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# Data Sales Application of Small Enterprises Using Growth Ratio Method

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***Abstract***

Micro, small and medium enterprises are businesses that are generally individually and are small business entities such as selling dumplings, fried bananas, even internet cafes and so on. This study aims to create a business intelligence application that displays sales turnover data for micro, small and medium enterprises using online analytical processing with a web-based growth ratio method that aims to help micro, small and medium enterprises by making application prototypes that can display data from sales results in various easy graphs. viewed and using the growth ratio formula method where the formula calculates the profit as a percentage and can be compared with the previous data. This application program is made for the public with the hope that micro, small and medium enterprises experience significant progress in profiting from their sales turnover Human-created applications were created to facilitate human needs and work ranging from lifestyle, health, security, entertainment, and others. In addition, we often also find several applications that have similarities with each other in various functions, appearance, and so on so that it spurs developers to have to work hard to develop these applications to attract the attention of website users by offering unique advantages and features that can be a differentiator from similar applications. The need for clear and precise information today is needed in everyday life in order to avoid false information or hoaxes. In addition, precise and accurate information can also be an important element that can influence developments in various aspects such as sales business, education, entertainment and so on at this time and in the future.

## I. INTRODUCTION

The development of data mining applications is getting faster and faster so that the creation of applications that become tools for humans that can facilitate human work and help humans to see and detail the information they can get. Technology will always develop rapidly and will always be used to carry out human activities [1]. The easiest example is the presence of the internet where the internet is a means of communication and information seekers. Technology can also be viewed as good at a time when it brings benefits that have a good impact on a large scale. Human needs for information are often very often not balanced with sources of presentation of news data or other data that containing adequate information which can result in often an information still having to be re- extracted from an information source in the form of a very large amount of data. The ability of humans in processing information technology to collect and store various type of data today is quite rapidly developing so that it can increase the ability of human to summarize, analyze and extract information in the form of very large amounts of data. The availability and need for information in the form of existing data can be used as a supporting basis in the decision making process to form solutions for business purposes in the fied informatic engineering which is the forerunner of a technology called data mining. According to an article about data mining written on the website entitled what data mining is Data Mining is an activity of digging and collecting important information on large data sets [2]. Data mining technology is also considered to be able to speed up the process in decision making that can allow an both an agency both entertainment, business and education and others to be able to process important and needed information contained in data on a large scale and the occurrence of transaction data where big data after being processed can become a new data or knowledge so that it can help a business field.

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Data mining techniques can also be categorized as part of business intelligence where the application of gathering, storing, analyzing techniques and providing access to data aims to make it easier for users of a company to make decisions in running a business strategically and somewhat better developed. “Business intelligence (BI) is a tool or technology that functions to collect, store, analyze and provide data access to assist agencies or companies in making decisions” [3]. In a company, the business intelligence process is carried out by a special division that aims to set the policies of a company so that the techniques of the business carried out become more effective. A simple example of the application of business intelligence can be such as selling snacks during the month of Ramadan such as fried foods, drinks and so on. Business Intelligence is not only applied by an agency or large company, in fact, Street Vendors or Micro, Small and Medium Enterprises can also use business intelligence technology to see opportunities to develop in their sales business. Street trader (Pedagang kaki lima) or PKL is a person who conducts sales business using a cart. Usually, the goods sold by these merchants can be in the form of snacks and drinks which are usually in the form of meatballs, dumplings, spring rolls, iced cendol, sweet iced tea, and others at affordable prices and sold in the complex, in front of schools, hospitals, and even on the side of the highway.

Micro, Small and Medium Enterprises is a form of productive business which is owned by a person or can be owned by a business entity that generally moves through the scope or sector of buying and selling activities such as trading which has certain characteristics or different characteristics [4]. Accompanied by the background written above, the author has hereby taken the title Business Intelligence Application Of The Sales Turnover Data Viewer of Micro, Small and Medium Enterprises Using Online Analytical Processing With a Web-Based Growth Ratio Method.

## II. METHODS

### 2.1 Growth Ratio

The Growth ratio method is one of the methods chosen to calculate the data of many which will be the percentage of growth of the total ratio of the entire data through calculations from two times such as the month of the day of the year adjacent.

The formula and example of calculating the Growth ratio are as follows:

Formula : ((present-past)/past)*100%

Where:

Past = Old data

Present = Recent data

100% = to convert data into percentages

a. Example of sample growth ratio from two pieces of data (without Average):

Sales of micro, small and medium enterprises with fried banana products have data on profit turnover in the first month of 1,852,700 and the second month of 2,116,000, An example of manual calculation of the Growth ratio method is ((2,116,000-1,852,700)/1,852,700)*100% = 14.21%

### 2.2 Business Intelligence

Business Intelligence itself is activities such as in the process of presentation and analysis of the information that has been collected and will then be processed into the data warehouse so that it is easy to use in the decision-making process as well as possible [5].

### 2.3 Online Analytical Processing

Online Analytical Processing is the use of a set of query and reporting tools that provide users with a multidimensional view of their data and enable them to analyze the data using simple windowing techniques [6].

### 2.4 HTML

HTML is short for Hyper Text Markup Language which is the basic programming language in creating websites, HTML consists of Head, Body and in it there are TAG and Attributes, although it is said to be a programming language, but HTML cannot be said as a programming language because HTML does not have things that are needed by programming languages are logic, HTML only gives output, therefore HTML is likened to the foundation or structure of the Web and the programming languages are PHP and Javascript [7].

### 2.5 Database

The database is a structure that is generally divided into 2 things, namely a flat database and a relational database where the existing data contains various items that have been arranged into one table that is used to store what will be presented in the database [8].

### 2.6 Black Box

Black-box is a method that can benefit the examiner because the Tester does not have to be proficient in programming language and also Testing is done from the user's point of view. This is done so that it is easier to find inconsistencies in the software under study. Moreover, Testers do not need to check the coding of the software. This also allows testers and software developers to work independently without interfering with each other's work processes [9].

### 2.7 JavaScript

Javascript is an object-based scripting language that allows users to control and manipulate an HTML document and is one of the programming languages that is often used as a method to make it easier to create a display because of its library [10].

## III. RESULT

### 3.1 Web Design

Web Application's Design


Fig. 1 Login Page

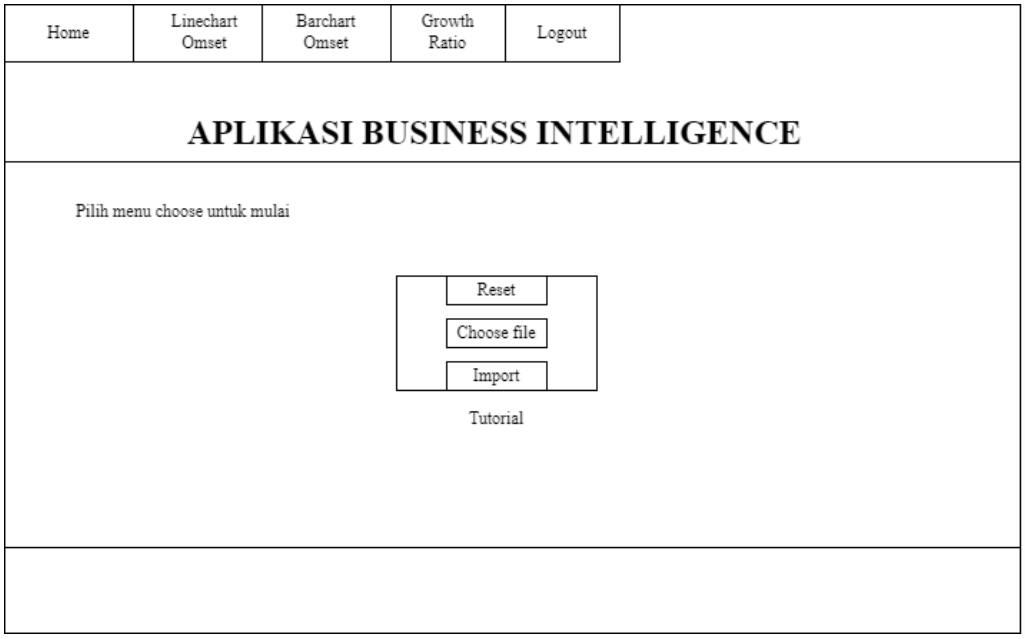


Fig. 2 Home Page

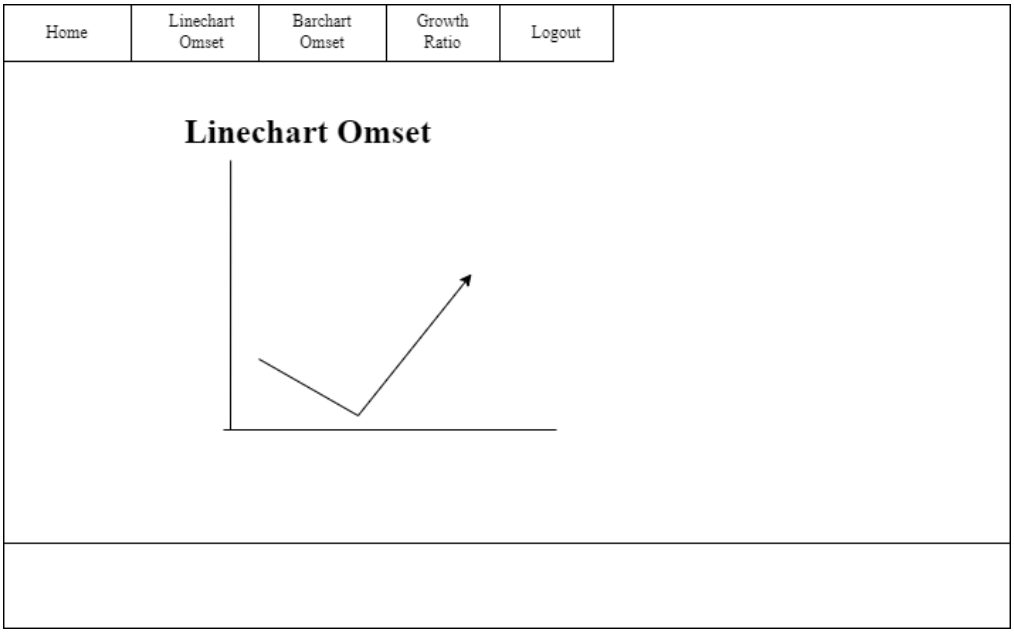


Fig. 3 Linechart Page

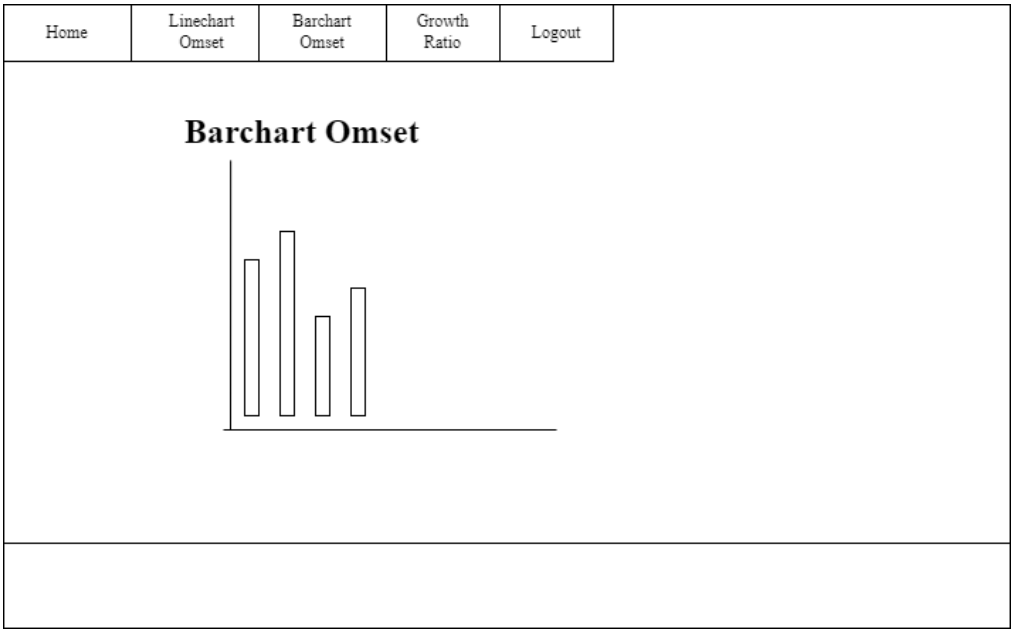


Fig. 4 Barchart Page

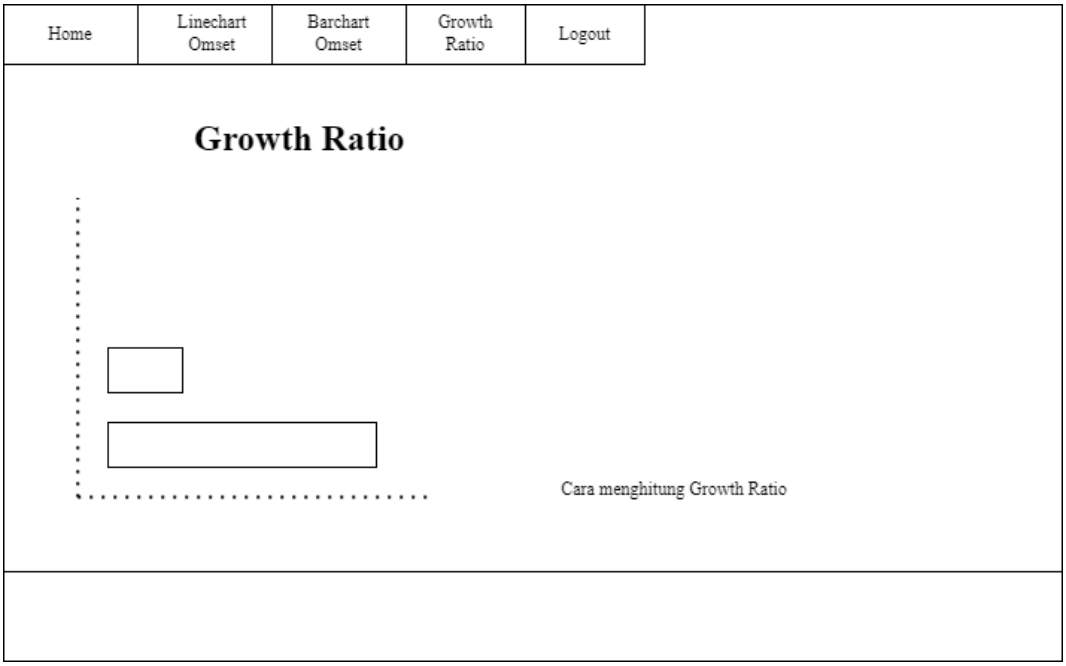


Fig. 5 Growth Ratio Page

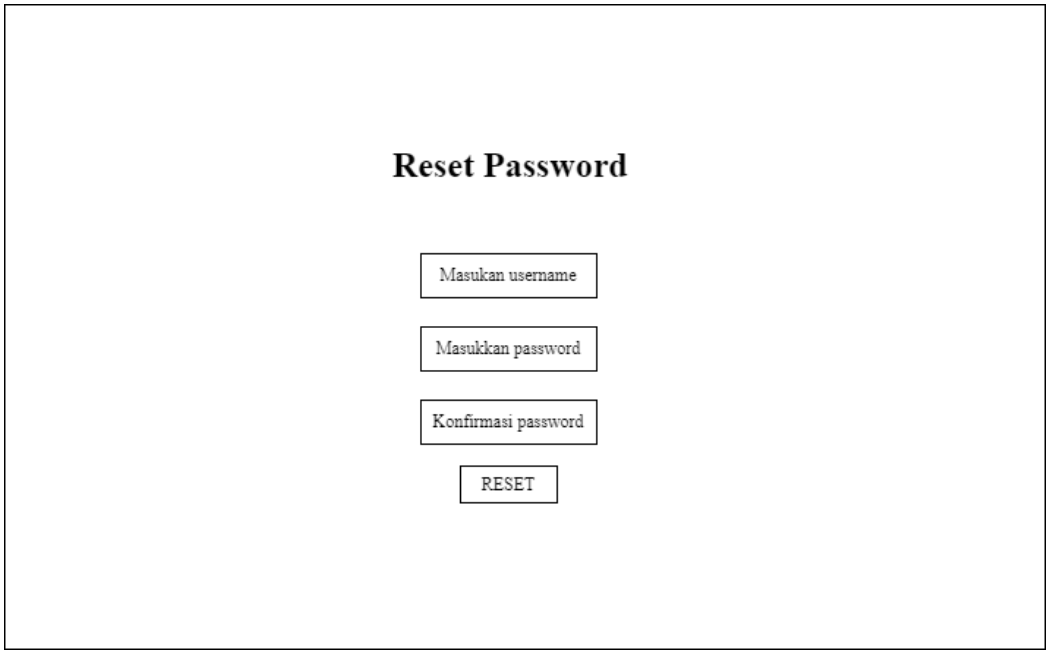


Fig. 6 Reset Password Page

### 3.2 Finished Products and Growth Ratio Count Screenshot

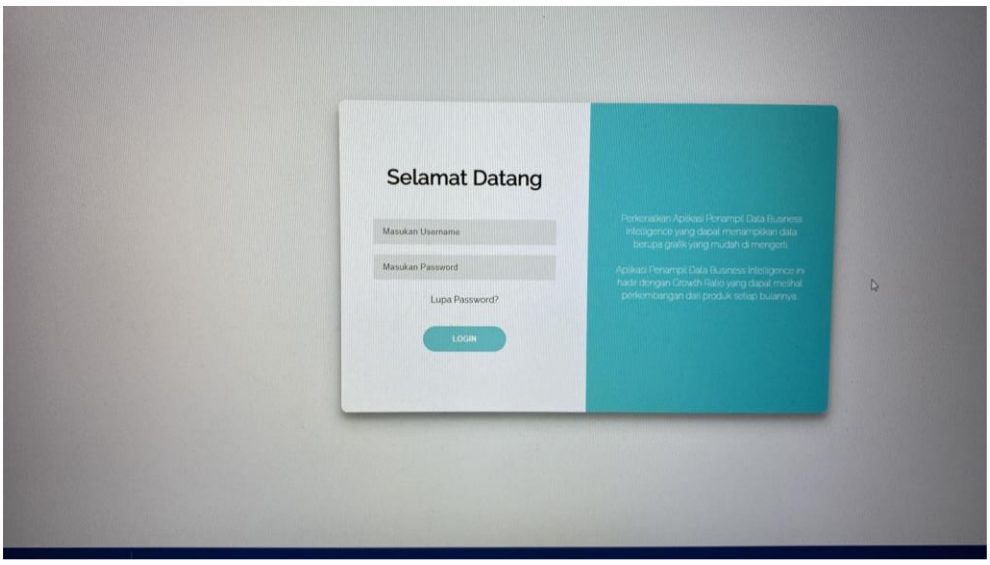


Fig. 7 Welcome / Login Screenshot

In the initial menu there is a username and password form which will be filled in by the user. If the password is incorrect, a display like this will appear, and when OK is clicked it will return to the login page.

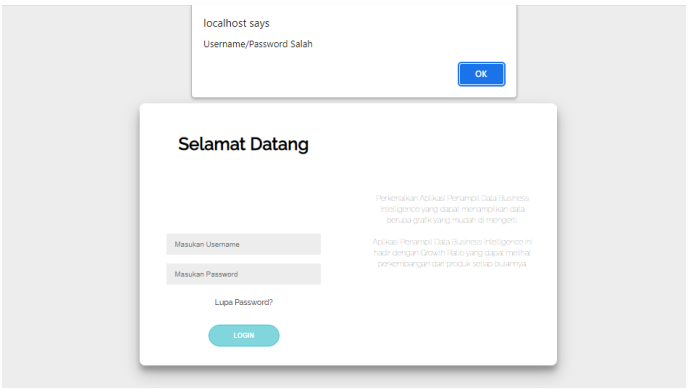


Fig. 8 Wrong Password Screenshot

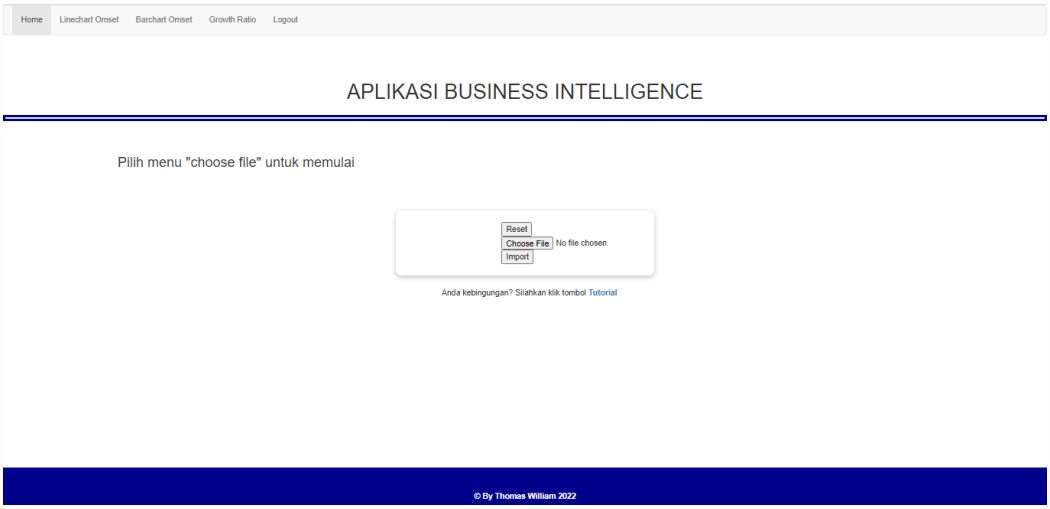


Fig. 9 Home Screenshot

The home menu will display an initial screen where the user can start processing data with a growth ratio by choosing a file to select an excel-formatted data file and then the user will click import to enter the data into the application program system.

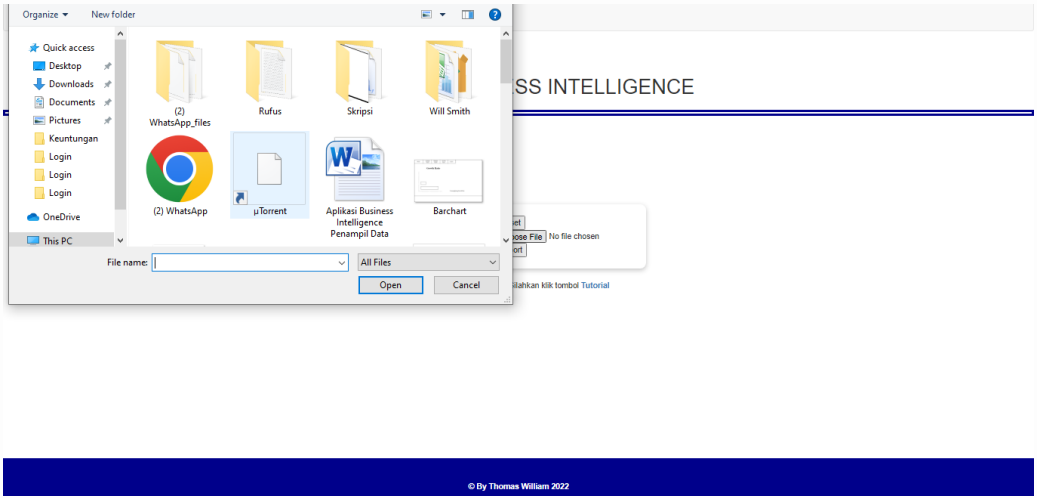


Fig. 10 Excel Import Screenshot

After the user clicks choose file, it will automatically be able to select the excel file to be selected and entered into the application.

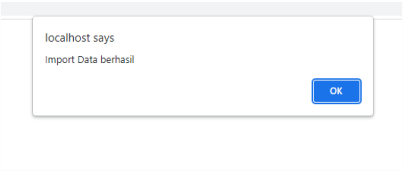


Fig. 11 Import Succesful Screenshot

After the user selects the file he wants to use, the message import data is successful and after the user clicks ok the user will be directed directly to the Linechart navigation bar to start viewing the data graph that has been read.

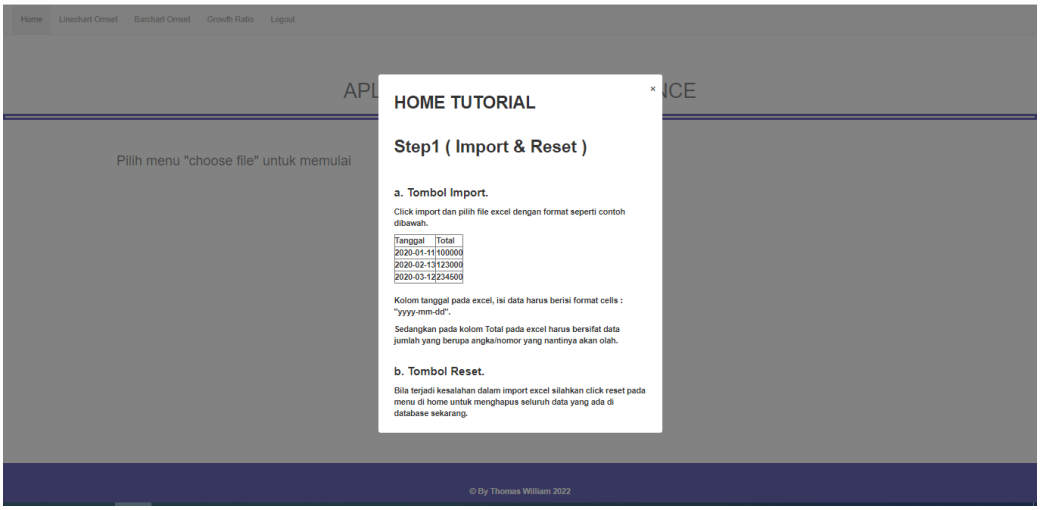


Fig. 12 Home Tutorial Screenshot

If the user has difficulty, then there is a button in the form of a link that can be clicked and a Tutorial display will appear for using the application. In the Tutorial there are steps to import data into the application with a predetermined format so that it can be read by the application and can be processed later.

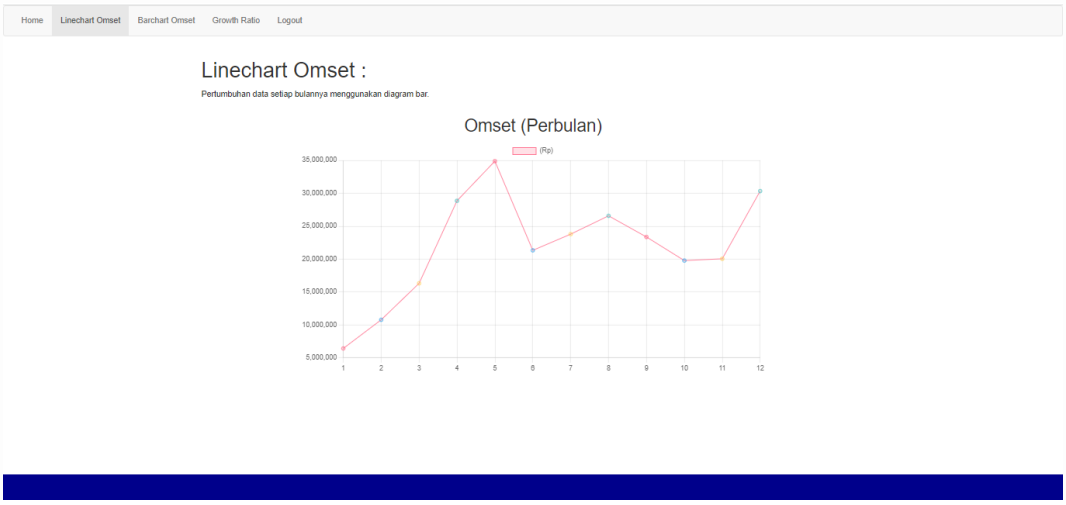


Fig. 13 Linechart Result Screenshot

On the Linechart turnover navigation menu display, you can see a line graph where each point on the axis will read the total per month in a year. Linecharts can only read data for up to a year.

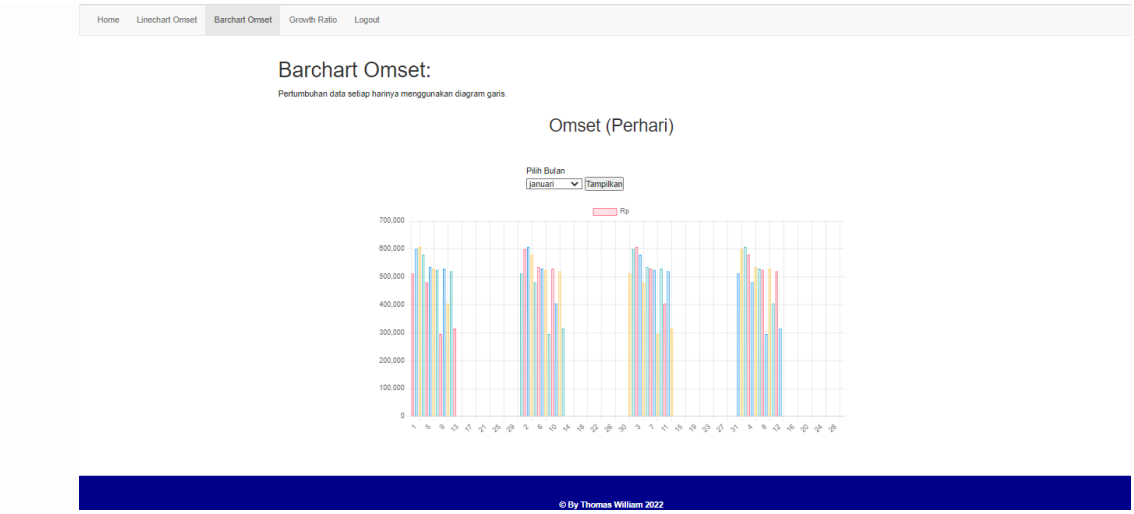


Fig. 14 Barchart Result Screenshot

As shown above, the Barchart Navigation Menu will display turnover in the form of a Barchart every day for one month. The month can be changed from January 2021 to January 2021 December and different from Linechart data can be stacked with other data


Fig. 15 Growth Ratio Result

In the Growth ratio bar navigation menu there is a display that displays the processed data in the form of a horizontal bar graph which can be seen in comparison of the results of the growth ratio calculation which can be negative or positive from 100% of the total count without a growth ratio.

### 3.4 Blackbox Result

TABLE 1
Blackbox Testing Result

| **Testing Scenario** | **Testing Activity** | **Expected Result** | **Testing Result** | **Information** |
|---|---|---|---|---|
| Clicking Home Navigation Bar | Click *Home Navigation* | Shows Home Menu | Suitable | Valid |

| | | | | |
|---|---|---|---|---|
| Clicking Linechart Navigation Bar | Click Linechart *Navigation* | Shows Linechart Graph | Suitable | Valid |
| Clicking Barchar Navigation Bar | Click *Barchart Navigation* | Shows Barchart Graph | Suitable | Valid |
| Clicking Logout Navigation Bar | Click *logout Button* | Return to Login Menu | Suitable | Valid |
| Clicking Tutorial Button | Click *Tutorial Button* | Shows Tutorial Growth Ratio Formula | Suitable | Valid |

Based on Blackbox Testing, this application can be concluded that the button and function is work well and shows Growth Ratio formula and result.

## IV. CONCLUSIONS

The conclusions obtained and suggestions based on the results found during the study were carried out, the researcher concluded in general that the Business intelligence application using Online Analytical Processing with the Growth ratio method proved useful in calculating the growth ratio Specifically, the authors concluded that:

1. Monitoring of some sample data on the turnover of micro, small and medium enterprises is facilitated by displaying the graph displayed and having a local database.
2. Data from micro, small and medium enterprises is easier to monitor their development with a variety of interesting and easy-to-understand charts.
3. The processing of turnover data for micro, small and medium enterprises has been automated by entering data into the application and calculated using the Growth ratio method.

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