Development of Portal Pintar Utilization Evaluation Dashboard (Case Study: BPS Province of Bengkulu)

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Abstract. BPS Statistics Province of Bengkulu (BPS Provinsi Bengkulu) plays a role in supporting statistical operations in Province of Bengkulu. As a vertical agency of Statistics Indonesia (BPS), BPS Province of Bengkulu also holds an important role in providing statistical data at the regional level. Naturally, BPS Province of Bengkulu also requires an integrated system to facilitate all activities, such as providing easier and faster access to information for all employees—both in reporting work progress and in monitoring the implementation of activities such as agenda planning, facility usage, facility loan management, and cross-unit coordination. Portal Pintar is a portal used to facilitate the management of various activities in BPS Province of Bengkulu. By using Portal Pintar, users can access and manage various types of information and documents, such as activity agendas, correspondence, and facility loan applications. BPS Province of Bengkulu then produces periodic evaluations of Portal Pintar's utilization, which are distributed to all employees. However, the evaluations conducted are not yet visualized automatically and in real time, hence the need to develop a Portal Pintar Utilization Evaluation Dashboard in which visualizations are generated automatically and connected to Portal Pintar's API. Through the development of this dashboard, it is expected that the evaluation of Portal Pintar's utilization will become more integrated.
Keyword: Portal Pintar, dashboard, visualization.

1. Introduction

Badan Pusat Statistik (BPS) is a Non-Ministerial Government Institution established under the provisions of Law Number 6 of 1960 concerning the Census and Law Number 7 of 1960 concerning Statistics, which was later replaced by Law Number 16 of 1997 concerning Statistics. Within this legal framework, BPS has a strategic mandate in the implementation of national statistical activities.

In general, BPS is responsible for providing accurate and reliable statistical data to support government policy formulation as well as meeting public information needs. Data collection is carried out through various activities, such as censuses and surveys conducted directly by BPS, as well as through the use of secondary data obtained from ministries and other relevant institutions.

BPS also plays a role in guiding and facilitating statistical activities within ministries, agencies, and other institutions in order to realize an integrated and efficient national statistical system. In addition, BPS develops and promotes the application of standardized technical and statistical methodologies,

provides educational and training services in the field of statistics, and establishes cooperation with international institutions and other countries to support the advancement and strengthening of Indonesia's national statistical system [1].BPS Province of Bengkulu is an agency that plays a role in supporting the implementation of statistical activities in the Province of Bengkulu region. As a vertical agency of Badan Pusat Statistik, BPS Province of Bengkulu also holds an important role in supporting the provision of statistical data at the regional level. BPS Province of Bengkulu certainly requires an integrated system to facilitate all operational activities. Moreover, such an integrated system not only helps simplify administrative processes but also provides easier and faster access to information for all employees, both in reporting work progress and monitoring the implementation of activities such as activity planning and facility loans.

In presenting data and information in an easy-to-understand way, a dashboard is one of the technological approaches that can be applied. Through a structured and interactive visual display, dashboards make it easier for users to grasp the essence of information [2]. In this regard, dashboards are tools that make it easier for employees to observe and evaluate because they display visualizations of the features available in the related system. Dashboards are visual tools used to evaluate ongoing processes, monitor actual performance, and make projections about future conditions [3].

A dashboard is an information system that displays an organization's activities concisely on a single screen [4]. In general, a dashboard can be interpreted as a mechanism for presenting important information about organizational performance in a visual format, serving to monitor and evaluate operational processes. Dashboards also serve as performance monitoring tools that require data to be available quickly, precisely, and accurately [5]. Therefore, dashboards are designed to be able to present monitoring data visually, interactively, and in real time [6].

Portal Pintar is an information system designed to facilitate more structured and integrated activity management at BPS Province of Bengkulu. Through this web-based information system, employees can easily access, monitor, and manage various important information related to activities at BPS Province of Bengkulu. This system provides features for document management, activity reporting, and requests for operational support such as official vehicle and room loans, thus integrating all activities at BPS Province of Bengkulu. With this system, all application processes become more transparent, well-documented, and trackable until completion. The integration of all these features within Portal Pintar makes it a tool that supports good and modern activity management at BPS Province of Bengkulu, while also reflecting BPS's commitment to continuously innovating in delivering the best services.

To support the implementation and monitoring of Portal Pintar's usage, BPS Province of Bengkulu periodically publishes evaluations of Portal Pintar's utilization. These evaluations contain information related to the use of features available in Portal Pintar by employees. To enhance the user experience, further development is needed, particularly in the visualization of Portal Pintar utilization evaluation. Previously, visualization of Portal Pintar utilization evaluation was created using Canva, which required time to produce and resulted in non-real-time visualizations. Therefore, the development of a dashboard capable of presenting data visually and in real time is necessary [7].

The use of visual representations to explore, interpret, and share data is known as data visualization or information visualization [8]. Visual forms of data presentation such as charts or diagrams can help users understand complex information and detect trends that are difficult to recognize from numerical datasets. Data visualization is needed to help information recipients better understand the results of data processing [6]. These processed data results are generally presented in the form of charts [9], which are one form of visualization to show comparisons of data quantities [10].

By utilizing visualization, complex data can be transformed into forms that are easier to understand and more visually appealing. This is very helpful in analyzing data and in making more accurate decisions based on visually presented information [10].

In this study, the data used are from the number of accesses to the features available in Portal Pintar. The evaluation data on the utilization of features available in Portal Pintar include access data for the agenda, leadership agenda, reports, official vehicle loans, business trips, incoming letters, disposition letters, decrees (SK), internal letters, external letters, linkmat, and notifications, which are obtained from the Portal Pintar's API.

Portal Pintar Utilization Evaluation Dashboard is part of Portal Pintar or a module for evaluating the utilization of the features available in Portal Pintar Information System. Through the development of this dashboard, employees can monitor the evaluation of the utilization of Portal Pintar features in real time. To improve ease of access to information, this study also developed a search feature that allows users to search for information according to their needs. Thus, the developed dashboard not only presents real-time evaluation results but is also designed to adjust the display of information according to user needs. Furthermore, testing of the developed dashboard was conducted with students and prospective users, namely employees of BPS Province of Bengkulu.

2. Research Method

Method used in this research is Pureshare Method. This method emphasizes the balance between an organization's technological needs and its business objectives.

2.1. Dashboard Development Method

In the Pureshare method, as explained in the previous review, several research stages were applied in developing this dashboard. The detailed research stages conducted in developing Portal Pintar Utilization Evaluation Dashboard are as follows:

a. Planning and Design
   This stage begins with needs identification, namely understanding the organization's needs regarding what information needs to be presented in the dashboard through interviews with Information Technology and Innovation Development employees at the Province of Bengkulu Statistics Agency (BPS). The results of this analysis are then incorporated into the initial design as the basis for subsequent development.
b. System and Data Review
   This stage identifies relevant data sources. Next, data is collected from these sources for use in the dashboard development process.
c. Prototype Stage Highlights
   This stage focuses on developing the dashboard architecture, such as developing the visualization flow and how the dashboard will be implemented. At this stage, a dashboard prototype is developed based on the initial design, which will be used as a guideline for implementing the solution. Solution implementation begins by connecting the developed dashboard with Portal Pintar's API to retrieve the required data. The dashboard interface is then built with various visualization components, such as area charts, bar charts, horizontal bar charts, and semi-circle doughnut charts, in accordance with the previously designed design.
d. Refinement Stage Highlights
   After the prototype is completed, the next stage is the dashboard review. At this stage, the dashboard is presented to the subject matter team, namely the Information Technology and Innovation Development team at BPS Province of Bengkulu. Input from the review process is used to make improvements so that the dashboard meets the needs of the organization. After approval by the subject matter team for release and user evaluation, the dashboard is ready for publication.
e. Release Stage Highlights

The final stage is the release of the dashboard, which is then evaluated by users to gather feedback. The results of this evaluation are crucial to determine whether the dashboard has met expectations by distributing data visualization effectiveness profile questionnaire. The questionnaire results can serve as the basis for future improvements or development of the dashboard.

2.2. Data Visualization Method

Several data visualization classification methods were used in this research. Data visualization classification methods were selected based on their suitability for the data to be visualized in the Portal Pintar Utilization Evaluation Dashboard. As shown in Table 1, these methods include comparing categories, showing changes over time, and monitoring performance or status. Each method has a specific purpose, such as comparing features, displaying trends, and tracking agenda status, which are all essential for understanding the data in this dashboard.

Table 1. Visualization Method Table.

Method	Purpose of Visualization
Comparing categories	The purpose is to compare the number of accesses for several features. This can be visualized using a horizontal bar chart, as the chart length can represent the number of readers for several features. An example is a visualization that compares the most accessed features
Showing changes over time	The purpose is to show the trend of changes in the number of agendas over a certain period. This can be visualized using an area chart or a bar chart, as the chart height can represent the number of feature accesses within a specific period. An example is a visualization displaying the number of agendas in the last three months
Monitoring performance or status	The purpose is to show the number of each agenda status. This can be visualized using a semi-circle doughnut chart, as it can represent achievement or performance status. An example is a visualization of agenda status based on the plan status: completed, canceled, or postponed

2.3. Evaluation Method

To determine the suitability between the developed application and user needs, the researcher conducted an evaluation using the Black Box method. To determine the suitability between the developed application and user needs, the researcher conducted an evaluation using two methods: Black Box Testing and the Data Visualization Effectiveness Profile Questionnaire.

a. Black Box Testing

Black Box Testing is a testing method that verifies the application's execution results based on the inputs provided, to ensure that the application's functionality meets the specified requirements [20]. This testing focuses on the interface, existing functionalities, and the suitability of the workflow with user needs [21]. In Black Box Testing, the focus is on the inputs and outputs provided by the system without considering the details of the internal implementation [22].

b. Data Visualization Effectiveness Profile Questionnaire

This questionnaire uses seven indicators to assess the effectiveness of data visualization on the dashboard. The Usefulness indicator measures the benefit of the visualization in improving users' understanding of the displayed data. The Completeness indicator evaluates the comprehensiveness of the data in terms of both information and time, such as quarters or years. The Perceptibility indicator aims to measure how easily users can view, read, and understand the visual elements on the dashboard. The Truthfulness indicator measures the accuracy of data presentation without manipulation. The Intuitiveness indicator assesses how easy the dashboard is to understand and use without guidance—for example, through a clear layout and simple navigation. The Aesthetics indicator evaluates the visual appeal of the dashboard, and the Engagement indicator measures the extent to which the dashboard encourages users to actively explore and delve deeper into the data.

3. Result

Portal Pintar, as an information system supporting activities at **BPS Province of Bengkulu,** provides various features such as document management, activity reporting, and submitting requests for operational support, including booking official vehicles and rooms. However, the evaluation of Portal Pintar utilization still has limitations in presenting its utilization visualization.

Portal Pintar **Utilization Evaluation** infographics are created manually using charts generated through Canva and sent to BPS employees via WhatsApp every quarter. This results in a lack of integration of utilization evaluation data and reduced convenience in presenting visualizations, as the data must first be processed manually. In addition, the current system does not yet have search and navigation features that would make it easier for employees to monitor the utilization evaluation of Portal Pintar features for previous quarters.

3.1. Application Requirements Analysis

Based on the above problem analysis, several solutions are needed to address these issues as part of the requirements for the system to be developed. The researcher divided the system requirements into two categories:

1. Functional Requirements
   The functional requirements of Portal Pintar Utilization Evaluation Dashboard are as follows:
   (i) The dashboard can display utilization evaluation data without having to create charts manually.
   (ii)The dashboard can display utilization evaluation data in real time.
   (iii) The dashboard has search and navigation features that make it easier for employees to find the desired utilization evaluation information for specific features.
2. Non-Functional Requirements
   Non-functional requirements are needs that do not focus on the application's functions but support its operation. For the developed dashboard, it is expected to present visualizations that are relevant and consistent with the data input in Portal Pintar. Thus, the designed dashboard is expected to be useful in supporting the utilization evaluation of Portal Pintar within BPS Province of Bengkulu.

3.2. Use Case Diagram

Use Case diagram illustrates the interaction between actors and the dashboard, as well as the steps required to complete a task. The main actor interacting with this dashboard is BPS Employees of Bengkulu Province, as shown in Figure 1. The diagram begins with the employee accessing the dashboard, followed by viewing the Home Page and the Summary Menu. One of the key features

available is the Filter Feature, which allows users to refine their data by either Yearly Filter or Quarterly Filter. The use of these filters is represented in the diagram as extensions of the main access process, allowing for a more customized view of the data displayed.

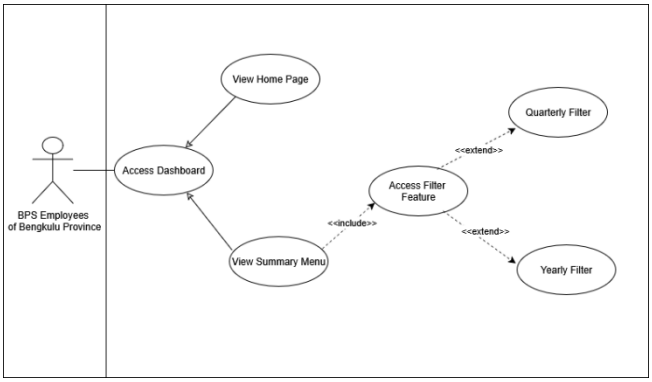

Figure 1. Use Case Diagram.

3.3. Activity Diagram

To illustrate the business process design, an activity diagram was created, as shown in Figure 2. The diagram represents the sequence of actions available to users of this dashboard, who are employees of BPS Province of Bengkulu. As depicted in Figure 2, the process starts with users logging into the dashboard, followed by viewing the Home and Summary pages. Additionally, users can access the Filter feature, where they can choose to display data either by year or quarter. This visual flow ensures that users can navigate efficiently through the dashboard, facilitating a streamlined experience for accessing key data insights.

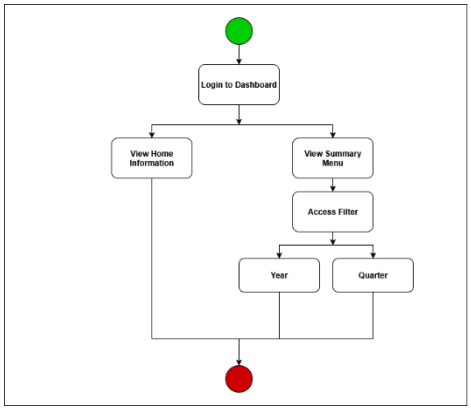

Figure 2. Activity Diagram.

3.4. Key Performance Indicator

The following are the key performance indicators of Portal Pintar, as shown in Table 2. This table assesses five categories such as the performance, service quality, innovation, user satisfaction, and compliance, each with specific targets and actual outcomes.

Table 2. Key Performance Indicator.

KPI Category	Metric	Target	Actual	Gap/Deviation	Actual

Performance	Completion of Reports (%)	100%	92%	-8%	Below Target
Service Quality	Average Response Time (hours)	≤ 24	18	+6 (better)	On Track
Innovation	New Features Delivered (per Q)	3	2	-1	Slight Delay
User Satisfaction	Satisfaction Score (1–5)	≥ 4.0	4.3	+0.3	Exceeded
Compliance	Timely Submissions (%)	95%	98%	+3%	Achieved

In Performance category, the report completion target was set at 100%, but the actual completion rate was only 92%. This represents an 8% decrease from the target, and therefore this category is considered below target. Furthermore, in the Service Quality category, the average response time to services was targeted to be no more than 24 hours. The actual results showed a response time of only 18 hours, meaning performance was six hours faster than the target and considered on track, indicating good service quality.

In Innovation category, the target for adding three new features each quarter was set, but only two were implemented. This indicates a slight delay in the feature development process. In contrast, in the User Satisfaction category, the user satisfaction score reached 4.3, out of the minimum target of 4.0. With a positive difference of 0.3, this aspect successfully exceeded user expectations.

Compliance category demonstrated excellent results. Out of a target of 95% on-time collection, Portal Pintar achieved 98%, exceeding the target by 3% and declared achieved. Overall, it can be concluded that Portal Pintar has demonstrated quite good performance. Three of the five main indicators met or even exceeded their targets: Service Quality, User Satisfaction, and Compliance. However, the Performance and Innovation aspects still require attention and improvement to achieve the targets comprehensively in the next period.

3.5. Prototype Design

The following design is the interface prototype that serves as the basis for creating the user interface during the implementation stage of Portal Pintar Utilization Evaluation Dashboard.

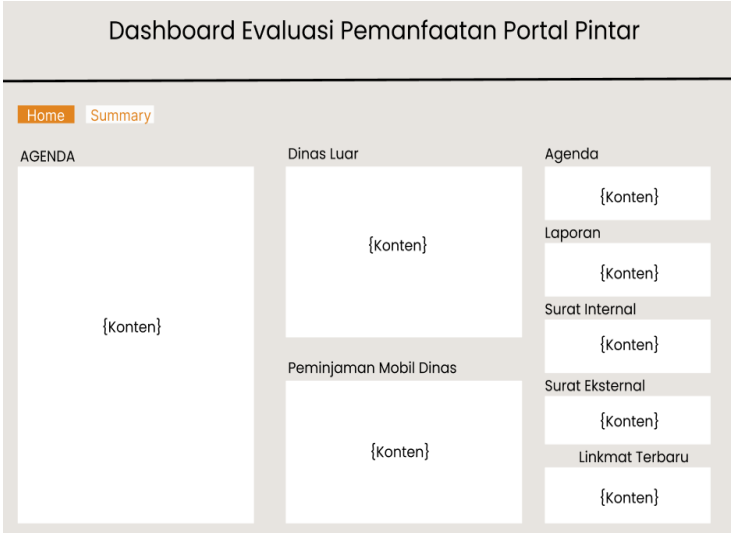

Figure 3. Home Page.

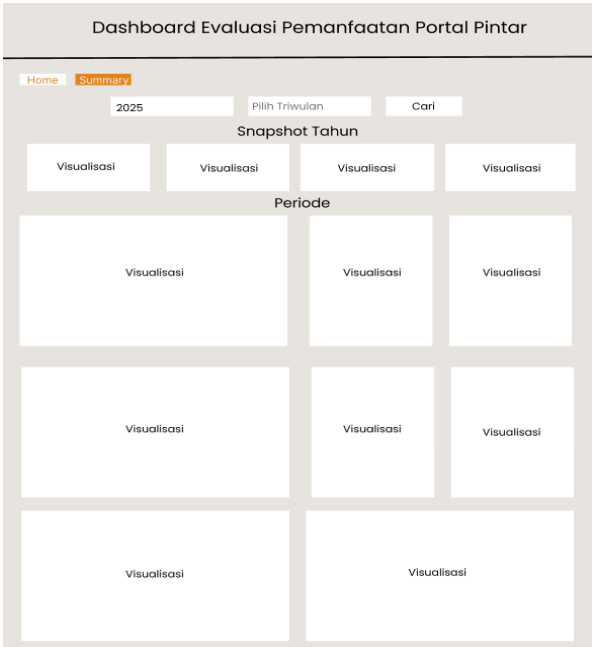

Figure 4. Summary Page.

When users access the Portal Pintar Utilization Evaluation Dashboard, they will be able to view the Home page information, as shown in Figure 3, as well as access Summary menu. On the Home page, users will find information related to the number of agendas, reports, and official vehicle bookings for the past month. In addition, users can view charts for agendas, leadership agendas, incoming letters, incoming letter dispositions, repo letters, reports, decrees (SK), official vehicle bookings, and business trips recently. This page also displays the latest usage notifications for features such as official vehicle bookings, incoming letters, and linkmat.

According to the *Use Case Diagram* shown in Figure 1, the main actor interacting with dashboard is BPS Province of Bengkulu employee. This diagram illustrates the steps these employees follow to navigate the system, from accessing the Home page to utilizing features like viewing agendas or filtering reports. On the summary page shown in Figure 4, users can see a visualization of the various utilization evaluations available. On this page, users can also access filter features, including quarterly and yearly filters. The *Activity Diagram* complements this by illustrating the specific actions users take while interacting with the system. It shows the flow of tasks from the user's selection of filters to the display of filtered data, guiding the process of visualizing utilization evaluations.

3.6. Implementation

After creating a dashboard prototype, the developed design was then implemented. The following shows the implementation of the previously designed Home and Summary page interfaces.

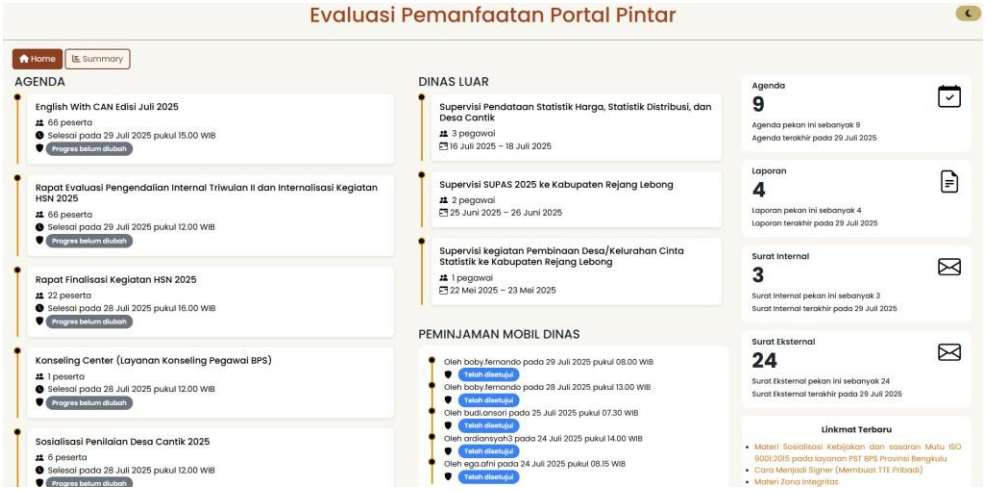

Figure 5. Home Page Implementation.

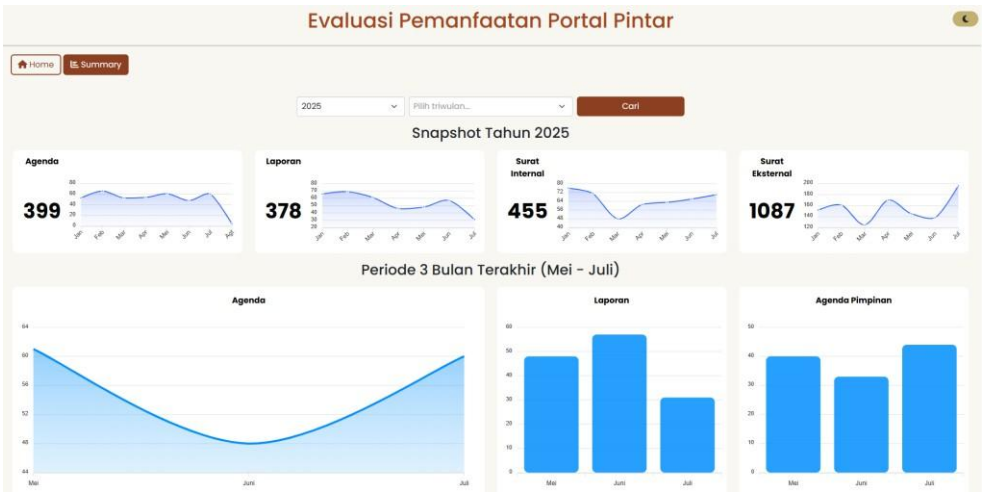

Figure 6. Summary Page Implementation.

a. Area Chart Implementation

Data presentation using area charts provides visualization for Agendas, Reports, Internal Letters, External Letters, and Disposition Letters. Area charts are ideal for showing trends over time, as the filled areas help highlight changes in volume. Figure 7 illustrates how these charts effectively display variations in each category, making it easier to analyze patterns and trends.

Figure 7. Area Chart Implementation.

b. Semi-Circle Doughnut Chart Implementation

Data presentation using a Semi-Circle Doughnut Chart provides a clear and easy-to-read overview of the status distribution of existing agenda items. The Semi-Circle Doughnut Chart is used to display agenda status in four main categories: Planned, Completed, Postponed, and Canceled.

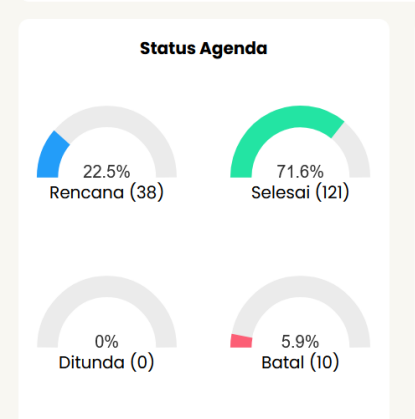

Figure 8. Semi-Circle Doughnut Chart Implementation.

c. Bar Charts Implementation

Data presentation using bar charts provides a clear and easy-to-understand representation for comparing data. On the dashboard, bar charts are used to display several features related to monthly data comparisons, such as reports, management agendas, incoming letters, decrees, employee outreach, internal letters, and external letters.

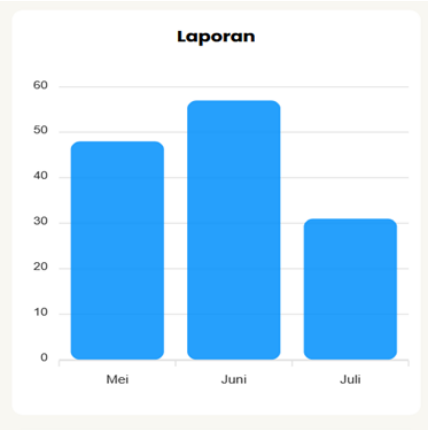

Figure 9. Bar Chart Implementation.

d. Horizontal Bar Chart Implementation

Data presentation using a horizontal bar chart is a suitable method for making comparisons. On the dashboard, a horizontal bar chart is used to compare several categories and user access to a feature, such as Users with the Most Agenda Inputs, Users with the Most External Service Inputs, Users with the Most Internal Mail Inputs, Users with the Most External Mail Inputs, Users with the Most Notification Reads, and the Most Feature Notifications Read.

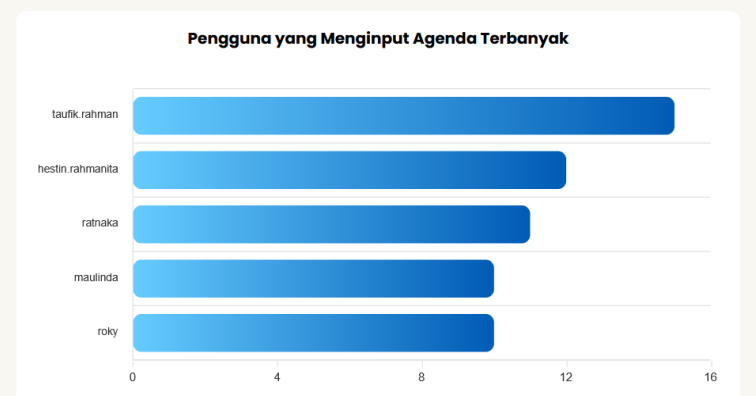

Figure 10. Horizontal Bar Chart Implementation.

e. Yearly Filter Implementation

Yearly filter on the dashboard allows users to view data based on yearly period, for example, to see trends and comparisons between months within a year. Yearly filter implementation displays data from January to December, with each bar indicating the amount of feature utilization in each month. For example, the graph shows a comparison of the number of agenda entries per month, with taller bars indicating months with a higher number of agenda entries.

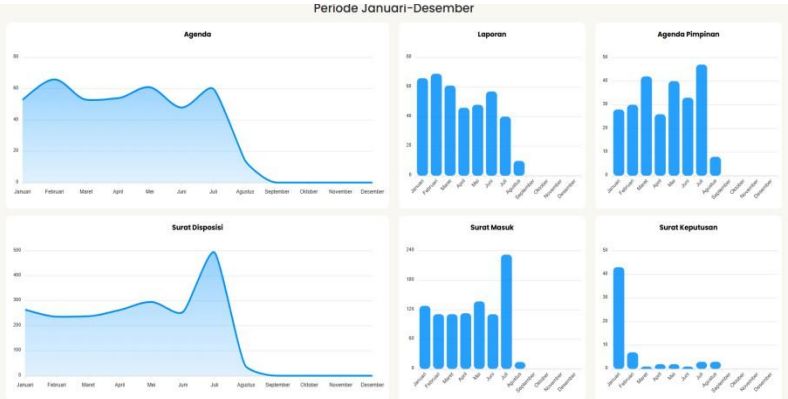

Figure 11. Yearly Filter Feature.

f. Quarterly Filter Implementation

Quarterly Filter aims to compare data based on quarterly time periods, such as the April-June period, as shown in Figure 12. For example, the graph shows a comparison of the agenda, incoming mail, and other features during the April-June period. Users can see which months had the highest number of inputs or the highest utilization of a feature during that quarter.

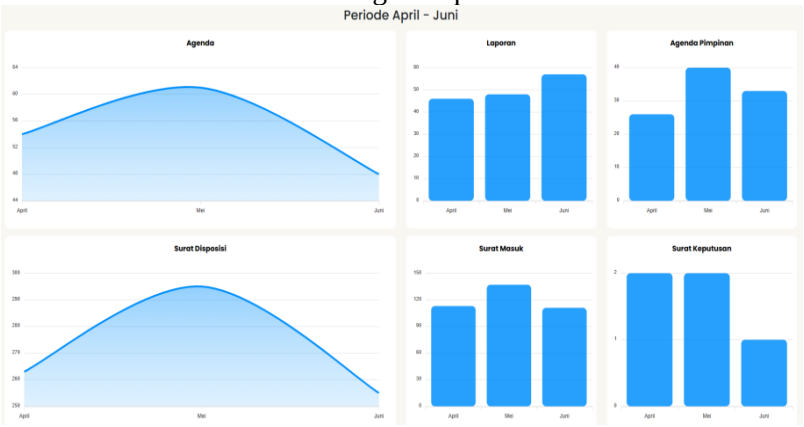

Figure 12. Quarterly Filter Feature.

3.7 Evaluation

After dashboard was implemented, testing was conducted on the developed dashboard. The testing was carried out using Black Box Testing and Data Visualization Effectiveness Profile Questionnaire to verify whether the dashboard met the intended objectives.

The testing involved 8 employees of BPS Province of Bengkulu, consisting of 4 employees from BPS Province of Bengkulu IT team and 4 employees from teams outside the IT team. The developed visualizations needed to be tested for user acceptance through the questionnaire. The effective data visualization criteria used were developed by Stephen Few, who formulated seven effective criteria: Usefulness, Completenes, Perceptibility, Truthfulness, Intuitiveness, Aesthetics, and Engagement.

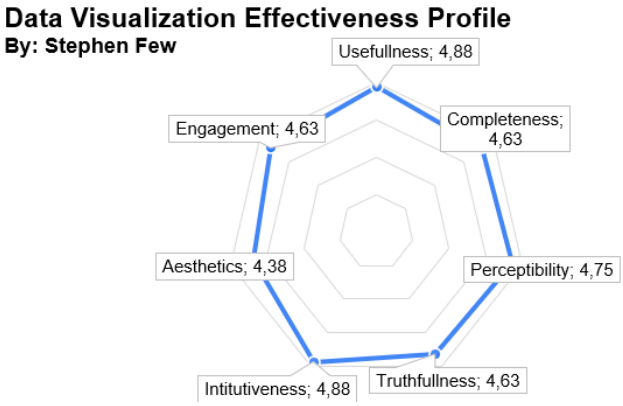

Figure 13. Dashboard Evaluation Chart.

The evaluation results from all respondents show that the dashboard can be considered effective, as the scores were close to the maximum value (5) for all criteria developed by Stephen Few. This indicates that the dashboard has met the principles of effective data visualization, making it not only informative but also enjoyable and easy to use.

Based on these results, it can be concluded that the developed dashboard provides a good user experience for all respondents. Therefore, this dashboard is effective in achieving its objective of delivering accurate, relevant, and easily understandable information.

4. Conclusion

Based on the results of the research conducted, Portal Pintar Utilization Evaluation Dashboard has been built, which is connected to the Portal Pintar's API of BPS Province of Bengkulu, thus providing real-time visualization updates that make it easier for users to obtain the latest information regarding the utilization of features available on the Portal Pintar. This dashboard also provides quarterly and yearly filter features so that users can adjust the period as needed. This feature provides flexibility in browsing utilization evaluations based on a specific time span. The developed dashboard has met the indicators of effective data visualization developed by Few and provides a good user experience for potential users. Thus, the developed dashboard has been effective in fulfilling its goal of providing accurate, relevant, and easy-to-understand information.

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