

The Implementation of Business Intelligence on Smart Sales Dashboard Using Tableau (Study Case: PT. Derma Konsep Estetika)

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Abstract— This research is to improve the optimization of sales data in PT. Derma Konsep Estetika. Datasource used is skincare sales data in 2019, which will be processed into a smart dashboard using Business Intelligence. The research method is descriptive. Dashboard development starts from the process of planning, data analysis, and extracting transaction data. Business Intelligence implementation starts from extracting company transaction data and collecting it in a data warehouse. The data will process into a form of Business Intelligence visualization. The results of the dashboard development can help managers in conducting sales strategies.

Keywords— Business Intelligence, Sales, Smart Dashboard, Tableau

I. INTRODUCTION

Lack of technology implementation in industrial companies can lead to errors in decision-making due to the inability to produce the right information. The current situation at PT. Derma Konsep Estetika. Every year, the company releases sales-related data, one of which is skincare products' sales data. However, the data cannot process due to a lack of technology utilization and the lack of appropriate tools in its operations. The data processing problem can solve by processing the data into a smart dashboard using Business Intelligence.

Business Intelligence is a process to extract the company's operational data and collect it in a data warehouse. The extraction process can also transform by applying various formulas, aggregations, and validation so that data obtained by the interests of business analysis [1].

We will conduct the process of collecting sales data sourced from a data warehouse. The data will process in a visual form that facilitates the management of PT. DKE in reading data. The created data visualization will produce reports and data analysis, for data reports will show a simple Fig. of the data. Meanwhile, data analysis will generate new insights that become the consideration of management to make decisions.

II. LITERATUR REVIEW

1. PT. Derma Konsep Estetika

PT. Derma Konsep Estetika (DKE) is one of the largest cosmetic manufacturer companies in Indonesia. DKE is a company focused on developing natural and clinically tested products. Sales of DKE products only focus on Business-to-Business (B-to-B), which show to aestheticians and clinics. DKE products are not marketed directly to consumers [2].

2. Data Visualization

Data visualization can interpret as various techniques for creating images, diagrams, or animations to communicate information (Turban, 2004). In general, data visualization is one of the methods to explore data interestingly because humans are capable of analyzing most of the visually presented information.

3. Business Intelligence

Business intelligence is a process to extract the company's operational data and collect it in a data warehouse. The data in the data warehouse is processed using various statistical analyses in data mining to obtain different trends or patterns. This simplification and downsizing results present to end-users, usually business decision-makers, based on facts and not relying solely on intuition and quantitative experience alone [3].

4. Business Intelligence and The Differences with Regular Analysis

According to Thomas and Woledge (2017), Business Intelligence and analytics have similar goals, both of which help organizations leverage data to improve decision making. However, how the two people achieved that goal is very different. Traditionally, Business Intelligence leverages historical data to learn from past decisions, while analytics uses various sources to predict future results.

5. Business Intelligence Function

Business intelligence function is to decision-making support system where the system and application convert data in a company or organization (operational data, transactional data, or other data) into a form of knowledge. In general, BI aims to present a variety of information tailored to the needs of each user [4].

6. Tableau

Tableau is an easy-to-use intelligence business software, especially when it comes to data visualization, data analysis, and reporting [5]. It is relatively easy to use because it uses a drag and drop system. Tableau is a Business Intelligence research by Gartner Report February 2016 [6].

7. Chart

Chart or graph is a depiction of data plotted in a field that connects two or more variables. Charts are a method of visually presenting quantitative data [7].

8. Data Warehouse

According to Inmon (1992), a data warehouse is a set of data subject to orientation, integrated, non-volatile, and time-variant used for the decision-making process.

III. RESEARCH METHOD

Research methodology can define as the knowledge passed to achieve a specific understanding [8]. In this study, the method used is the descriptive method. The stages in this research shown in Fig.1.

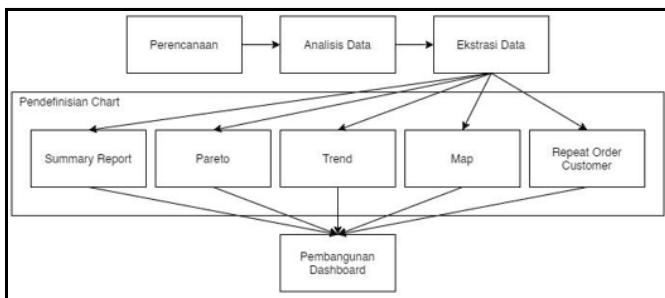
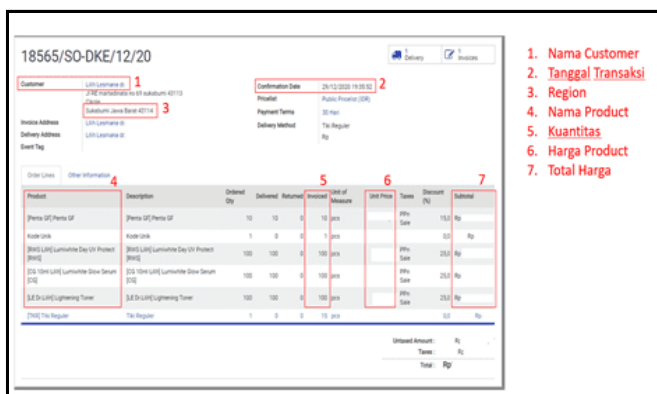


Fig. 1. Research Stage

IV. DISCUSSION

A. Planning

At the planning stage, we conduct identifying the problem, namely the absence of a sales dashboard at PT. DKE. The existence of a sales dashboard is essential to support management's needs to make strategic decisions. The created sales dashboard will contain a sales data graph—the sales data obtained from detailed invoices. The sales data is obtained from detailed invoices as shown in Fig. 2.



Product	Description	Ordered Qty	Delivered Qty	Returned Qty	Unit of Measure	Unit Price	Taxes	Discount (%)	Subtotal
Penta GP	Penta GP	10	10	0	10 pcs	1100	0%	0%	11000
Radiance White Sun	Radiance White Sun	1	0	0	1 pcs	10000	0%	0%	10000
Derma Moist Cream	Derma Moist Cream	100	100	0	100 pcs	2500	0%	0%	250000
Chromaglow Serum	Chromaglow Serum	100	100	0	100 pcs	2500	0%	0%	250000
Acne Sunscreen	Acne Sunscreen	100	100	0	100 pcs	2500	0%	0%	250000
Butter Cream K	Butter Cream K	100	100	0	100 pcs	2500	0%	0%	250000
DKE Expert Acne Nig	DKE Expert Acne Nig	100	100	0	100 pcs	2500	0%	0%	250000
Normal To Dry	Normal To Dry	100	100	0	100 pcs	2500	0%	0%	250000
Acne Night Cream	Acne Night Cream	100	100	0	100 pcs	2500	0%	0%	250000
DKE Expert Hydra Ph	DKE Expert Hydra Ph	100	100	0	100 pcs	2500	0%	0%	250000
Light Skincare	Light Skincare	100	100	0	100 pcs	2500	0%	0%	250000
Normal To Oily	Normal To Oily	100	100	0	100 pcs	2500	0%	0%	250000
Locochalzone Serum	Locochalzone Serum	100	100	0	100 pcs	2500	0%	0%	250000
Peptide Serum Light	Peptide Serum Light	100	100	0	100 pcs	2500	0%	0%	250000
Derma Filter - 250%	Derma Filter - 250%	100	100	0	100 pcs	2500	0%	0%	250000
Radiance Sunscreen	Radiance Sunscreen	100	100	0	100 pcs	2500	0%	0%	250000
Night Cream White	Night Cream White	100	100	0	100 pcs	2500	0%	0%	250000

Fig. 2. Customer Detail Invoice of PT. DKE 2019

B. Data Analysis

We analyze the need for data to chart as part of creating a sales dashboard. From the chart formed, a dashboard makes that represents the business picture of PT. DKE in 2019. The fields from the data warehouse in Tableau will be divided into two parts, the Measure and Dimension as shown in Fig. 3.

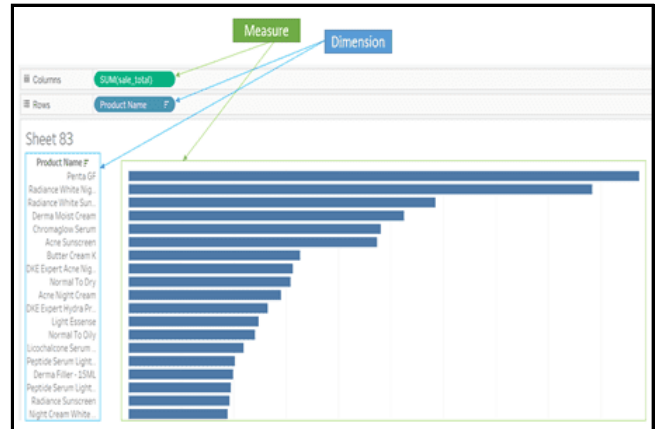


Fig. 3. The Example of The Chart

To facilitate dashboard development, the focus of this research is data analysis based on the following variables:

1. Summary of sales of PT. DKE within a year.
2. Pareto analysis. This chart analyzes 80 % of total sales of 20 % of products within one year.
3. Trend skincare sales PT. DKE every month within a year.
4. Analysis of the spread of skincare products PT. DKE throughout Indonesia.
5. Customer repeat orders. This chart analyzes customers per quarter.

C. Data Extraction

The data extraction process starts from a PostgreSQL Database whose data extracted using SQL Query into Tableau as shown in Fig. 4. Tableau is a business intelligence tool for charting and dashboard visualization. Simultaneously, SQL Query is a form of the command used to access and display data on a database system. The extraction process produces several fields divided into two states: measure (quantitative) and dimension (qualitative).



Fig. 4. Data Extraction Process

D. Chart Development

After the extraction process is complete, the next step is to visualize the available data (make a chart). Blank pages from the tableau sheet will be processed data from the fields open into charts [9]. Fig. 5, Fig. 6, Fig. 7, Fig. 8 and Fig. 9 show the charts generated from Tableau. They are Summary Report, Pareto, Trend, Map and Repeat Order Customer charts.



Fig. 5. Summary Report Chart

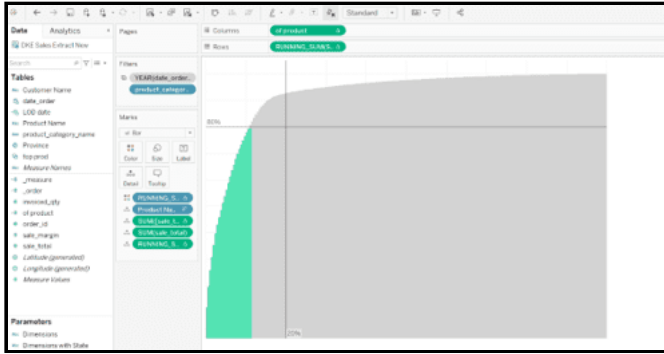


Fig. 6. Pareto Chart

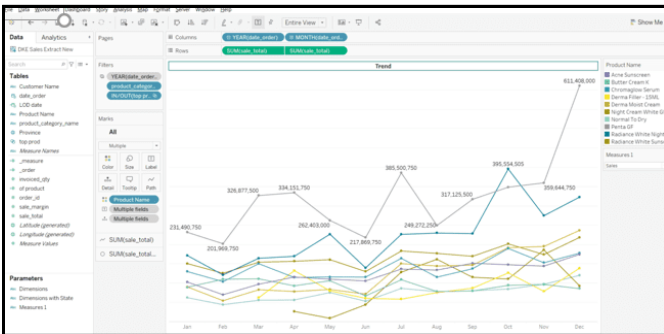


Fig. 7. Tren Chart

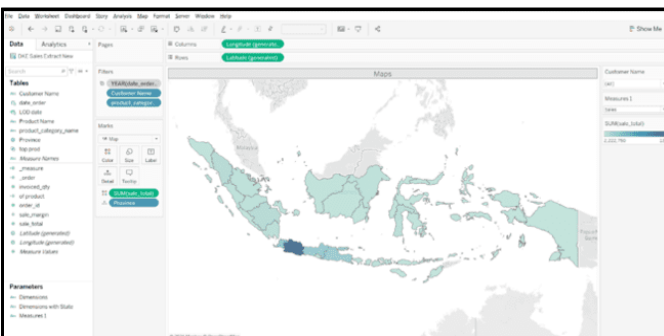


Fig. 8. Map Chart

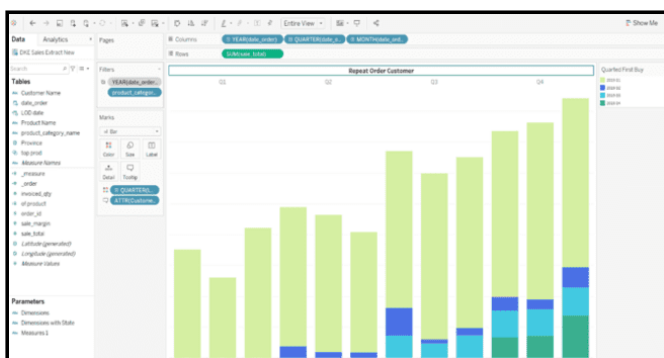


Fig. 9. Repeat Order Customer Chart

E. Dashboard Development

After creating all the charts were completed, a dashboard development will carry out—the dashboard is from a collection of charts arranged into a corresponding visualization page. The content of the dashboard is the transformation of data from the Data Warehouse into a

Dashboard Visualization. Fig. 10 is an example of building a dashboard for visualizing the Pareto sales chart.

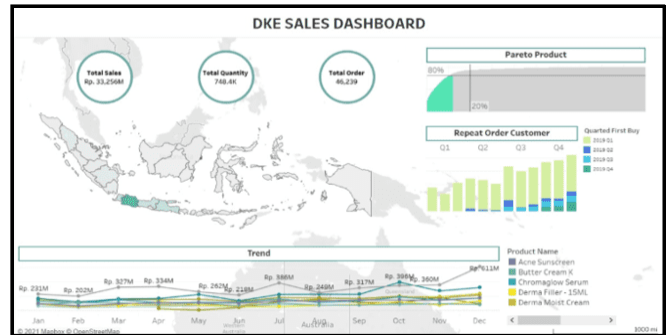


Fig. 10. DKE Sales Dashboard Development

An Action Filter creates at this stage. The function is to make the dashboard filter dynamically. Fig. 11 and Fig. 12 show the filter for the Pareto and the map charts. Action filters help managers get analytical insights from company sales data. The filter action will change according to the desired action.

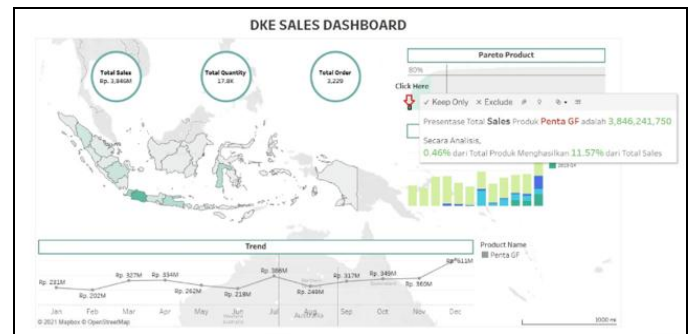


Fig. 11. DKE Sales Dashboard Pareto Action Filter

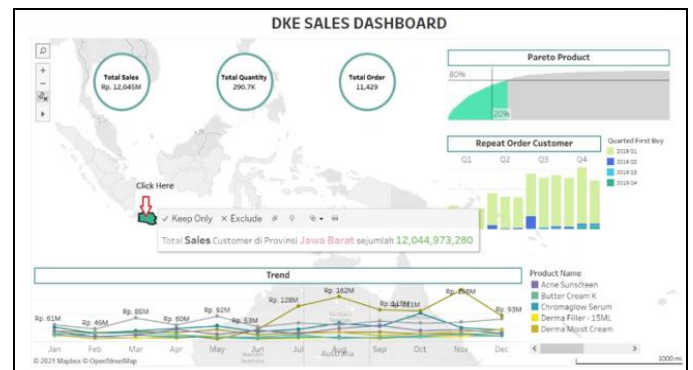


Fig. 12. DKE Sales Dashboard Map Action Filter

V. CONCLUSION

The Implementation of Business Intelligence in PT. DKE through various stages, starting from data planning, analysis, and data extraction. In the data analysis stage at PT. DKE has a chart definition consisting of the summary report, Pareto, trend, map, and repeat order customer in a dashboard. The dashboard consists of various charts arranged into a corresponding visualization page and display related information that the user can easily digest to draw conclusions and strategies drawn from the analysis made. The dashboard's

content is the transformation of data from Data Warehouses into the form of Dashboard Visualization. We have created an Action Filter that is useful as a dynamic dashboard filter—the smart dashboard construction in PT. Derma Aesthetic Concepts can assist managers in carrying out their next sales strategy.

The Implementation of the smart dashboard has well implemented. Development can still be carried out, such as operational dashboards to help analyze reports periodically, for example, daily. Besides, a dashboard warehouse can also develop to assist in analyzing warehousing data. It is also necessary to have other analysis that allows being implemented the smart dashboard on PT. DKE.

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