

Marketing Dashboard as an Early Warning on PR. Gagak Hitam

Aang Afandi¹, Nurafni Eltivia², Siti Holifahtus Sakdiyah³

State Polytechnic of Malang, Indonesia ^{1,2,3}

E-mail: sitiholifahtussakdiyah@gmail.com

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Abstract.

The marketing dashboard is one of the company's barometers that can be used for early warning of the company in marketing operations. This study aims to facilitate the company's management and marketing division for decision-making in marketing operational activities by designing a marketing dashboard. Besides being used for decision-making, the marketing dashboard can also be used for early warning companies in determining steps in the marketing department. The method used in this research is the Research and Development (R&D) method which uses the Analysis, Design, Development, and Implementation, Evaluation (ADDIE) model to design the marketing dashboard – collecting data using interviews and documentation at the company. This research produces a marketing dashboard that describes sales position, turnover, and stock turnover – the results of implementing the marketing dashboard on PR. Gagak Hitam showed a positive response.

Keywords: Marketing Dashboard, Microsoft Power BI, R&D, ADDIE

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1. Introduction

Companies developing their business require reliable company management in reading and capturing existing opportunities. A reliable and good management company will make decisions and policies to provide the company's short- and long-term benefits. In making the right decisions, company management requires accurate and real-time data.

Accurate data will describe the actual conditions in the company. The data used as guidelines by the company's management are all related to the company's operations, including inventory, production, marketing, financial, and labor data. All company operational data must be valid and can be accounted for by their respective divisions. For the marketing division, where the marketing division is the main gate for the company to earn revenue, the data presented must be accurate and follow current market conditions.

Marketing data, including sales data, sales area, achievement of Key Performance Indicators (KPI) of marketing, and sales distribution, must be displayed clearly and accurately. Marketing data will be the company's benchmark in meeting consumer desires for the products needed. Marketing data will be the basis for the production division to produce products desired and needed by the market.

Marketing data presented as a report to company management should be interactive and easily understood by company management. Easy-to-understand data will make it easier for company management to evaluate and make decisions about the marketing division and company development. To create interactive and easy-to-understand data, you can use software such as Microsoft Power Business Intelligence (BI) with a Dashboard concept that contains sales data that includes brand sales, per type of sales, turnover, finished goods stock, return movements, and lousy stock movements (Putra & Sari, 2016).

Several studies that use dashboards to evaluate the marketing division include research on PT. XYZ to measure the effectiveness and efficiency of management in strategic decision-making using a digital dashboard from BI (Putra & Sari, 2016b). Research using dashboards for sales reports can also be carried out in SMEs (Dewi et al., 2021). Not only used by trading companies or dashboard manufacturers with Power BI software, but it can also be applied to service companies (Nugroho et al., 2021).

With the marketing reports contained interactively in the marketing dashboard, it is hoped that it will make it easier for company management to make strategic decisions. In company management, the obstacles often faced in making decisions include inaccurate data displayed, irrelevant information presented, the reporting division needs to understand the report, and the reported data needs to be on point, making it difficult for marketing managers to understand the reported data.

The marketing dashboard can also be used as an early warning tool for companies to achieve company goals. The marketing dashboard, which contains sales results, consumer data, sales trends, and market research on consumer needs, can be used as data to analyze how to forecast future sales, forecasting products being prepared, and forecast the problems, obstacles, and opportunities of the company in the marketing division. Early warning is needed in companies to minimize risks that will hinder the company in achieving company goals and risks that are expected to occur in the future (Habibi, 2020).

In this study, with the marketing dashboard, the company's risk of experiencing a decrease in revenue can be minimized by looking at the sales growth graph to be used as an analytical tool to forecast sales and forecast production needs. The marketing dashboard also minimizes the risk of company management making policies that can hinder the achievement of company goals. In this role, the marketing dashboard is an early warning for the company.

In this study, the object of this research is cigarette companies with complete marketing divisions with many marketing data. Having a Romania does not make marketing data accurate and can be used to guide decisions. Improper data processing and non-interactive presentation are obstacles for the marketing division in presenting marketing reports (Chayani et al., 2021).

2. Research Method

2.1 Research Design

The research conducted is a type of Research and Development (R&D). This method aims to produce a product and test its effectiveness of the product. R&D is a series of processes or steps to develop or improve a new product so it can be accounted for (Arifin, 2012). The development model used in developing this web-based inventory application was adapted from Instructional Media Design (Lee & Owens, 2004), namely the Analysis, Design, Development and Implementation, Evaluation (ADDIE) model. In the ADDIE model, each stage will be interrelated and continuous. The stages in the ADDIE model can look like the following picture:

ADDIE stages in this study:

1. Analysis

In the ADDIE development research model, the first stage is analysis. At this stage, what is done is analyze the problems that occur in the company using the RCA method. At this stage in determining the problem first by conducting preliminary research in the company. Preliminary research can collect data that supports the determination of the root of the problem and, at the analysis stage, also determines the right solution to be applied in the company. The analysis is also carried out by conducting interviews with interested parties to clearly and in detail the problems faced. After knowing the problems faced by the analysis process, it is continued by making solutions that must be adapted to the conditions in the company.

2. Design

The second stage is the solution design at the analysis stage. In this study, in the design stage, there were several steps taken. The first is data collection. The data collected comes from the marketing division. After the data is collected, identify the needed and not needed to be used as a report called the data cleaning process. The second step is to perform ETL from the data that has been collected. The next step is to create a dashboard design tailored to the company's needs.

3. Development

The third stage is development. At this stage, several steps are taken; the first is the creation of a BPMN to see the reporting process and improve the reporting process that the company has carried out. The second stage is data cleaning. At this stage, all the data that has been collected is converted into the same format. Then after the data format is the same, the following process is to transform the data from the excel file to Microsoft Power BI. The fourth step is to create a dashboard that matches company management's needs.

4. Implementation

The fourth stage in the ADDIE model is implementing the dashboard designed and built in the previous stage. Implementation is carried out in the company to the ranks of managers and company management. At this stage, the company's feedback will be considered in improving the resulting dashboard.

5. Evaluation

The last stage of ADDIE is an evaluation carried out in response to the feedback that the company has given at the implementation stage. The evaluation was conducted to develop the dashboard, making it more feasible.

2.2 Materials and Tools

Marketing Dashboard

Companies use customer data as a modern marketing medium to build good consumer relationships. So that customer data can be appropriately used, the data must be organized and displayed interactively so that it is easy to understand and understand. A marketing dashboard is a tool that can be used to present data in an interactive visualization as a source of assessment about the performance of the marketing division. The dashboard can help to facilitate the analysis and decision-making process. A good dashboard is a dashboard that can display dynamic visualizations with charts, graphs, and plots that can pull data automatically and directly. The marketing dashboard displays sales data analysis in an easy-to-understand graphic form. By looking at the marketing dashboard, companies can quickly develop sales strategies (Saragih et al., 2021).

A marketing dashboard is a digital tool that contains complete, accurate, and real-time reporting, including analysis, KPIs, and marketing metrics in the form of data visualization. This dashboard is specially created to track and monitor team performance and marketing management. Many features can be displayed in the marketing dashboard, especially sales activities and KPIs. Essential features in the marketing dashboard include KPIs to monitor the development of marketing KPIs, contact management to store customer data, and detailed reporting that provides complete, accurate, and easy-to-understand reports. The benefits of a marketing dashboard include monitoring employee performance; activity visibility; data integration; displaying an approach to reaching attractive prospects; enabling marketing planning; automating manual tasks; having an easy-to-understand interface that makes it easy to use, and can be used mobile devices (Fadly et al., 2019).

Business Intelligence

Business Intelligence (BI) is not a product or a system but an architecture of a series of activities that are integrated into an application as a guide for decision-making and become a database that facilitates enterprise access to business data. BI has attracted the attention of many companies because of its ease of use and the many benefits it provides to enterprises. However, the company's challenge in using BI is related to the business model run by the company. Bi was developed according to the company's needs (Darudiato et al., 2010).

BI describes the concept or method of how company management improves the quality of business decision-making based on a data-based system. BI is a way to collect, store, organize, summarize data and provide information on the company's business activities, both internally and externally, that can be easily accessed by company management to assist management in making decisions. BI is a support system for making data-based decisions (Imelda, 2008).

Microsoft Power BI

Data is a valuable asset for companies to understand customers, markets, and growth. Processing data must be reasonable and correct to help make decisions. You can use Microsoft Power BI software to process and present data correctly. Microsoft Power BI is a software made by Microsoft that can process data in more detail and present it with interactive data visualizations (Wijaya & Purnamasari, 2020). Three essential concepts in Microsoft Power BI are datasets, reports, and dashboards. Datasets are collections of data that are input into the Microsoft Power BI system. Reports are charts or graphs of data

generated in a one-page visualization. At the same time, the dashboard is an integrated display of various reports that provide data information, analysis, and company description. The advantages of Microsoft Power BI include visually displaying data with interactive charts, maps, and graphs, getting the latest information with dashboards, and accessing data using Microsoft Power BI dashboards and reports at any time.

The components contained in Microsoft Power BI are first power query: self-service extract transform and load (ETL) tools are used to run Excel Add-In to receive, process, and load data from various sources into excel form. The second component is the power pivot, data modeling that makes it easy to calculate quickly. The third component is power view which is used to build data visualizations quickly and easily by providing a drag-and-drop interface. The next component is a power map, data visualization using three-dimensional forms. Furthermore, there is a bi-desktop power component for report writing and interactive visualization display (Akbar et al., 2018).

One of the basic concepts in Microsoft Power BI is a dashboard that displays data and visualizations with easy access and can combine data on one page. Several types of dashboards that can be used include the first strategic dashboard used by company management, which contains information on the achievement of company goals and the performance of the entire company that can be used for decision-making. The second type is an operational dashboard that monitors the activities of every part of the company, with the data displayed in detail and updated. The third dashboard is a tactical one that measures the results of a company project to see whether it has increased or decreased. Fourth is analytical, which is used to look at past data, and the results can be used as a reference for decision-making that can be done in the future. The last dashboard is Ad-Hoc, used for short-term and urgent needs.

3. Results and Discussion

Helping companies of all sizes turn data into insights is the ultimate goal of modern business intelligence and data analysis tools that, in recent years, have become a critical necessity and eliminate guesswork. Reaching the full potential that databases offer, improving performance, and improving business processes through effective BI solutions is not only done by large companies but also medium and small businesses. Every professional in our ruthless digital age has a responsibility to do the best possible data management for their region, and by leveraging modern business intelligence solutions, organizations will not only have a complete picture of their data but also have easy access to the various touchpoints needed to success of operational and strategic activities.

Marketing strategy is an essential factor determining the company's success. The presence of marketing software with a dashboard is needed to advance the marketing division. This is because all sales data and analyses displayed by the marketing dashboard are complete and accurate. The marketing dashboard displays sales data analysis in graphs or easy-to-understand materials. Businesses can quickly develop a sales strategy after viewing the monthly marketing report on the dashboard (Pauwels et al., 2009).

A marketing dashboard is a digital tool that contains complete, accurate, and real-time reporting. The report includes analytics, KPIs, and marketing metrics using data visualization. This marketing support application is specially designed for marketing teams,

and managers to monitor their performance and correct any deficiencies at any time (Hamzeh et al., 2020). In addition to the marketing dashboard, the marketing application also provides a visually attractive display of marketing metrics and is easy to read and understand by the marketing team. By tracking marketing KPIs over time, teams can work on field data to improve their performance.

A marketing dashboard is a concise and detailed compilation of all pertinent data about a company's marketing efforts. In the past, companies had to collect this information by hand, but now all helpful information can be entered on a single computer page. Pages containing a marketing dashboard can also include links showing users all data about a particular marketing area. All this information about past performance would ideally show marketers how to continue marketing campaigns in the future (Clark, 2021).

One of the most challenging problems marketers face is deciphering all the information provided by Cararn technology. Whether this information comes from customer surveys or is driven by more sophisticated computer systems designed to assess how well a marketing campaign achieves its objectives, it can all be overwhelming. Deciding which information is essential and relatively trivial can differentiate between efficient and wasteful marketing. Creating a marketing dashboard is the best way to solve this problem (Bertschinger & Pfante, 2020).

It is essential to understand that there are many ways for a company to build a marketing dashboard. Doing so may take a lot of trial and error until a company establishes a formula that works for them—done clearly and concisely with a design that is easy to use and understand.

The marketing dashboard structure usually includes a main page with all the most relevant information. This data can include the results of previous campaigns regarding return on investment from sales of advertised products. It can also include customer-based data such as brand recognition or customer satisfaction levels with efforts in particular marketing.

The marketing dashboard from this main page can be broken down into smaller areas that allow closer inspection and study. For example, one link could lead to a page showing the effectiveness of television ads run by the company compared to radio or print ads. Another might be to demonstrate the company's efficiency in its marketing efforts. The basic structure should allow the main dashboard page to display marketing data highlights while links provide a complete picture of all marketing areas.

The creation of the Power BI dashboard for the first step is the ETL process. At this stage, accounting collects all data from the marketing division for sorting and grouping the data. Data that plays a minor role in reporting to company management should be included. This ETL process is necessary because the results of data processing in this process will be a guide for company management to make decisions for the continuity of the company's operations. In this study, the data obtained are in the form of sales and stock.

For sales data provided by the marketing division in the form of a daily sales recap for one month. Sales data includes sales of hand-rolled kretek cigarettes and machine-made kretek cigarettes. The next step in sorting sales data is a monthly sales recapitulation for the sales data that has been collected. Sales are recorded monthly every year for several years to

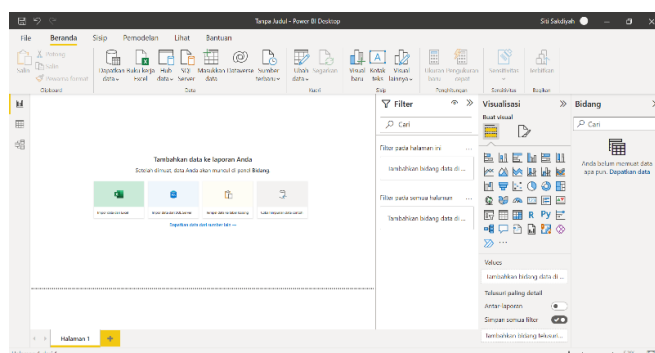
see how the company is progressing in tabular data. This is intended to facilitate the dashboard creation process.

After sorting data from the company, the next step is the ETL process using the default software from Microsoft Power BI, namely the power query editor. The power query editor checks whether the data transformed to Microsoft Power BI can be used directly or must be edited first. Before the data is loaded into Microsoft Power BI, you must first clean the data. Cleaning data helps sort out data not used for visualization and equate it with the data structure that Microsoft Power BI wants in creating data visualizations.

After cleaning the data, it can be transformed and loaded in Microsoft Power BI. If the data is still deemed inappropriate before being visualized, it can be corrected in the power query editor. The next step after the data loading process is to create a data visualization to become a dashboard that can be used as a guide for decision-making.

For the Microsoft Power BI framework, the first is to connect data, transform data, visualize data, and publish dashboards. The first process is to connect data, where this process as explained earlier, Microsoft Power BI can connect more than 135 data sources, one of which is from Microsoft Excel. The data obtained from the company is in the form of an excel file so that that data can be directly connected to the Microsoft Power BI desktop.

The second process is transforming data. The Query Editor built into Microsoft Power BI is used to modify or edit data files before they are loaded into Microsoft Power BI. The Query Editor plays the role of an intermediate data holder where it can modify data by selecting rows and columns, splitting them and columns, rotating and dropping them, etc. Changes made by the Query Editor in Microsoft Power BI are not reflected in the actual data set. After pre-processing the data and converting it into the required format, it can load it into Microsoft Power BI. The third process is data visualization. It is in this process that the dashboard is made.



like the picture.

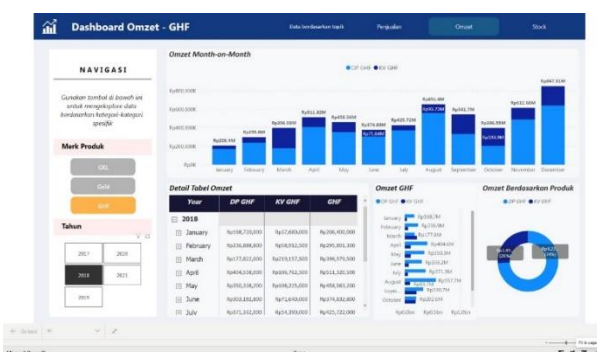
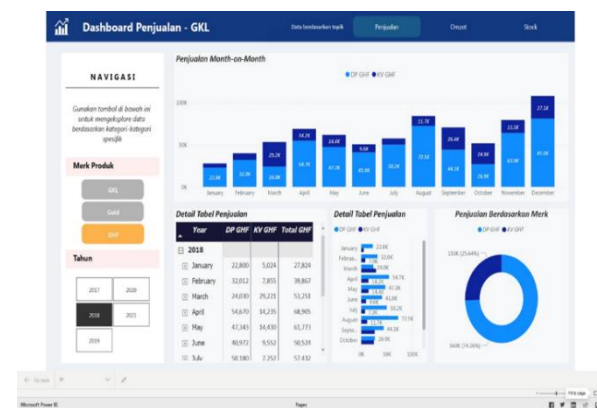
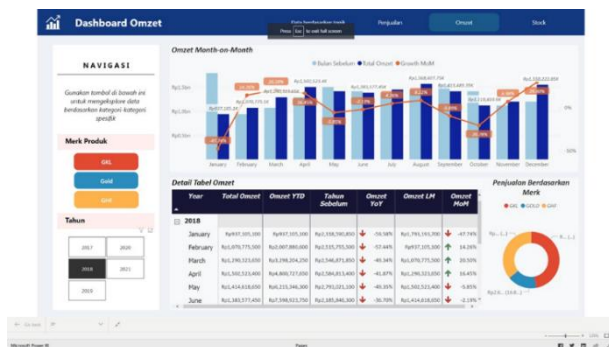
The marketing dashboard includes sales, turnover, and stock turnover data. For the dashboard, the first page describes the overall development of sales by quantity. On the marketing dashboard on the first page, you can filter by year to find out the progress of sales every month, and you can see the pie chart for each brand.

After going through the data cleaning process, connecting the data to Microsoft Power BI, transforming it then processing it in the query editor, the data is ready to be visualized with various graphs or charts interactively. To create a dashboard using Microsoft Power BI desktop with an initial view

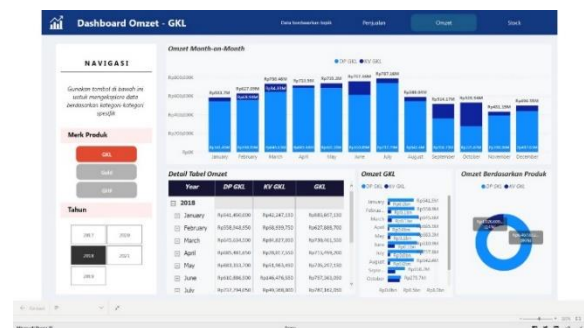
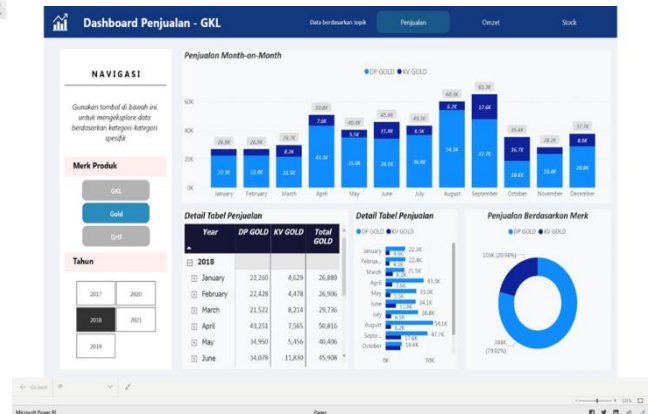




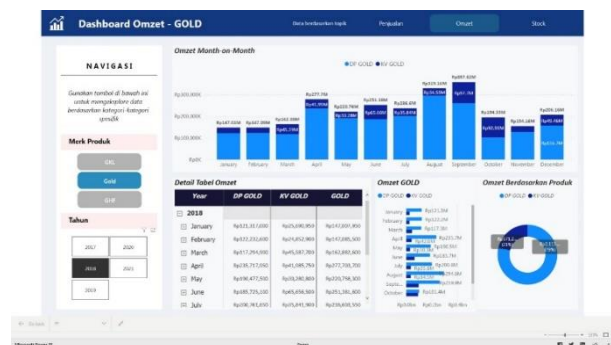
The following dashboard is the dashboard for turnover. The turnover dashboard can be filtered for each year, and you can see the development of monthly turnover. Turnover is the value of sales for product brands filtered turnover by type of sales from each brand.



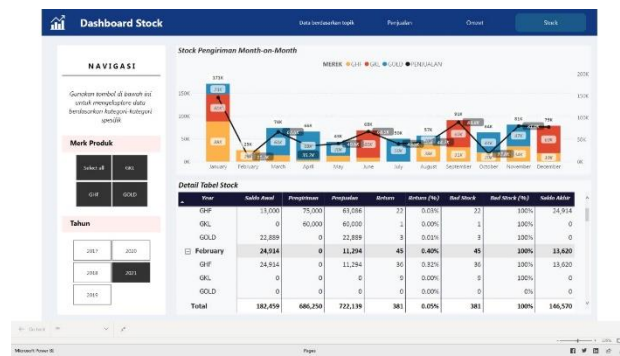
To filter each brand, it is used to view sales based on the type of sales, namely dropping (DP) for large-scale sales and canvas (KV) for small-scale sales. On the dashboard for each brand, you can see a sales table for each type of sale and a pie chart for that sale.



The last dashboard is the dashboard for stock which consists of monthly shipments for each brand, sales, returns, and wrong stock. In the stock data set, you can see the percentage of goods returned from the market to sales and the percentage of lousy stock from returns.



Based on the implementation of PR. Gagak Hitam, for the data visualization



dashboard that has been generated, the marketing division's response to this dashboard is very responsive. According to the manager, this dashboard is considered adequate and efficient compared to reading reports in printouts and tables that the administrative staff has reported. The information conveyed to the company's management is also more focused and

conceptualized regarding marketing performance. Reading a tabular report from Microsoft Excel results requires a relatively long time to understand and know the latest developments and conditions presented in the report. Meanwhile, reports in the form of a dashboard can clearly describe conditions in real-time. By looking at the development of sales and stock turnover, it can be used as an early warning to decide on policies in marketing.

4. Conclusion

The visualization design is made using Microsoft Power BI to make the visualization more interactive and can provide attractive and easy-to-understand information to company management. Visualization can be tailored to the company's needs with various themes that can be applied in data visualization. An exciting and on-focus theme can make it easier for management to find the main points of the problem for which decisions and policies will be made.

Implementing the Microsoft Power BI dashboard visualization provides a new understanding for the marketing division to present and provide accurate, relevant, and real-time information to company management. The resulting data visualization dashboard provides new knowledge for companies, especially administrative staff as report makers.

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