Diagram describes the sales target data management flow from login until the system displays the admin page. The admin can add, edit, and delete sales target data, where each change will be processed by the system until the data is successfully updated and saved, as illustrated in Figure 5. Both diagrams demonstrate how the two actors User and Admin interact with the system through distinct workflows: the User focuses on monitoring and analyzing sales performance data, while the Admin focuses on managing and maintaining the sales target data that feeds into those analyses.

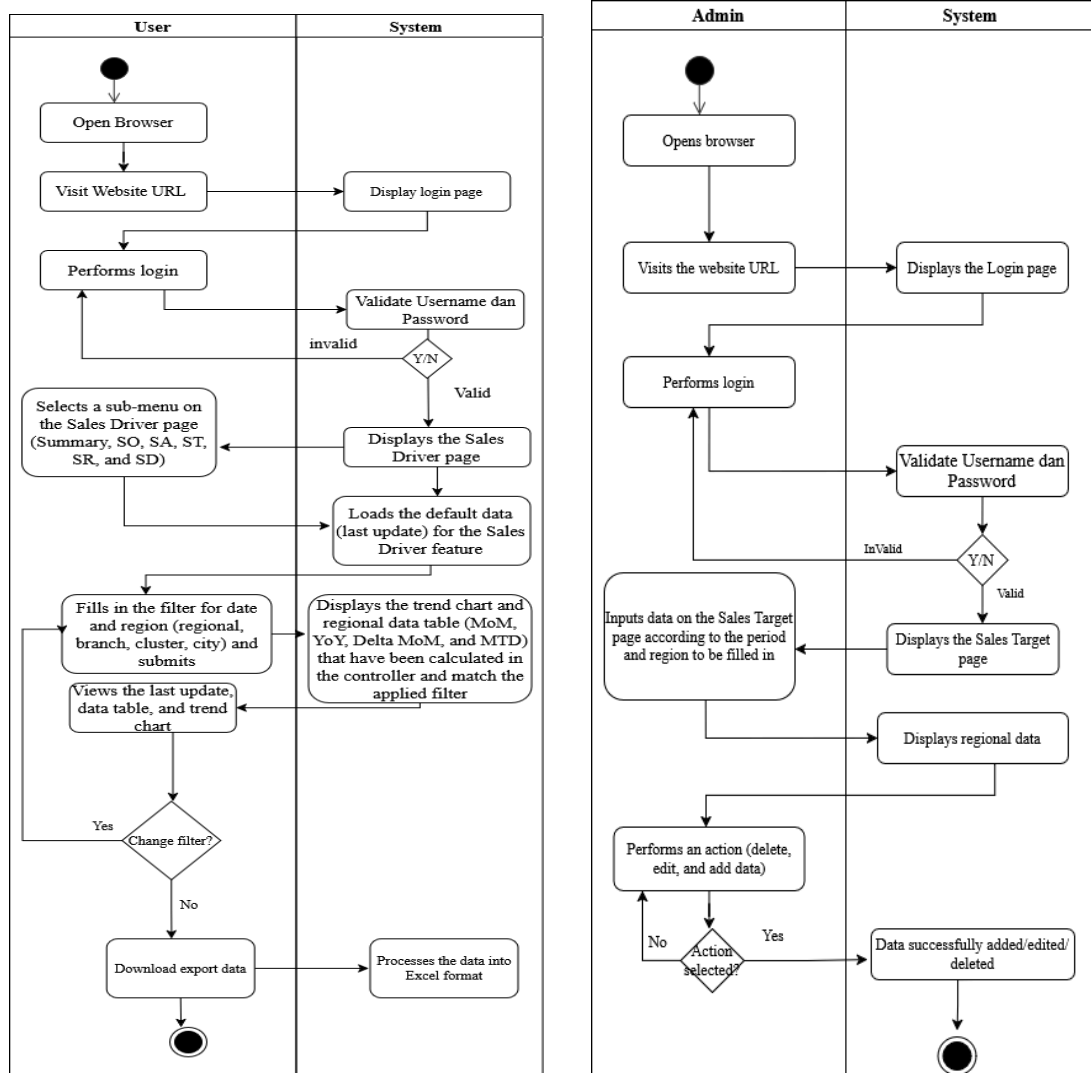
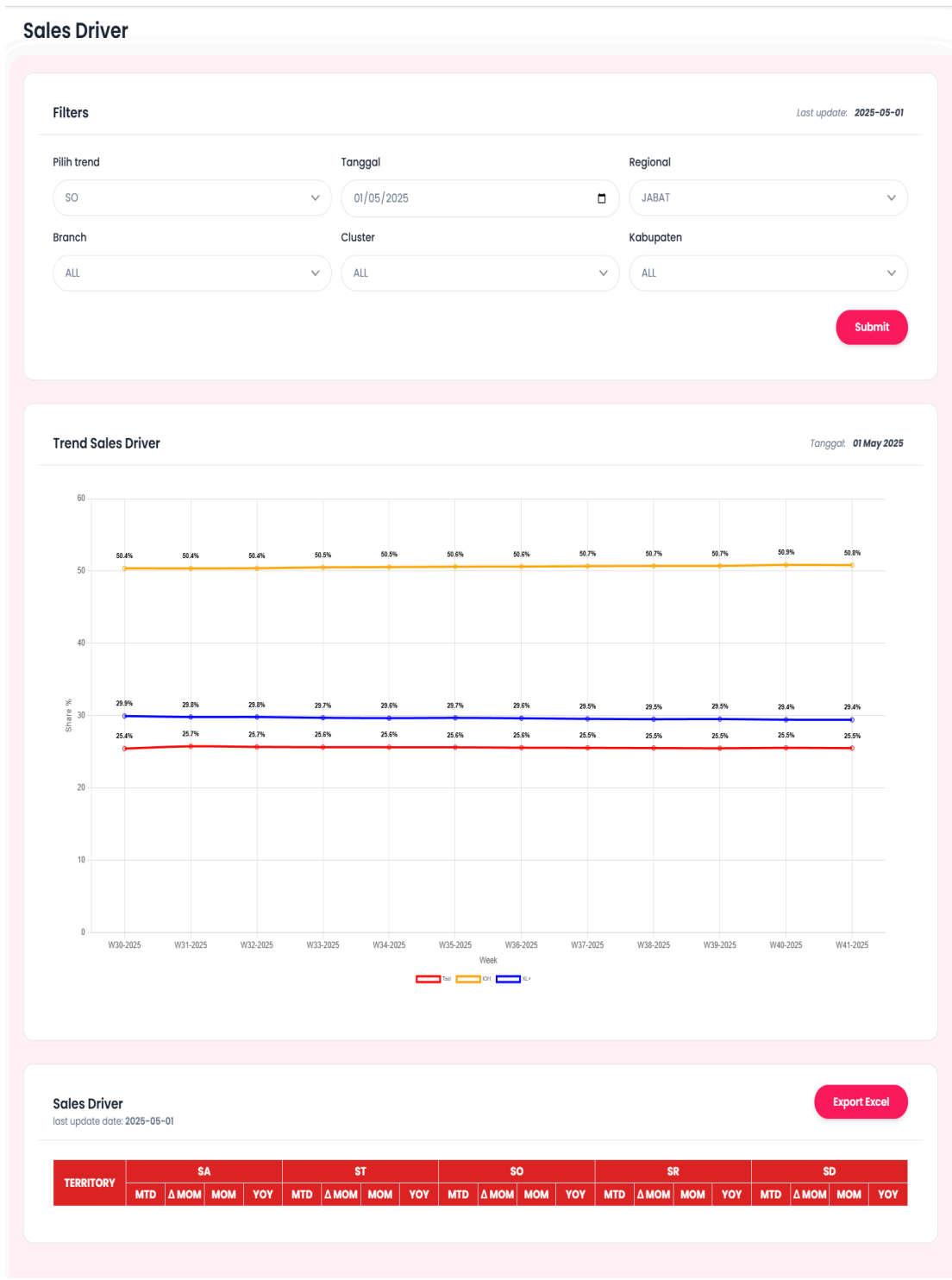


Figure 5 Activity Diagram User and Admin

In accordance with the Rapid Application Development (RAD) method, the prototype process was carried out iteratively through three cycles - prototype, test, and refine - directly involving users until the design was declared to meet requirements, a cycle in which the prototype is treated not as a final output but as an initial stage that is tested and, if it does not yet meet requirements, refined again until the design matches user needs (P et al., 2022)

In the first iteration, an initial prototype of the Sales Driver feature was designed, displaying all 5S data (SO, SA, ST, SR, and SD) on a single integrated page with brand comparison trend charts and regional-level territory tables. User testing identified three main shortcomings: the display was too dense because indicators were not separated, regional details were limited to the regional level, and there were no visual indicators to distinguish performance increases or decreases. Based on these findings, improvements were focused on separating the display per indicator, expanding the regional level detail, adding more detailed trend charts, and adding visual indicators for positive and negative values. The design of this initial prototype is presented in Figure 6.



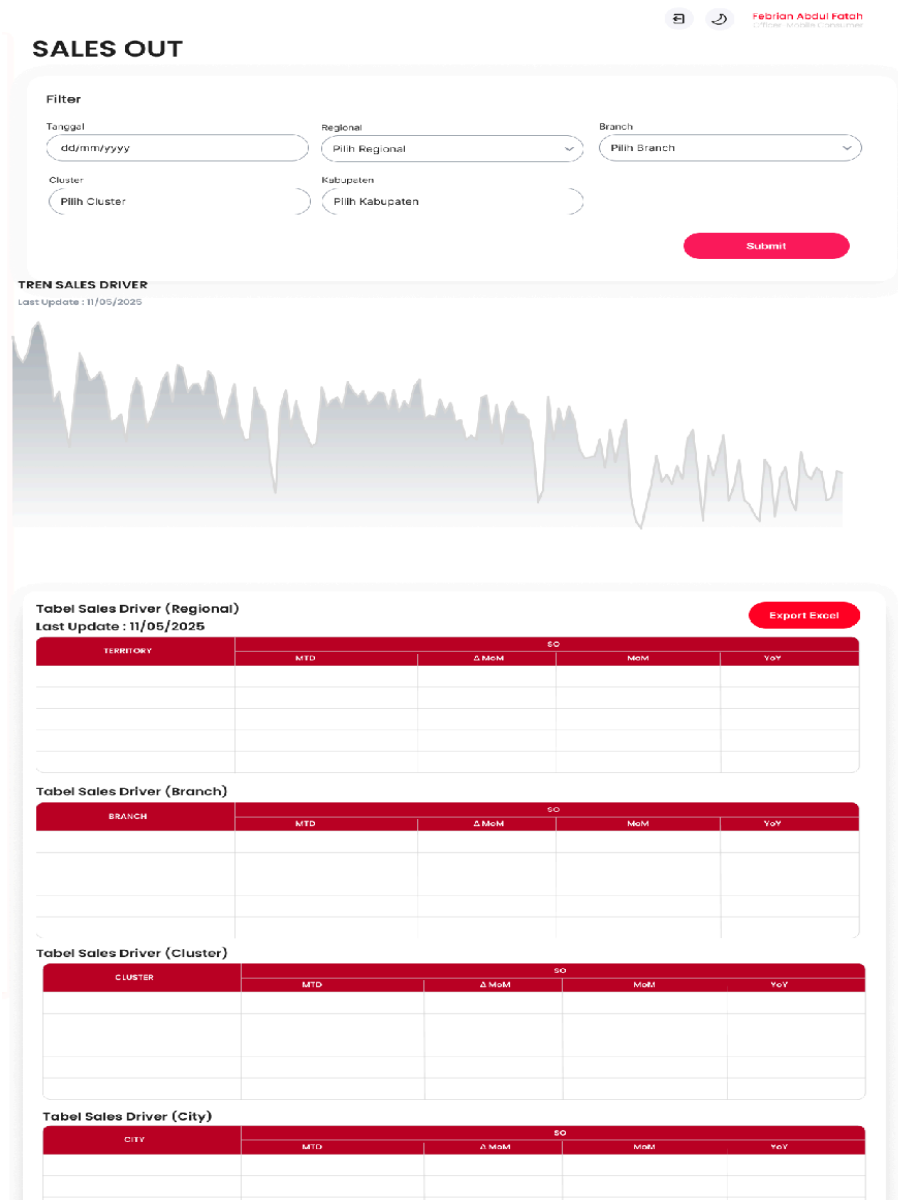


Figure 7 iteration 2

3) Construction

The Construction stage is the process of developing the system by implementing the results of the design carried out in the User Design stage into a usable application. At this stage, the coding process was performed to build the Sales Driver feature based on 5S sales data on the Onedirection Monitoring Website. The implementation covered the development of the user interface (frontend), backend logic, and database integration. The coding process was carried out by implementing application functions and interface components based on the designed system workflow to ensure that each feature functioned as intended (Siskandar et al., 2021). System development covers the implementation of the user interface (frontend) and data processing logic (backend) integrated with the database.

4) Cutover

This stage involves testing the overall system that has been built, where all components need to be tested. Black Box Testing was conducted to test functionality based on test scenarios prepared by the developer team. This testing focuses on system functionality without requiring in-depth understanding of how the system works behind the scenes (Saputra & Mardiaty, 2025). an approach similarly applied in evaluating website-based information systems using use case testing techniques. This approach ensures that the system works in accordance with the usage scenarios designed based on user needs (Cahyono et al., 2025; Jovita Nabilah Azizi et al., 2024). After Black Box Testing, the testing was continued with User Acceptance Testing (UAT). Through UAT, the conformity of the designed system with the system required by users can be determined (Fitriastuti et al., 2024) as

similarly demonstrated in the evaluation of a web-based financial and inventory management information system, where UAT confirmed that the system met end-user requirements (Aliyah et al., 2024). The Likert scale is a psychometric measurement method widely applied in questionnaire design, and it is a scale type that is very commonly used in survey research (Adelia Tri Aprilian et al., 2023). Testing was conducted using a Likert scale-based questionnaire with 5 points to measure the level of user acceptance of the system.

RESULTS AND DISCUSSION

- 1) System Implementation Stage
 - a) Construction

System implementation was focused on the development of the Sales Driver summary page and the detail page for each 5S indicator (SO, SA, ST, SR, SD). Each page is equipped with filter features based on period and region, trend charts comparing the current month and the previous month, and hierarchical regional tables displaying performance indicators MTD, MoM, YoY, and Delta MoM. Additionally, a summary dashboard was implemented featuring visual components such as 5S cards, conversion flow, radar chart, trend charts, and regional performance comparison tables, along with a data export feature in Excel format to support reporting needs. as shown in Figure 8.

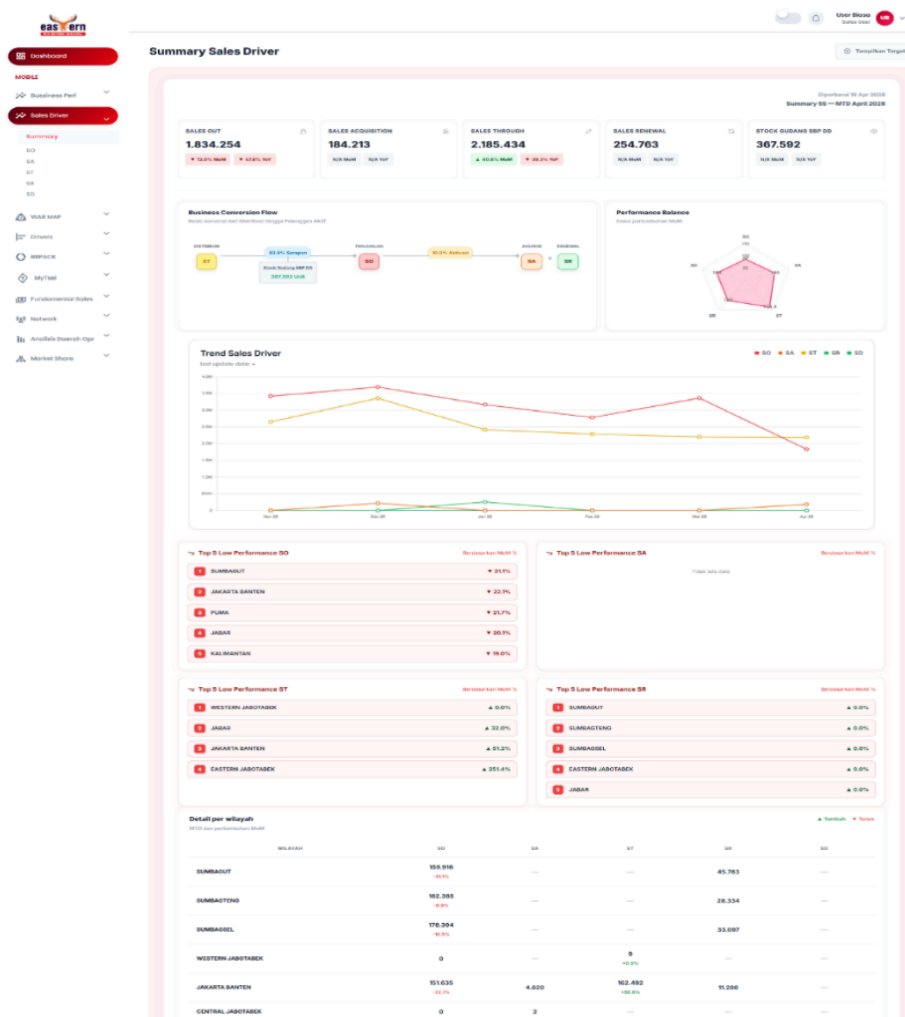


Figure 8 Summary Sales Driver Page

The Summary Sales Driver page displays an overall summary of sales performance (5S) in a single view. This page is designed as the main monitoring center, allowing employees to quickly obtain an overview of sales performance conditions without needing to open each 5S module separately. The integration of all visual components on a single page helps employees conduct a comprehensive analysis of the relationships between sales indicators, enabling more effective identification of performance declines as well as improvement opportunities. In addition, the use of interactive visualizations such as trend charts, radar charts, and conversion flow supports managerial

decision-making, as the displayed information is easier to understand compared to relying solely on conventional tabular data. The Summary Sales Driver page consists of six visual components designed to provide a comprehensive overview of 5S-based sales performance to employees. These components are summarized in Table 2.

Table 2 Summary Sales Driver Dashboard Components

No	Component	Function
1	5S Card	Displays the actual value, target, and achievement percentage for each 5S sales data concisely
2	Conversion Flow	Illustrates the business process conversion ratio between 5S sales data, from product distribution to the formation of active customers
3	Performance Balance	Displays the balanced achievement of all five 5S sales data simultaneously in a single radar chart
4	Trend Chart	Displays the movement of actual 5S sales data values over a monthly time range
5	Top Low Performance	Displays the five regional areas with the lowest performance per 5S sales data, marked with a red color indicator
6	Detail Per Region	Displays a recap of performance across all regions for all 5S sales data in one integrated view

The practical value of these components becomes evident when they are read together rather than in isolation. For instance, in the April 2026 period, the 5S Card for Sales Out (SO) showed an actual value of 1,834,254 transactions, already surpassing its target of 1,800,000. On its own, this figure would suggest strong performance. However, the same card also displayed a 13.0% MoM decline and a 57.8% YoY decline for the same indicator. Reading these three numbers together reveals that reaching the monthly target did not necessarily mean that performance was improving. This distinction would be easy to overlook when target and trend figures are calculated separately across different Excel sheets, as was previously done manually.

A similar pattern emerged from the Conversion Flow component, which showed an 83.9% distribution absorption rate but only a 10.0% activation rate. This result points management toward customer activation as the stage most in need of improvement, rather than distribution. The Top Low Performance component added another layer to the analysis by immediately highlighting the five regions with the sharpest SO decline, such as SUMBAGUT at 31.1%. This allows evaluation efforts to be focused on these regions first instead of requiring users to scan through the entire regional table. Taken together, these examples show that the dashboard's value lies not only in visualizing data, but also in making cross indicator patterns visible at a glance. It can reveal situations where target achievement masks a downward trend, distribution does not translate into active customers, or certain regions are contributing significantly to an overall decline. These insights previously required considerable manual cross checking across multiple Excel sheets, whereas the dashboard brings the information together in a more practical and efficient way.

On the admin side, a sales target feature was developed that enables management of sales target data based on period and region, including adding, editing, and deleting data integrated with the user dashboard to display comparisons between targets and actual sales realization, as illustrated in Figure 9.

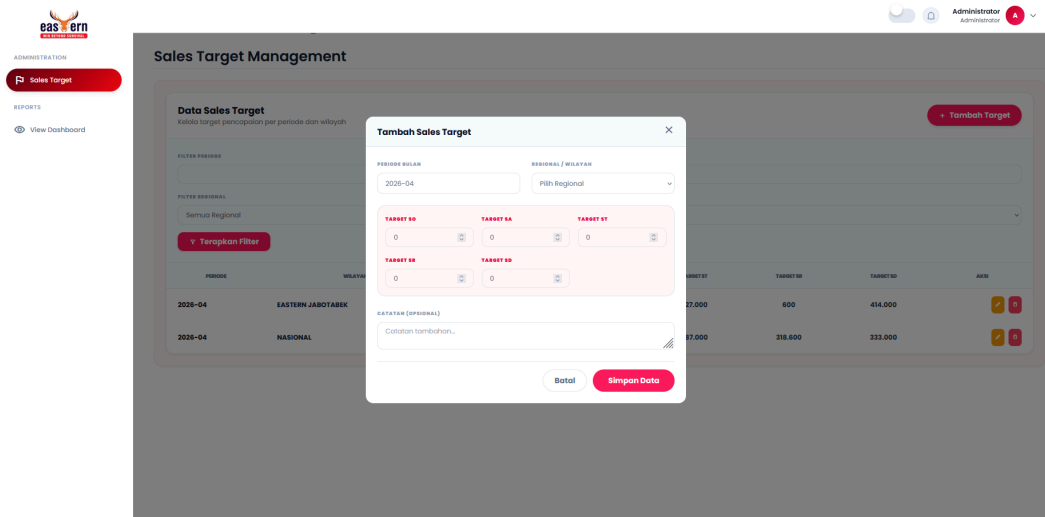


Figure 9 Sales Target Management Page

Thus, the Construction stage produced a Sales Driver system capable of supporting the structured sales performance analysis process.

b) Cutover

Black Box Testing was conducted on all Sales Driver and Sales Target features using use case testing techniques with a total of 68 test scenarios. The test results showed that all scenarios were successfully executed according to expectations, achieving a success rate of 100%. This indicates that there are no functional failures in the system that was built. The Black Box Testing results are presented in Table 2.

Table 3 Blackbox Testing

No	Feature	Number Of Skenario	Result
1	Login	5	Passed
2	Summary Sales Driver	11	Passed
3	Sales Out	10	Passed
4	Sales Acquisition	7	Passed
5	Sales Through	8	Passed
6	Sales Renewal	7	Passed
7	SBP DD Warehouse Stock	8	Passed
8	Sales Target (Admin)	12	Passed

Subsequently, User Acceptance Testing (UAT) was conducted involving 8 respondents from the Campaign Personalization and Operation Analyst Eastern Division, consisting of 5 respondents as users and 3 respondents as administrators. The determination of the number of UAT respondents, 8, was based on relevant theoretical and practical considerations. According to (Nielsen & Landauer, 1993), for usability testing in the early stages of system development, the optimal number of respondents ranges from 5 to 8. More than 80% of usability issues can be detected with the first 5 respondents, and increasing the number of respondents to 8 provides more comprehensive coverage of system problem findings. Furthermore, according to (Sauro & Lewis, 2015), for information system testing with a homogeneous user base, a sample within this range is sufficient to detect critical system issues.

The UAT respondents were selected based on all actual system users, consisting of 5 employees and 3 administrators. Respondent selection was based on the criteria of direct involvement in system use (Thabibi et al., 2025), as was also done in research that determined UAT respondents based on the actual system user roles (e.g., employees and administrators), and research (Apriyanti et al., 2024) that distributed UAT questionnaires to each system user role within a company.

The UAT questionnaire consisted of 4 testing variables, namely system functionality, system performance, user experience and interface appearance, and efficiency and productivity (Aliyah et al. 2024). Based on the UAT results, the User group obtained an average score of 92.40% and the Admin

group obtained an average score of 93.06%. These values fall within the Very Feasible category (80%–100%), indicating that the Sales Driver system has been successfully implemented without significant obstacles in the aspects of system functionality, system performance, user experience and interface appearance, and efficiency and productivity.

To further contextualize these results, a qualitative comparison was made between the previous manual process and the process supported by the Sales Driver system. Prior to implementation, generating a sales performance report required employees to manually collect 5S data from separate sources, input the data by region and date into Excel, calculate MTD, MoM, YoY, and Delta MoM indicators for each region, verify and correct the results when inaccuracies were identified, create trend charts manually, and compile the report for distribution. This process involved several sequential manual steps and was reported by employees as time-consuming and prone to input errors. With the Sales Driver system, these activities are integrated into a single workflow. Employees only need to apply the relevant filters, after which the system automatically calculates the indicators, generates trend charts and regional tables, and provides an option to export the data to Excel.

Thus, the reporting process is simplified from several manual steps into a filter-and-view workflow. This simplification is also reflected in the efficiency and productivity aspect of the UAT results. Specifically, 92% of employee respondents agreed that the Sales Driver feature helped them analyze sales performance more quickly than the previous Excel-based process (P14), while 92% agreed that the summary page enabled them to view overall regional performance more quickly and in a more data-driven manner (P15). These findings indicate that respondents perceived the Sales Driver feature as facilitating faster access to sales performance information and reducing the number of manual steps required for analysis

CONCLUSION

Based on the results of the development and testing of the Sales Driver feature on the Onedirection Monitoring Website of PT XYZ, all research objectives were achieved. The Sales Driver feature successfully managed and presented sales data based on the 5S components (Sales Out, Sales Acquisition, Sales Through, Sales Renewal, and Stock Gudang SBP DD) in a structured manner within an integrated system, automatically calculated sales performance indicators including MTD, MoM, YoY, and Delta MoM, and presented the results in the form of an interactive dashboard, thereby replacing the manual Microsoft Excel-based process. Based on the Black Box Testing results, all 68 test scenarios were successfully executed according to the expected outcomes, achieving a 100% success rate. Meanwhile, User Acceptance Testing (UAT) obtained average scores of 92.40% for the User group and 93.06% for the Admin group, both of which fall within the “Very Feasible” category. These results indicate that the Sales Driver feature functions according to the tested scenarios and is well accepted by users. Therefore, based on the testing and user acceptance results, the Sales Driver feature supports more structured and integrated data-driven monitoring and analysis of sales performance.

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