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# BUSINESS INTELLIGENCE ANALYSIS IN HRIS MONITORING DASHBOARDS USING POWER BI

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**Abstract**

This study aims to design and develop an information dashboard to assist PT. Samudra Dyan Praga in managing human resources (HR) and budgeting in exhibition activities. The research method used is a web-based information system design approach, which involves the stages of design, development, and testing of a dashboard to monitor and report on labor needs in real time. The result of this research is the creation of a dashboard that provides information on the number of workers needed, job specifications, and the budget required for each ongoing exhibition project. This dashboard can also display data accurately and in a timely manner to facilitate decision-making by management. The conclusion of this study is that the implementation of an information dashboard can improve the efficiency and effectiveness of HR management and reduce unplanned cost overruns in exhibition activities. The implication of this research is that the company can more easily monitor labor needs and evaluate budgets, which in turn supports strategic decision-making in the company's operations, particularly in HR management and cost control.

**Keywords**: business intelligence, reporting, dashboard, decision making

## Introduction

In the current era of globalization, business competition between companies is getting bigger and tougher. In order to compete, companies must equip their infrastructure with the support of information technology (Aharoni, 2024; Owoade & Oladimeji, 2024; Teece, 2022). High-level management as a decision maker needs something that can push the system to compete with other companies (Pappas et al., 2021). Business Intelligence as a decision-making system term that can assist management by providing predictions and decisions (A'oetpah & Sekti, 2024; Senjaya et al., 2024). One of the information facilities that can be used to support decision-making activities is the application of Business Intelligence (BI), the ability of this application to collect and process data into information which is then collected into knowledge and can end with action in making a decision at any time and right place (Laudon & Laudon, 2004; Rahman, 2018).

PT. Samudra Dyan Praga is a company engaged in the Contractor Event Organizier (MICE), on a national and international scale, which is headquartered in East Jakarta and has branches in Bali, Medan, Surabaya, Makasar, and the Ciputat Warehouse, Tangerang. In carrying out event or exhibition activities, the need for manpower is crucial and immediate at PT. Samudra Dyan Praga. The demand for labor can come suddenly without even prior planning. For example the PON Papua event or Formula E. The need for workers who are daily workers, is not well planned, both in terms of quantity, specifications and even in terms of salary per day. In fact, sometimes the request for additional employees (staff) is outside the planning, forcing the company to incur extra costs outside of planning. This certainly greatly complicates the HRGAIT Division in

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finding and fulfilling workers both on a daily basis and project based as well as planning financial funds. With a relatively high demand for manpower, informative and concise report data are needed to make it easier to monitor the movement of additional labor and in terms of reporting project expenses.

At PT. Samudra Dyan Praga main problem is that there is no recap reporting application that makes it easier for top management to review and analyze, especially in terms of the daily movement of workers and staff. At present each division and branch provides weekly reporting reports still in the traditional way in written paper notes, excel files and separately, making it difficult to make executive summaries. Recording that is still manual slows down the presentation of data in real time. One of them is when there will be a massive lay off during the Covid-19 pandemic. The process of making lay off targets, the percentage of employee reductions from each division, what percentage of savings or costs are obtained, the composition of the existing man power after the lay off process, and the remuneration that will occur in the future, is a separate obstacle in the process due to employee data and data other supporters are not well managed (Gusnadi & Hermawan, 2019; Siska & Putri, 2021).

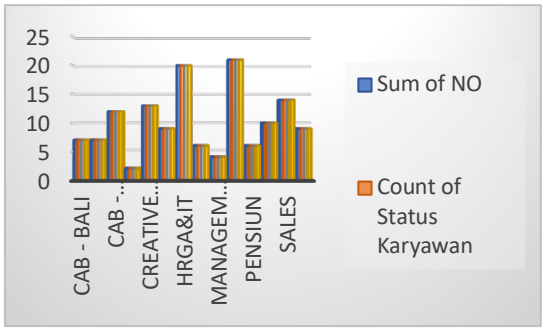


**Figure 1. Employee Report Graph with previous Excel**

Concise and informative information is the main thing for PT. Samudra Dyan Praga, so that the creation of an information dashboard is very important for the company, because it is a tool for reviewing, monitoring, and evaluating the condition of the company, especially related to Human Resources. Parts such as the movement of man power, remuneration, and employee location maps are the most important things to monitor in order to achieve competitive advantage and the sustainability of the company going forward (Sihombing et al., 2019; Sugiarto et al., 2021; Wahyudi & Syazili, 2021).

One of the tools or software to develop this application is Microsoft Power BI. Power BI is included in the Top 15 Business Intelligence tools in 2022 (https://mopinion.com/business-intelligence-bi-tools-overview) which can provide solutions to the need to present data and information in a visual form that is attractive and easy to understand. Microsoft Power BI in its use can use many data sources such as sql, excel, csv, websites, and so on.

The dashboard that is designed will display a visualization to convey information about man power growth charts, staff salary cost recap data, daily staff salaries and man power condition maps. The dashboard will collect relevant information from various sections, consolidate, and convey it in an informative, fast and easy-to-understand personalization. Therefore, the use of dashboards at PT. Samudra Dyan Praga will help solve reporting presentation problems, especially from Human Resources.

In recent years, several studies have highlighted the importance of Business Intelligence (BI) tools in improving decision-making and streamlining operations in various industries. A study by Dwivedi et al. (2021) emphasized that BI systems significantly enhance the ability to monitor real-time data, which helps organizations optimize human resource allocation and financial management. This aligns with the need for PT. Samudra Dyan Praga to implement a dashboard for monitoring labor movements and managing budgeting more effectively. Similarly, a study by Ali and Arslan (2019) found that BI systems, particularly Power BI, provide crucial advantages in data visualization, which allows companies to make informed, data-driven decisions more quickly and efficiently. These findings support the proposed development of an information dashboard to improve HR management and budgeting processes at PT. Samudra Dyan Praga, as it could help address the company's current challenges in reporting and decision-making. This study aims to design and develop an information dashboard to assist PT. Samudra Dyan Praga in managing human resources (HR) and budgeting in exhibition activities.

The objectives to be achieved in this study are: (1) *Centralisation* in data processing as *reporting* material. (2) Simplify and streamline time in the data processing process to *reporting*. (3) Design and build a *dashboard reporting* related to HR that displays reports on HR conditions in the form of *dashboard* visualisations, using the Power BI application.

Moreover, the benefits of research are to provide input, improvements and benefits for companies so that data management is more effective, efficient, especially in human resource management

## Research Methods

The research method used is qualitative, carried out during data collection, and after completion of data collection within a certain period. Activities in qualitative data analysis are carried out interactively and take place continuously until completion, so that the data is saturated.

### *Data Collection Technique*

The data needed for this research can be obtained from comprehensive data collection in the HR department, especially at PT Samudra Dyan Praga.

Data collection can be done according to the needs of the research series used. The data collection techniques used in this study are as follows:

1) Observation
   Data collection method by direct observation of the object of research, collecting and reviewing company data. In the process of collecting data in this study, researchers used the participatory observation method, namely the researcher came to the place of activity of the person being observed, but did not participate in the activity.
2) Literature Study
   Literature study is a method of obtaining by exploring data sourced from organisational data, books, journals, articles and other papers related to the topic of this research. The literature study in this research is used to strengthen the descriptive method and to support the qualitative data used.
3) Documentation Study
   One of the qualitative data collection methods by viewing and analysing documents made by the subject himself or by others about the subject.

***Data Analysis Technique***

Data analysis according to is the process of systematically searching and compiling data obtained from interviews, field notes and documentation, by organising data into categories, breaking down into units, synthesising, compiling into patterns, choosing which ones are important and which ones will be studied, and making conclusions so that they are easily understood by oneself and others.

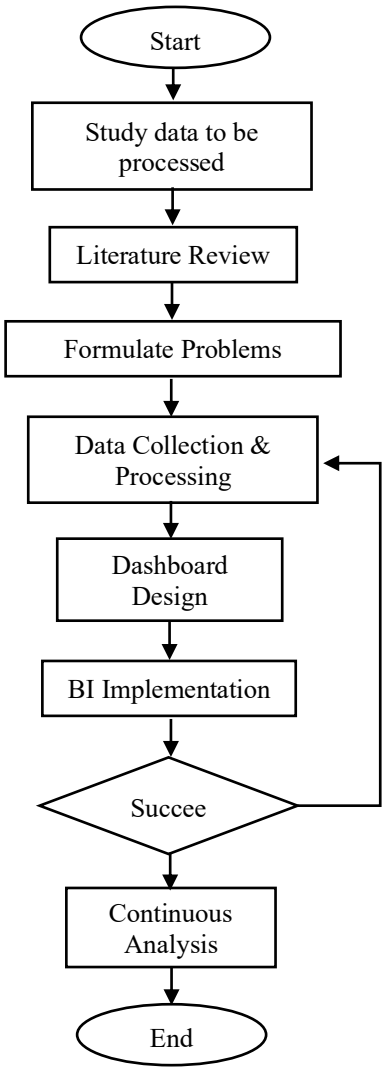


**Figure 2. Research Flowchart**

The research method used is:

1) Observation
   Namely by direct observation of the object of research, collecting and analyzing company data. In this process the researcher used the participatory observation method, that is, the researcher came to the place of the activity of the person being observed, but did not participate in the activity.
2) Literature Study
   Namely by digging sources from internal organizational data, books, journals, articles and other written works related to this research topic.
3) Documentation Study

One method of collecting qualitative data is by viewing and analyzing documents made by the subject himself or by other people about the subject

## Results and Discussion

### *Research Results*

The results of this study are HRIS monitoring dashboards with business intelligence analysis. Reporting data is displayed in 1 dashboard, making it easier for the review process, further analysis.

Based on the results of the development that has been carried out, the conclusions of the Business Intelligence Dashboard Analysis of HRIS PT Samudra Dyan Praga are as follows:

1) The designed dashboard is able to summarise all HR development recording and reporting in the form of informative, concise and fast graphs.
2) The designed dashboard helps top management review briefly, and accelerates the analysis process and supports management to make decisions quickly and accurately.

### *HRIS Monitoring Dashboard Interface Design Stage*

At this stage, the steps involved in designing the HRIS Business Intelligence Dashboard Monitoring Analysis will be explained.

1) Get Source Data, the source of which is from excel, several users
2) Data Cleansing, which is a process where incomplete data contains errors
3) and inconsistent were removed from the data collection.
4) Perform Data Integration, the data integration process where repeated data will be combined.
5) Continue the Selection stage, the process of selecting or selecting data that is relevant to the analysis to be received from existing data collections.
6) Then Data Transformation, which is the transformation of the selected data into display form through data sorting so that it is easy to apply and obtain potentially useful graphic patterns.

After the data is sorted, further processing is carried out in a more concise and informative manner. Then import all data into Power BI.

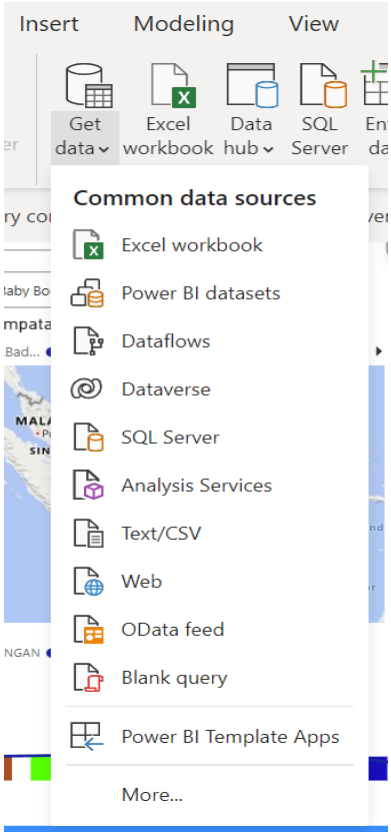


**Figure 2. Import Menu / Get Data from Power BI**

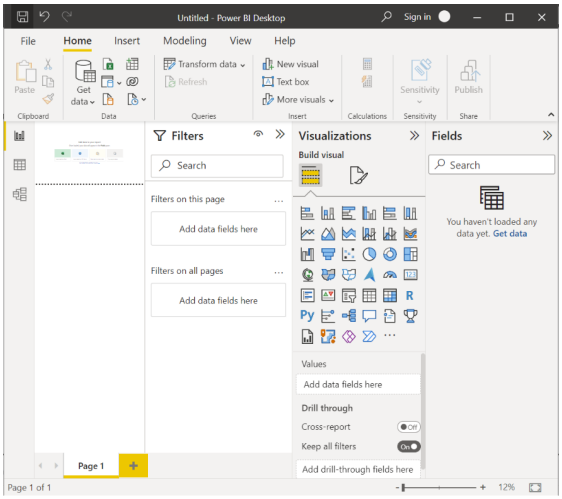


**Figure 3. Paper Work of *Power BI***

### *Dashboard Result*

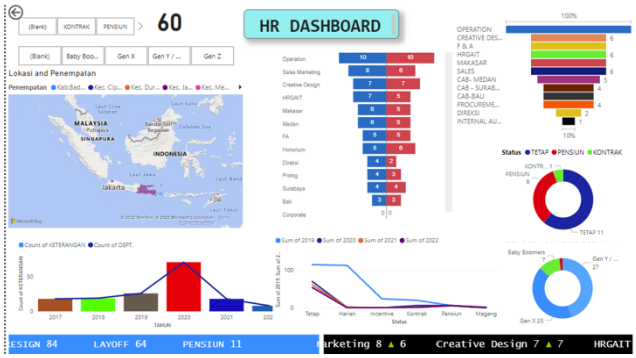


**Figure 4. HRIS Business Intelligence Analysis Dashboard**

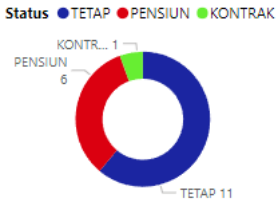


**Figure 5. Dashboard Analysis of BI Status of Employees**

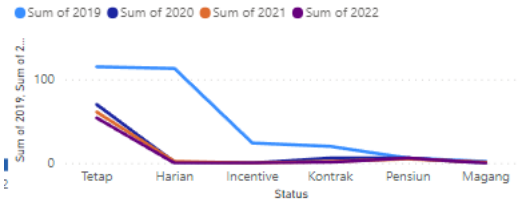


**Figure 6. BI Analysis Dashboard Number of Employees by worker type**

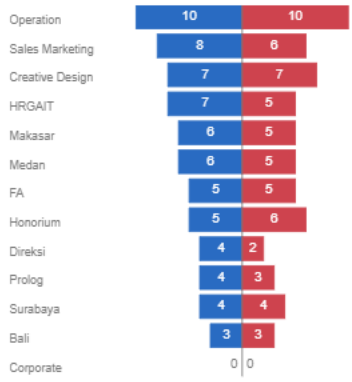


**Figure 7. Dashboard Analysis of BI Comparison of Number of Workers**

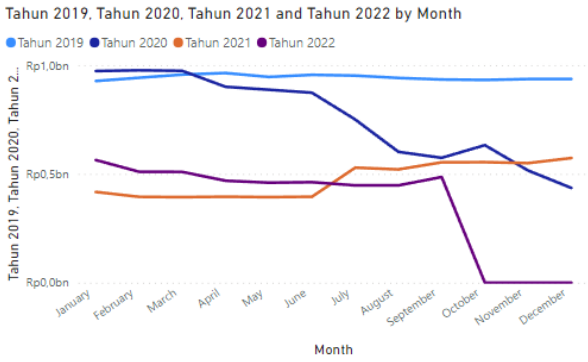


**Figure 8. Dashboard Analysis of BI Comparison of Labor Costs**

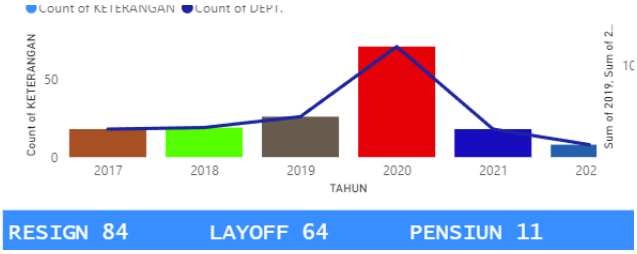


**Figure 9. BI Trend Turn Over Analysis Dashboard**


**Figure 10. BI Analysis Dashboard Branch & HO Locations**

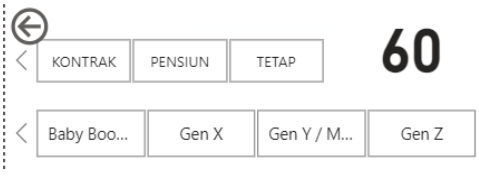


**Figure 11. Dashboard Analysis of BI Total Employees and Check Box drill down data**

| NAMA KARYAWAN | STATUS | BULAN | TAHUN | KETERANGAN | DEPT. | LOKASI |
|---|---|---|---|---|---|---|
| TSABIT MAULANA | RESIGN | JANUARI | 2017 | HABIS KONTRAK | OPERATION | JAKARTA |
| STEPHANIE SIMBOLON | RESIGN | FEBRUARI | 2017 | KEMAUAN SENDIRI | HRGAIT | JAKARTA |
| ELSAN SETYA PERMANA | RESIGN | FEBRUARI | 2017 | UNPROCEDURAL | SALES & MARKETING | JAKARTA |
| BUDIONO | PENSIUN | APRIL | 2017 | PENSIUN | CORPORATE | JAKARTA |
| SUMARNA | RESIGN | MEI | 2017 | KEMAUAN SENDIRI | OPERATION | JAKARTA |
| RIFAI ROMADHONI | RESIGN | MEI | 2017 | KEMAUAN SENDIRI | PROLOG | JAKARTA |
| LAURENSIA SEVIN ANGGITA D | RESIGN | JUNI | 2017 | KEMAUAN SENDIRI | TENDA | JAKARTA |
| HAMID ROZIKO | RESIGN | JUNI | 2017 | KEMAUAN SENDIRI | PROLOG | JAKARTA |
| DEFRI EKA PUTRA | RESIGN | JULI | 2017 | KEMAUAN SENDIRI | TENDA | JAKARTA |
| NURVANO ANDRIAN | RESIGN | OKTOBER | 2017 | KEMAUAN SENDIRI | OPERATION | JAKARTA |
| KEMAS ISMAIL HIKMA | RESIGN | NOVEMBER | 2017 | KEMAUAN SENDIRI | SALES & MARKETING | JAKARTA |
| LAURA WIDYA | RESIGN | NOVEMBER | 2017 | KEMAUAN SENDIRI | TENDA | JAKARTA |
| BAGUS KOREANTO PUTRO | RESIGN | DESEMBER | 2017 | KEMAUAN SENDIRI | CREATIVE DESIGN | JAKARTA |
| KARYONO | RESIGN | DESEMBER | 2017 | KEMAUAN SENDIRI | HRGAIT | JAKARTA |
| DITA UMLHAMULATI | RESIGN | DESEMBER | 2017 | KEMAUAN SENDIRI | TENDA | JAKARTA |
| JUFENTUS SANNY KUMAMBONG | RESIGN | DESEMBER | 2017 | KEMAUAN SENDIRI | SALES & MARKETING | JAKARTA |
| AFINY | RESIGN | FEBRUARI | 2018 | KEMAUAN SENDIRI | CREATIVE DESIGN | JAKARTA |

**Figure 12. BI Row Data Analysis Dashboard**

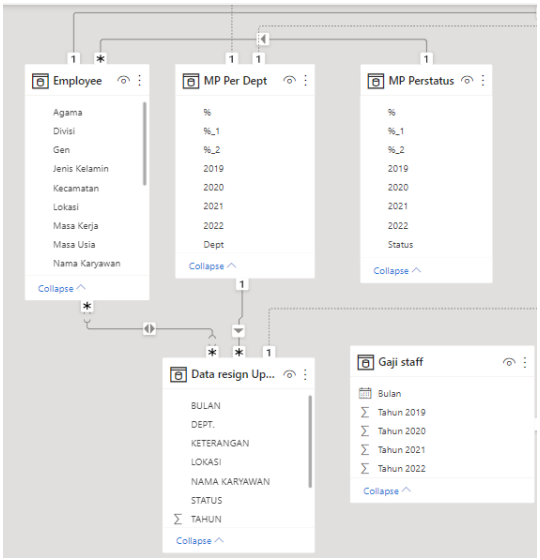


**Figure 13. *Entity Relationship Diagram***

***Discussion***

The implementation of the HRIS Business Intelligence (BI) monitoring dashboard has demonstrated significant improvements in decision-making efficiency, workforce management, and overall operational effectiveness at PT Samudra Dyan Praga. The dashboards, designed to present data in concise and visually appealing formats, simplify the review process and accelerate analysis for top management. For example, the ability to drill down into data provides managers with the flexibility to explore specific insights, such as workforce trends or cost comparisons across branches, enabling faster and more accurate decision-making. Additionally, visualizations like employee distribution by type and labor cost comparisons provide critical insights into workforce efficiency and budget allocation, supporting data-driven strategies to optimize resources.

The turnover trend analysis dashboard further highlights its usefulness in identifying patterns and predicting potential workforce issues. By analyzing turnover data, management can pinpoint factors contributing to employee attrition, such as dissatisfaction or operational inefficiencies, and develop targeted retention strategies. The data integration process, including cleansing and transformation steps, ensures that the dashboards rely on high-quality, consistent data, enhancing their accuracy and reliability. Moreover, the integration of Power BI underscores the role of modern technology in transforming complex datasets into actionable insights. Combined with the Entity Relationship Diagram (ERD), which streamlines data relationships within the HRIS, the system not only supports operational needs but also aligns with broader

digital transformation goals. These outcomes emphasize the strategic value of BI tools in enhancing organizational performance in today's competitive and data-driven business landscape.

## Conclusion

Based on the results of the development that has been carried out, the conclusions of the Business Intelligence Dashboard Analysis of HRIS PT Samudra Dyan Praga are as follows: (1) The designed dashboard is able to summarise all HR development recording and reporting in the form of informative, concise and fast graphs. (2) The designed dashboard helps top management review briefly, and accelerates the analysis process and supports management to make decisions quickly and accurately.

In this analysis, there are still limitations and shortcomings and require improvements to increase the benefits of this application which can be developed in further research. The suggestions that can be given by researchers for further researchers are as follows: (1) The company needs to improve the data processing process which is still fragmentary and not well collected. (2) The company adds a data analyst position to implement the Business Intelligence design that has been developed. (3) Companies in the future need to do forecasting or forecasting using historical data before doing future business planning in order to minimise losses.

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