Tech saksham

Case Study Report

Data Analytics with Power BI

“Inventory and sales analysis of Departmental store”

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INDEX

ABSTRACT

The progress of time continually accompanied by the development of technology. It leads to the competition among industries that require them to have superiority to attract more consumers. X Fashion is one of the fashion industries which sells various apparel products for people in the sale of large or small scale. The business processes of X Fashion is procuring products, managing inventory, sales, and managing finance. A lot of variations and number of products in the store are not in balance with a good management because all forms of recording are done manually. It causes potential error so that the information disseminated is inaccurate. Based on this consideration, a research is conducted as inventory and sales information system design on X Fashion clothing store to identify business process also to design an inventory and sales information system on X Fashion clothing store. The method used is Systems Development Life Cycle which consists of systematic steps for developing, designing, and maintaining the system to meet the needs of users, including supervision, recording, and reporting. Information system is designed to provide stock data, expense, and income reports automatically.

INTRODUCTION

In the development of technology, a company demanded to implement technology to build their business process. X Fashion is a developing business unit in selling various apparel products. Based on the information fromtheowner, theyhavedifficultyto manage stock due to lots of product variations. During this time, every sort ofinformationwasnotedmanually, whichspendlonger time. Moreover, collected informationis not accurate because of manual documentation. Basedonthis problem, research is conducted to design an inventory and sales information system to helpandquickeningactivity in theside of collecting and processing product information, selling, alsofinancial. The method used is Systems Development Life Cycle (SDLC) which consists of systematic steps for developing, designing, and maintaining the system to meet the needs of users. This method provides a good quality of system design, following user needs. The type of developing system design used is prototype model tocreate a model of program to visualized software components as what the user needs. Designing this information system using MySQLsoftware and PHP programming language which flexible on the operation system, fast in execution, also easy to interact with the database.

Problems Identification

The problem identification from the research is obtained by the research background which carried out from the preliminary studies. The problem of the research is the information system still manual and not integrated that causing some problems.

The data collecting stage starts from obtaining primary data form interview and also observation. The data includes the present business process, information needs analysis, also system user identification.

After collecting data, designing and building system can be done by creating the information system flowchart, context diagram, Data Flow Diagram, Entity Relationship Diagram, making CRUD matrix, present the design of the information system, then do the system construct.

RESEARCH METHODOLOGY

Preliminary Studies

The initial stage is done by an interview with the owner and every department. An observation also conducted to find out the actual condition of the company that caused the problems. Based on the interview and observation, the condition or the business process of the company is discovered.

Business Process

According to Weske (2007),business process consists of a collection of activities carried out in a coordinated manner in an organization. These activities are combined to achieve a business goal. According to Dumas, Rosa, Mendling, and Reijers (2017), business process is carried out by the company when providing service or product to consumer. The way the business process is designed and carried out affects the quality of service perceived by consumer and the efficiency of the service.

System Planning

According to Dennis, Wixom, and Roth (2012), system design is the determination of the overall architecture that consists of a collection of physical, hardware, software, human, and communication processing components. The design of a new system must meet all aspects by prioritizing the needs of consumers, selecting and evaluating potential products, applying technology, planning product life cycles, and designing products to make it easier to use.

Systems Development Life Cycle (SDLC)

The methodology of system analysis and design referred to System Development Life Cycle (SDLC), which includes the development of processes and ongoing maintenance processes. The methodology of analysis and design of the system was originally prepared for software development so that it only focuses on programming. In the analysis phase, the main focus is on understanding the needs of the organization. On the other hand, the design phase focuses on the physical aspect of a system to support specific organizational needs. But in its development, the process is always followed by the operation phase and the implementation phase (Ramakrishnan, 2012). According to Barjtya, Sharma, and Rani(2017), System Development Life Cycle is a collection of systematic steps for the development, design, and maintenance of a

Data Flow Diagram (DFD)

Data Flow Diagram describes the business process along with the data involved in the process, which focuses on the activities involved (Dennis et al., 2012). According to Rosenblatt (2014), Data Flow Diagram shows the movement of data through the information system but not show a logical model of how the system works. Data Flow Diagram uses symbols that represent the process, data flow, data storage, and entity.

Entity Relationship Diagram (ERD)

According to Dennis et al. (2012), Entity Relationship Diagram is an illustration that displays information that is created, stored, and used by a business system. The purpose of reading ERD is to find individual pieces of information in the system and find out how the information is organized and related to one another. Meanwhile, according to BaguiandEarp (2012), Entity Relationship Diagram is a method of mapping data to be stored in a database system. In ERD, the same information is placed in a box called an entity. The lines between entities indicate the relationship between data. The illustration of ERD is not sequential even though entities related to each other are placed closely.

SERVICES AND TOOLS REQUIRED

Services Used

- **Data Collection and Storage Services**: Banks need to collect and store customer data in real-time. This could be achieved through services like Azure Data Factory, Azure Event Hubs, or AWS Kinesis for real-time data collection, and Azure SQL Database or AWS RDS for data storage.

- **Data Processing Services**: Services like Azure Stream Analytics or AWS Kinesis Data Analytics can be used to process the real-time data.

- **Machine Learning Services**: Azure Machine Learning or AWS SageMaker can be used to build predictive models based on historical data.

Tools and Software used

Tools:

- **PowerBI**: The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query**: This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

Software Requirements:

- **PowerBI Desktop**: This is a Windows application that you can use to create reports and publish them to PowerBI.

- **PowerBI Service**: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

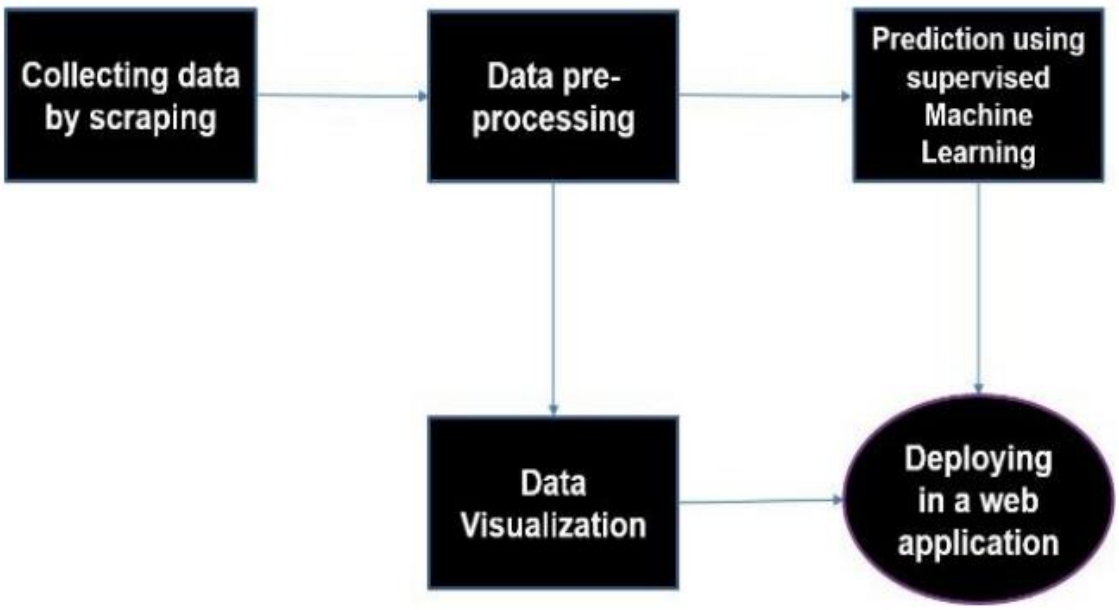
- **PowerBI Mobile**: This is a mobile application that you can use to access your reports and dashboards on the go.

PROJECT ARCHITECTURE

SYSTEM ARCHITECTURE:

The proposed system aims to analyse the data generated by matches and predict the outcome of the match (one Pre-Toss and then Post-Toss). The steps followed are

- Collecting data by scraping
- Data pre-processing
- Prediction using supervised learning algorithm (Random Forest Classifier)
- Data Visualization
- Deploying in a web application


Collecting data by scraping
Data pre-processing
Prediction using supervised Machine Learning
Data Visualization
Deploying in a web application

MODELING AND RESULT

1.stock details

2. Expense Report

3. Income Report

1. Stock

Data Stock data is information that must be maintained by the person in charge of product stock to control the remaining inventory in the warehouse. The problem of the current system is that not all stocks are successfully recorded because there are too many products in the warehouse, also not regularly arranged, thus the stocks that are still in the warehouse are considered non-existent or vice versa. This also because records are not constantly updated, that is, when sales transactions occur, the stock on the record does not automatically decrease but must be updated manually.

2. Expense Report

Expense report is a record of expenditure information from the procurement process. In the current system, the finance department records expense manually based on the invoice which is often not

3. Income Report

The income report contains a record of income information from product sales. Because the store serves direct sales also shipping sales, receipts are generated more that make itdifficult for the finance department for collecting sales information to record income. Besides, sometimes direct sales do not conduct with the transaction bill, so there is no record of the sales.

CONCLUSION

Based on the research, some conclusions can be taken:

1. The business process on X Fashion clothing store consists of product procurement, stock management, selling, and financial management.

2. Circumstances occur at this time are the number of variation and product, but all forms of records are done manually which takes time and raises the potential for errors so that the information obtained is inaccurate.

3. The needs of the owner are the integration of stock, sales, and financial data so that the delivery of information can be done quickly,therefore the information obtained is accurate.

4. The application of information system technology can answer all the needs of every department.

5. Based on the testing, the information system is declared feasible to be used in supporting the clothing store business process because it can accommodate all needs of the owner as well as every department on X Fashion clothing store.

6. Adding brief information on each menu and button or making a manual book, so users can find out the function of each control in the information system.

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