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# Development of Sales Employee Monitoring System in Integrated Performance Measurement Using Prototyping Method

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**ABSTRACT**
Measuring employee performance is a critical component of ensuring the success and sustainability of a business in a competitive and dynamic business environment. The objective of this research is to create a web-based employee performance monitoring information system that can address the obstacles associated with managing employee performance, including data inaccuracy, reporting delays, and a lack of visibility of employee progress. The prototype method was employed to design this system, which enables the system to be developed iteratively in response to user feedback. This system's primary capabilities include the ability to access and revise employee data, prospects, and performance reports in real-time. The black box testing method was employed to evaluate the implementation of this system, and the results indicated that all of the features that were developed were valid and functioning properly. Ultimately, this system will facilitate more appropriate decision-making and increase company productivity by enabling companies to more effectively monitor employee performance. In summary, the information system for monitoring employee performance that has been developed provides a practical and effective solution to the numerous obstacles that organizations encounter when administering their performance.



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## INTRODUCTION

In a dynamic and competitive business world, measuring employee performance is a crucial element to ensure the company's success and sustainability. The ability to effectively monitor, measure and manage employee performance not only contributes to increased productivity, but also helps in making more informed decisions based on accurate data. Without an adequate system, performance measurement is often hampered by problems such as inaccurate data, delays in reporting, and lack of visibility into employee progress (Setrojoyo et al., 2023; Sudarmo, 2020).

Currently, the process of managing and recording employee data at the Nusantara Technology Synergy Company, including target and achievement data, is still done manually using spreadsheets. Although spreadsheets are a familiar and accessible tool, this method has many limitations, especially in terms of accuracy and efficiency. The use of spreadsheets

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causes difficulties in monitoring employee performance in real-time, hampers the evaluation process, and increases the risk of human error in recording data(Sudarmo et al., 2020).

Company supervisors complained about difficulties in monitoring employee performance targets because the data was stored in separate spreadsheets and was difficult to access in an integrated manner. They also face the challenge of updating data regularly, which requires a lot of time and effort. When data is fragmented, supervisors must collect and update data manually, which not only reduces efficiency but also increases the possibility of errors.

Additionally, employees in the field often do not have direct access to updated performance data. This condition causes the inability to carry out real-time updates, which ultimately reduces the efficiency and effectiveness of performance management(Diawati et al., 2019; Jabid, Syahdan, et al., 2023b; Paramarta et al., 2021). Without access to current and accurate data, supervisors and managers cannot conduct objective performance assessments, and this can impact a company's strategic decision making(Hasyim et al., 2023; Jabid, Abdurrahman, et al., 2023; Jabid, Soleman, et al., 2023).

To overcome these various challenges, an integrated and efficient information system is needed. Information systems specifically designed to monitor employee performance will enable companies to manage and monitor performance more effectively. With this system, employee performance data can be accessed and updated in real-time(Jabid, Syahdan, et al., 2023a; Sudarmo et al., 2022; Wijaya et al., 2024), allowing management to get a clearer and more timely picture of employee progress(Bakri & Alfiah, 2024; Ramli et al., 2022; Sirat et al., 2023).

The advantage of this information system is its ability to integrate various data sources into one platform that is easily accessible to all interested parties. This system will not only automate the data collection process(Hasibuan, 2023; Hasibuan et al., 2024), but also provides analytical features that can help management make decisions based on valid data(Kraugusteeliana & Violin, 2024; Rustiawan et al., 2023; Sudipa et al., 2023). In addition, this system can be tailored to a company's specific needs, ensuring that every important element in performance measurement can be managed efficiently.

In developing this employee performance monitoring information system, the prototyping method was chosen as the most appropriate approach. The prototyping method allows for iterative system development, where initial prototypes of the system can be tested and improved based on user feedback. This approach is particularly useful in the context of developing complex information systems, as it allows developers to capture user needs more accurately and ensure that the resulting system truly meets their needs (Fahri, 2022). By using the prototyping method, companies can gradually build a system that is not only effective, but also user-friendly. Initial prototypes of these systems may include basic features such as performance data input, target monitoring, and real-time access for employees in the field. Based on user feedback, additional features such as performance analysis, weekly reports, and integration with other systems can be added.

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## METHODS

The prototyping method is a very effective approach in information systems development, especially when user needs are not yet fully understood or when users require a system that is highly tailored to their needs (Riyanti et al., 2024). This method allows companies to develop systems that suit their specific needs in an iterative and efficient manner (Taufiqurrochman et al., 2024; Trilaksono et al., 2023). The prototyping method begins with the requirements gathering stage, where developers work together with users, such as sales managers and supervisors, to identify the main needs of the monitoring system to be built. The information gathered at this stage is very important because it will form the basis for the development of the initial prototype.

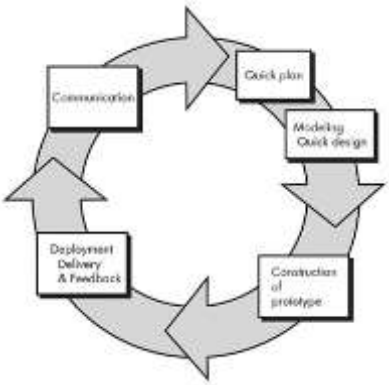


**Figure 1.** Prototyping Method

After gathering requirements, the developer will design a system prototype. Performance data input, dashboards to track targets, and real-time access are typical aspects of this prototype. The prototype shows users how the system will work. Although imperfect, the prototype lets users test the system's core features. Users will evaluate the prototype next. Salespeople and supervisors will test the prototype in realistic settings. User feedback at this stage will disclose defects, problems, and features that were not previously considered. Developers add or improve prototype features based on feedback. This approach may take multiple revisions until the prototype meets user needs. The final system is developed after refining the prototype. All tested and approved features will be implemented into a comprehensive, ready-to-use system at this level. This development includes testing to ensure all system components work as specified. The technology will be applied in real life and trained on after development. Small-scale trials are conducted before launch to ensure the system operates smoothly and no major concerns are missed. Prototyping ends with maintenance and development. The system must be monitored constantly to fix bugs, add features, and adapt to changing company needs. This upkeep keeps the system relevant and functional.

Prototyping also lets the organization add features or make changes as needed. The prototyping process makes sales employee monitoring information system creation flexible and iterative. By passing through these steps, the organization can ensure that the system

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produced meets current and future demands. A more accurate, efficient, and easy-to-use system will help the organization monitor and improve staff performance.

## RESULTS AND DISCUSSION

### Needs Analysis

The system analysis stage will be carried out to collect the data needed for research based on the theory that has been studied previously. This stage also aims to obtain information regarding the expectations of users of the system to be developed. The analysis carried out in this research is based on observations or events during the monitoring process of sales employees in supporting an activity or events. Before building a web-based sales employee monitoring information system, first study business processes and employee monitoring. Based on the needs analysis, there are several system features that are created in the System event list, namelyprocessing employee data, managing product type data, processing new lead data, processing prospect data and managing reports.

### System Design

The table design uses a physical data model. In the physical data model, it is generated from the conceptual data model where the result is the relationship of all tables used in the system.

**Figure 2.** Information System Table Design

Based on Figure 2, it can be explained that there are 5 tables in the sales employee monitoring information system implemented in the system, there is a user table to store system user data, there is lead data to store employee data, there is data packages to store product data and prospect data to store target data. of each sales employee.

### System Implementation

### Implementation of the Supervisor Dashboard Page

The supervisor dashboard page functions to display all the features that can be accessed. The menu includes user features, package types, packages, new leads and prospects and displays the progress of each sale.

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**Figure 3.** Implementation of the Supervisor Dashboard Page

### Implementation of the New Lead Sales Data Page

The New Lead Data page in Sales is used to input all data acquired during after sales and manage this data so that it becomes a prospect. On this page, sales can enter all customer data and there is also an add data button to do so, and a change button to change the data that has been added. There is functionality to search for data in tables.

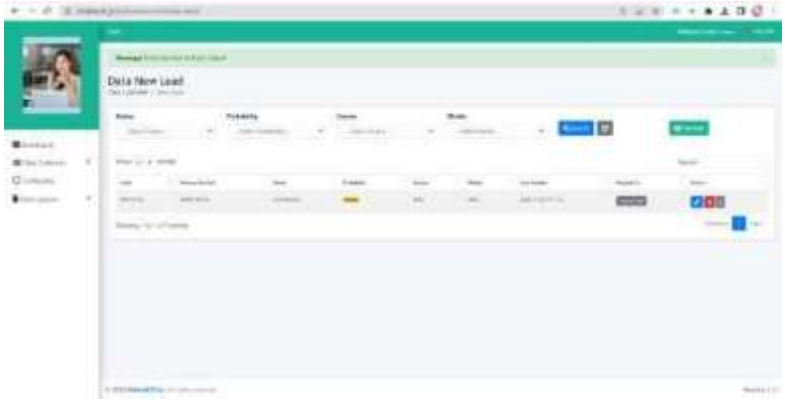

**Figure 4**. Implementation of the New Lead Sales Data Page

### Implementation of the Add Prospect Data Page

The Add Prospect Data page in sales is used to view and manage all customer data that has been acquired as a customer entered by sales in the system.

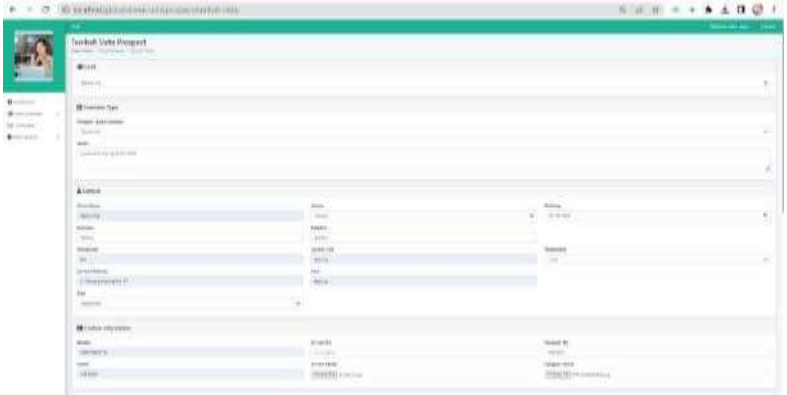

**Figure 5**. Implementation of the Add Prospect Data page

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### System Testing

System testing uses the black box testing method to determine the functionality of each feature. By carrying out testing, there is a process of checking the validity of features on the system, processes on the system and process flow on the system.

**Table 1**. Blackbox Testing Scenario

| Processes in the System | Results | Information |
|---|---|---|
| Login Process | Succeed | System features are appropriate and valid |
| Data editing process | It's been successful | System features are appropriate and valid |
| Data deletion process | It's been successful | System features are appropriate and valid |
| Data printing process | It's been successful | System features are appropriate and valid |
| Logout process | It's been successful | System features are appropriate and valid |

## CONCLUSION

This research develops a web-based employee performance monitoring information system using the prototyping method. This system is designed to overcome various challenges in managing employee performance in companies, such as reporting delays, lack of visibility of employee progress, and data inaccuracies. With this system, companies can monitor employee performance in real-time, which allows more precise decisions to be made based on valid data. The system implementation includes several main features, including employee data management, prospects and performance reports, all of which were tested using the black box testing method and declared valid.

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