Analysis And Design Of Data Warehouse At Warung Asri

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The purpose of this research is to help provide information in supporting the decision making process in the field of sales, purchasing and food inventory control at Warung Asri. With the support of a data warehouse, management can be assisted in making decisions faster and more precisely. The research methods carried out include ongoing system analysis, library research, designing data warehouses using the star schema method. The results of this study are the availability of a data warehouse that can produce fast and accurate information both about data sales and material stock, thus helping the owner in making decisions in determining the amount of stock and sales targets. The conclusion of this research is the application of this data warehouse can be a media to assist the management of Warung Asri

Index of Terms—Application, Information, Data warehouse, Star Schema

I. INTRODUCTION

At present the development of technology is very rapid. It discusses how to facilitate everyone in doing something. These activities include daily activities and business process activities. The impact of the system can cause every activity to be more effective but each system has its own function. The main function of each system is to provide solutions to complaints that are needed by everyone, both individuals and companies, to become more effective and efficient activities. one of the current technological developments is the data warehouse system. Excerpted from research by AA Ngurah Narendra, Santi Ika Murpratiwi, and Made Sudarma in 2018 regarding data warehouse applications where today's data warehouses have been developed to assist in processing historically important data, current data values start from One study of data warehouse design, is a data warehouse to facilitate national and local tax information[1]

Warung Asri is one of the restaurants located in Denpasar which is located on an area of 18 acres above the ongan dam with views of shady trees making this place suitable for a place to eat because the weather is very cool. Warung Asri is known as one of the restaurants that sell mainstay menus such as Japanese specialties such as sushi, grill seafoods, and Chinese food. The increasingly tight transactions that occur make management overwhelmed in decision making. It is very important for management to be able to determine various decisions and policies related to the development and achievement of strategic business goals going forward quickly and accurately. Coupled with the demand for products that often change depending on a variety of situations and market conditions, the management of the warung asri must be able to determine the right business strategy in order to compensate for these changes. Based on these facts, the Owner and management realize the importance of the availability of data and information for decision making. Therefore, we need an analysis and design of Data Warehouse to be able to meet those needs. In this research, data warehouse development uses the star schema method.

II. LITERATURE REVIEW

The data warehouse is a place to archive summaries of historical data contained from existing databases within an organization (kusnawi, 2010)[2] . According to Inmon and Richard D. (1994) data warehouse is a collection of data that has an integrated, integrated subject, time variation, and the fixed nature of the combination of data in supporting the management decision making process[3]. Meanwhile, according to quotation from I Made Adi Bhaskara, Luh Gede Putri Suardani, and Made Sudarma. (2018) Data warehouse is a place for storing company data or companies that organize it so that it can be understood and analyzed[4]. During its development, much has been done related to the data warehouse in accordance with current environmental problems.

Research that supports this research is research by Choirul Huda, Jumas Ranope Marly Lumenta, and Kevin in 2010 With the title of Data Warehouse Analysis and Design at PT Pelita Tatamas Jaya. This research produces conclusions After conducting the analysis and design of Data Warehouse at PT. Pelita Tatamas Jaya, the author

draws the conclusion that the proposed Data Warehouse can be used to support analysis activities as a basis for decision making by executives at PT Pelita Tatamas Jaya. Information from the data warehouse system application at PT. Pelita Tatamas Jaya is knowledge for company executives that can be developed to determine sales strategies for companies in addition to determining purchasing policies and controlling requirements[5]. In a subsequent study conducted by Aggry Saputra, Zulfachmi, and Made Sudarma in 2018 with the title "Designing Data Warehouses for Analysis of Culinary Sales with Multidimensional Modeling - Star Schema Design" in which this research resulted in experiments:

1. The information obtained is more useful and effective because it has been screened from several previous dimensions.
2. With the construction of data warehouse reports that are generated more quickly and precisely.
3. Management is easier to see sales statistics, food data and drinks that are in great demand[6].

Finally, the use of data warehouses helps the data analysis process, so that management can analyze information and can be used as a database for making decisions..

III. METHODOLOGY

The method used in this study includes analysis, design, followed by making programs, testing and evaluating. Analysis is carried out on the condition of the restaurant, analysis of strengths, weaknesses, opportunities, and threats so that it can be identified needs Data warehouse design with the application of star schemes, including architectural design.

Fig 3.1 Flowchart of research stages

A. *Star Schema*

According to research from Kadek Ary Budi Permana, Gde Brahupadhya Subiksa, and Made Sudarma in 2017 where the Star Scheme is a fairly simple data warehouse system anywhere supported it is also called a star because the diagram looks like a star Star schema is a table design where there is a fact table located in the middle of a dimension, this table functions as a link to other dimension tables[7]. Star Scheme has function as the model of the business scheme accurately by using several fact tables. The strength of the use of star scheme is from the system performance system, where the star schema is more reliable compared to other schemes. It is caused by the use of join level among the fact tables with the less dimension table, as the result it can help the system in doing aggregation operation.

Fig 3.2 Star Schema

The main characteristic of the star schema is that its dimension tables are not normalized. In the model above (Figure 3.1), the fact_sales fact table (in blue) contains the data extracted from the operational database. While the red table is a dimension table.

B. Critical Success Factor (CSF)

Critical Success Factor (CSF) is a factor that determines and influences the ability of an organization to achieve its goals and helps to define what needs are needed. The management determines the Critical Success Factor that the overall sales value must increase by at least 15% - 15% per year. The sale value in question is the value of money received not the number of menus sold.

C. Subject of data

The subject of data is the data that is the source or input needed in the system that is grouped into a particular group. Data subjects are used to obtain data sources that function as information needed for the executive. The subject of the data used as a source of data in this study is as follows

NO	Data Subject	Details
1	Menu produk	Contains information about various products
2	Supplier	Contains information about suppliers who supply goods to the restaurant.
3	Pelanggan	Contains information about customers who buy food products
4	Gudang	Contains information about the location of the storage of cooking ingredients
5	Stok Bahan	Contains information about the amount of each material available in the warehouse.

Table 3.1 Data Subject

D. Data Subject Matrix

The matrix is used as an explanation of the relationship or relationship between two aspects in the current system. Created in a table format containing the value 'x' means there is a relationship while " - 'means there is no relationship. To find out the relationship between data subjects in Warung Asri, it can be seen in the following matrix:

Grain / Dimensi	Member	Paket	Periode	Jenis Pembayaran	Admin	Barang	Gudang
Sistem Reservasi	✓	✓	✓	✓	✓		
Sistem Stok			✓			✓	✓

Table 3.2 Business Process Dimensions

E. Information Needs

To support related parties in making decisions, information on the level of product sales is needed, information on the level of purchase of goods, information on the level of sales of each month, information on the amount of material entering and leaving the warehouse. Such information can be presented per month, quarter, semester and even annually. Information is also needed on the percentage growth in the value of sales and growth in the value of material purchases as seen from the amount paid from one period to the next year.

F. Architectural Design

The proposed data warehouse architecture design uses a centralized data warehouse architecture. The components of the proposed centralized data warehouse architecture include data sources, data transformation, data warehouses, applications for users. The data source comes from operational data that is already owned by the company. This operational data includes supervision of inventory of material inventory, sales of menu products, purchase of materials

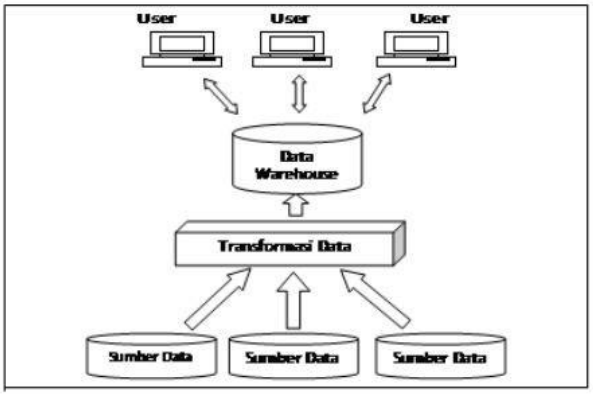

Fig 3.3 Architectural Design

G. *Star Schema Design*

In designing the company's data warehouse system using a star schema, where the fact table is placed in the middle which functions as a link in the dimension tables (n-dimensions). The use of this star schema was chosen because the form of this scheme is easy to understand and use, making it easier to do the query formation process.

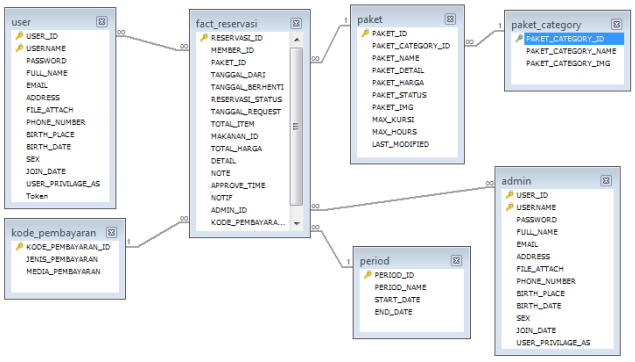

Fig 3.4 Skema Bintang Fact Reservasi

The Star Reservation Scheme generated in this study consists of a Fact_Reservation Table where the fact table contains a foreign key of 5 dimension tables (Admin Dimensions, kode_Pembayaran Dimensions, Paket Dimensions, User Member Dimensions) which relate to fact tables through (admin_id, pembayaran_id, paket_id, user_member_id)

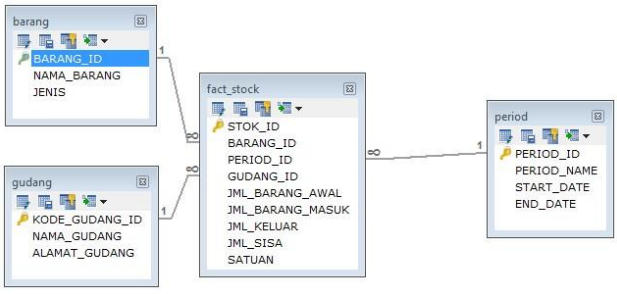

Fig 3.5 Material Stock Factor Star Scheme

Seen Fact_Stock Table where fact table contains foreign key from 3 dimension tables (Gudang Dimension, Barang Dimension, Period Dimension,) which are related to fact table via (barang_id, warehouse_id, period_id)

H. Design

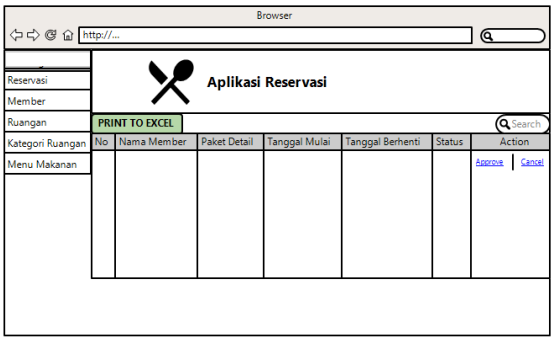

Fig 3.6 Initial sales reservation design

Fig 3.6 design of the appearance of the reservation page on the web service to be built. On this page there is a reservation information table that can be added, edited and deleted by the admin.

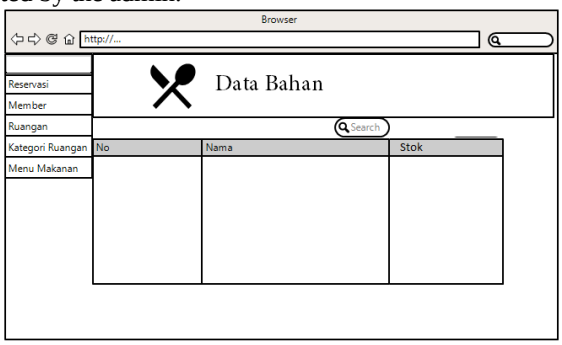

Fig 3.7 Material data design

Fig 3.7 Design of the display page stock material on the web service to be built

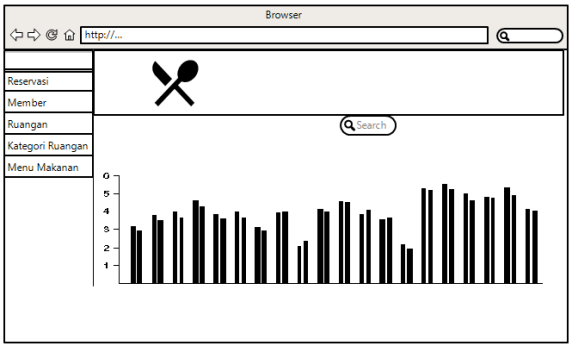

Fig 3.8 sales chart display design

Fig 3.8 Design of the sales chart display design on the web service to be built

I. Appearance Display

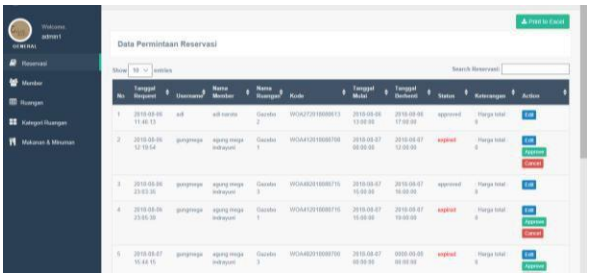

Fig 3.9 Display Transaction Data

Fig 3.9 Display of the reservation page on the web service On the reservation page contains information about the reservation data that is in a beautiful ongan stall. On this page the admin can manipulate data such as approve reservations, then edit reservations and cancel reservations.

Fig 3.10 Tampilan data Menu

Fig 3.11 Tampilan data Stok Bahan

Fig 3.11 Design of the sales chart display design on the web service to be built

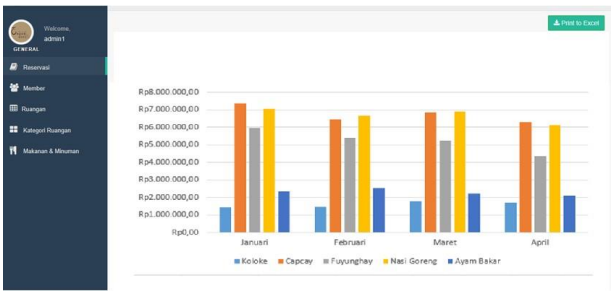

Fig 3.11 Display sales chart

Fig 3.11 management can see the sales chart of each of its products so that management can consider the main focus on each food product

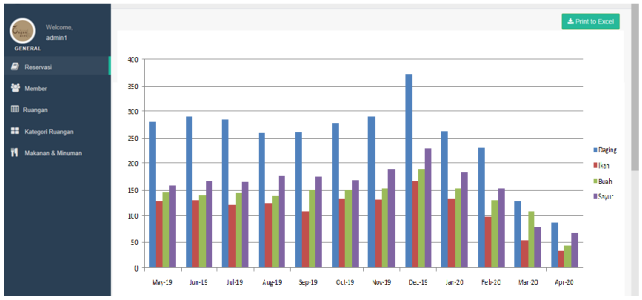

Fig 3.12 Stock material chart

Fig 3.12 management can see a graph of material requirements and can consider the material needs in the next period

IV. CONCLUSION

After analyzing and designing the Data Warehouse at Warung Asri, the author draws conclusions that the proposed Data Warehouse can be used to support the analysis activities as a basis for management decisions. The management can see sales chart data and material expenditure so that they can decide on the next business strategy quickly and accurately.

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