Analysis of Community Satisfaction Levels using the Neural Network Method in Data Mining

Sabdi Albi Hasibuan[1)*],Volvo Sihombing[2)], Fitri Aini Nasution[3)]
[1,2,3)]Universitas Labuhanbatu, Indonesia
[1)] sabdialbi@gmail.com, [2)] volvolumbantoruan@gmail.com, [3)] fitriaininasution689@gmail.com

Abstract: Data mining is a process that is carried out to extract data into information. There are several models that can be done in data mining, such as classification, association, clustering, regression. But in this study will be carried out using a classification model. Research conducted on the level of public satisfaction for shopping on the Lazada application. This study aims to determine the level of public satisfaction on the Lazada application. This research was also conducted because the goods sold on the Lazada application are quite cheap and when compared to the original price there is a considerable difference. Therefore, research was conducted on the level of community satisfaction on the Lazada application. This research will be conducted on data mining with a classification model and using the neural network method. The results obtained from the data mining process using 100 community data, the results obtained are 81 community data (representation obtained by 81%) of people who are satisfied shopping on the lazada application and by 19 (representation obtained by 19%) people who are not satisfied shop on the Lazada app. From these results, many people are satisfied with shopping on the Lazada app. So from the results of this classification it can be concluded that the goods sold on the Lazada application are good goods.

Keywords: Classification; Data Meaning; Lazada App; Neural Network; Satisfaction Level

INTRODUCTION

Buying and selling is an activity carried out between the seller and the buyer. The seller as the person who provides the goods and the buyer is the person who will buy the goods sold by the seller. Almost all people have done buying and selling activities. Buying and selling carried out by the community such as in markets, supermarkets, minimarkets and even at school There is also a buying and selling process. But at this time because there has been a lot of development in technology, the buying and selling process has been done a lot using technology. As until now, there is already an application that can be used to buy goods. This buying and selling activity is often referred to as online shopping. Online shopping applications have been in great demand by public Many teachers, students and even students have used online shopping applications. Online shopping applications that are often used by the public, such as the Lazada, Shopee, Tokopedia, blibli, jd.id applications. With online shopping, it makes it much easier for people, that's because they don't need to leave the house to buy goods and they don't waste a lot of time. With this online shopping application it also makes it easier for people who work and don't have time to come or go to buy goods. But not all societies understand the use of technology that can hinder them when they want to buy goods on online shopping applications. Not only that, sometimes buying goods in online shopping applications also has some drawbacks, such as inappropriate goods, long delivery times, expensive shipping costs and sometimes defective goods to the location and this needs to be a consideration when shopping online. But in fact not a few people shop online, because of that a study was made about the level of people's satisfaction with online shopping applications. But in this study, not all online shopping applications will be studied. The online shopping application that will be examined is the Lazada application.

The Lazada application is an online shopping application that is often used by the public. This application is widely used by the public to buy goods. This is because the goods sold on the Lazada application are cheap. Unlike other online shopping applications, the prices of goods sold are also cheap. But these prices are not as cheap as the prices of goods sold on the Lazada application. Not only that, the shipping costs provided by the Lazada application are also fairly cheap. By Because That's a lot of people who use the Lazada application as an online shopping

*name of corresponding author

application. This sentence is a statement from several people who have been interviewed about online shopping applications. Therefore the authors make research on the level of community satisfaction on the Lazada application. This was done to prove statements from the community and also this study aims to determine the amount of public interest in the Lazada application. This research will be conducted on data mining using the orange application.

Data mining is a technique that is used to extract knowledge from data sets using techniques of statistics and mathematics (Uçar & Karahoca, 2021) (Hussain, Dahan, Ba-Alwib, & Ribata, 2018). Techniques, statistics and mathematics are used to determine the accuracy of each process performed on data mining. Existing data on data mining will be extracted and processed into useful information (Indrayuni, 2019) (Watratan, B, Moeis, Informasi, & Makassar, 2020). Data mining that will be carried out in this study is data mining with a classification model. The classification model is one of the techniques in data mining which is the process of grouping data based on data similarity (Pour, Esmaeili, & Romoozi, 2022). The data will be grouped based on certain classes that have been determined in the research conducted. To perform data mining with a classification model, a method is definitely needed that can be used for the classification process in data mining. The method to be used is the neural network method. The neural network method is a method found in data mining and is often used for the classification process in data mining.

METHOD

The Neural Network method is a method with a classification model found in data mining that contains a group of probabilities that are fully connected and arranged in two or more layers (Almasinejad et al., 2022) (Khrisat & Alqadi, 2022). The author uses the method neural network, because this method can be superior for use as accuracy in data classification (Chai, Wong, Goh, Wang, & Wang, 2019). Therefore the authors use the neural network method to classify the level of public satisfaction in the Lazada application as an online shopping application (Firdaus, Yunardi, Agustin, Putri, & Anggriawan, 2020). This method will be used to classify the level of public satisfaction with the Lazada application as an online shopping application (Cases et al., 2019). The application used to classify data mining is the orange application (Priatna & Djamal, 2020). This method is also a development of the Multilayer Perceptron (MLP) (Rustam, Yuda, Alatas, & Aroef, 2020). To use this method, the author will use 2 data, the first data is training data which will be used as a reference in the classification process and the second data is testing data which will be used as research sample data and is also data that will be classified in data mining (Baker, Mohammed, & Aldabagh, 2020) (Toradmalle, Muthukuru, & Sathyanarayana, 2019) (Aguni, Chabaa, Ibnyaich, & Zeroual, 2021).
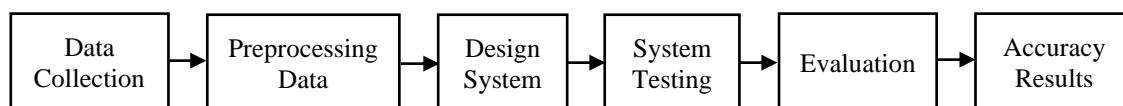

Fig 1. Neural Network Method Process Design

Figure 1 is a workflow that will be used in this study using the neural network method in the data mining process. For an explanation as follows:

1. Data Collection   : At this stage it is a process to collect data that will be used as research sample data (data testing) and training data that will be used for the classification process in data mining. The data obtained will be compiled in the form of an excel file with file.xlsx format.
2. Preprocessing Data : Furthermore, at this stage the data that has been obtained will be selected for its feasibility to be used both as research sample data (testing data) and training data.
3. Design System   : At this stage is process designing widget designs that will be used in data mining. The widget design will be carried out with a data classification model using the neural network method as the method that will carry out data classification.
4. System Testing   : At this stage is the process of testing the system that was previously built in data mining with a classification model using the neural network method.
5. Evaluation   : At this stage is a process that will be carried out to determine the results of the accuracy of the classification process in data mining. This process also requires a design system which can be used for evaluation.
6. Accuracy Results   : At this stage it is the result of the accuracy that has been carried out using an accuracy system design in data mining.

*name of corresponding author

Confusion Matrix

Confusion matrix is an easy to use and effective tool to perform a data classification and easy to be able to determine the results of classification (Yun, 2021). The confusion matrix can be used to carry out a work evaluation of a model and can be used to determine the results of the data mining process.

Table 1. Confusion Matrix

Classification	Predicated Class	
	True	False
Actual: True	True Positive (TP)	False Positive (FP)
Actual: False	False Negative (FN)	True Negative (TN)

To determine the calculation of the confusion matrix, we can do it by calculating accuracy, precision and recall.

Accuracy is calculated by the condition that the prediction number (TP + TN) is divided by the number of samples available. To calculate accuracy, the following formula can be seen (Agustina, Adrian, & Hermawati, 2021):

$$\text{Accuracy} = \frac{TP+TN}{TP+TN+FP+FN} \times 100\% \qquad (1)$$

Precision is used to identify positive cases with a high false positive rate, which can be calculated as follows (Normawati & Prayogi, 2021):

$$\text{Precision} = \frac{TP}{TP+FP} \times 100\% \qquad (2)$$

In contrast to precision, recall serves to identify positive cases with high false negative values. Recall can be calculated in this way (Patil & Tamane, 2018):

$$\text{Recall} = \frac{TP}{TP+FN} \times 100\% \qquad (3)$$

RESULT

Data Analysis

Table below is data from the community which is the research sample data. The data was obtained by distributing questionnaires to the public.

Table 2. Community Data (Sample Data)

Full Name	Gender	Product Quality	Product Price	Product Delivery Time	Product Shipping Costs
Abdul Rahman	Man	Good	Affordable	On Schedule	Expensive
Adimina Harefa	Woman	Good	Affordable	On Schedule	Cheap
Aditya Dimas Pradipta	Man	Good	Expensive	Long	Expensive
Afandi	Man	Good	Cheap	Fast	Affordable
Agustina Br Jebua	Woman	Good	Affordable	Fast	Affordable
Agustina Leoni	Woman	Not Good	Expensive	On Schedule	Expensive
Agustini	Woman	Good	Affordable	On Schedule	Expensive
Ahmad Yunan	Man	Good	Affordable	On Schedule	Expensive
Andri Frengki Pinem	Man	Not Good	Expensive	Fast	Expensive
Anik Sriwahyuni	Woman	Good	Cheap	On Schedule	Affordable
Ar Miah	Woman	Very Good	Cheap	Long	Affordable
Ardo Nduru	Man	Good	Cheap	On Schedule	Cheap
Arwil Munthe	Man	Good	Cheap	Fast	Cheap
Bayu Syaputra	Man	Very Good	Expensive	On Schedule	Cheap
Cantika Sulistiyani	Woman	Very Good	Cheap	Long	Affordable
Chesi Ruth Violand	Woman	Not Good	Expensive	Fast	Expensive
Dani Alim	Man	Good	Affordable	On Schedule	Affordable
Desy Muliyani	Woman	Good	Cheap	On Schedule	Affordable
Ernawati	Woman	Not Good	Cheap	Fast	Cheap
Faridah	Woman	Good	Affordable	On Schedule	Expensive
Fitri Yusvita	Woman	Good	Affordable	On Schedule	Expensive
Grisma	Woman	Very Good	Expensive	On Schedule	Affordable
Hapsah Silaen	Woman	Good	Affordable	On Schedule	Affordable

*name of corresponding author

Hariyani	Woman	Good	Affordable	On Schedule	Expensive
Hayaitul Fitri	Man	Very Good	Cheap	On Schedule	Cheap
Heriyati	Woman	Very Good	Affordable	On Schedule	Expensive
Hermanda	Man	Good	Affordable	On Schedule	Expensive
Husein Ahmad	Man	Very Good	Affordable	On Schedule	Affordable
Ikrima	Woman	Very Good	Cheap	Fast	Affordable
Indra Mawansyah	Man	Very Good	Affordable	Fast	Expensive
Indra Wati	Woman	Not Good	Expensive	Long	Cheap
Irwal Munthe	Man	Good	Cheap	Fast	Expensive
Joni Putra	Man	Good	Cheap	On Schedule	Affordable
Joni Zefriansyah	Man	Not Good	Cheap	On Schedule	Affordable
Juliana	Woman	Very Good	Expensive	On Schedule	Affordable
Julitina Liliwu	Woman	Good	Affordable	Long	Cheap
Junaini Ritonga	Woman	Not Good	Expensive	Fast	Expensive
Kari Muda Harahap	Man	Not Good	Expensive	On Schedule	Expensive
Karno	Man	Very Good	Expensive	On Schedule	Affordable
Kasino	Man	Not Good	Expensive	Long	Cheap
Kasnia	Woman	Good	Affordable	On Schedule	Expensive
Kasturi Halawa	Man	Not Good	Expensive	On Schedule	Expensive
Khairul Basri Siregar	Man	Good	Cheap	Fast	Affordable
Lestari	Woman	Not Good	Cheap	Long	Expensive
Lodewyk Siregar	Man	Good	Affordable	On Schedule	Expensive
Mayaruddin	Man	Very Good	Cheap	On Schedule	Expensive
Menilia Nduru	Woman	Very Good	Expensive	On Schedule	Cheap
Metaria Delau	Woman	Not Good	Cheap	Fast	Affordable
Mia Silvana	Woman	Good	Cheap	Long	Cheap
Michael Siregar	Man	Good	Cheap	Fast	Expensive
Muhammad Marsito	Man	Not Good	Expensive	Long	Expensive
Muhdani	Man	Good	Cheap	On Schedule	Affordable
Nasya Siregar	Woman	Good	Cheap	On Schedule	Expensive
Ngadinem	Woman	Not Good	Expensive	Fast	Expensive
Ngadino	Man	Very Good	Expensive	On Schedule	Affordable
Ngadiso	Man	Good	Affordable	On Schedule	Affordable
Nisa Wulandari	Woman	Good	Affordable	On Schedule	Expensive
Normah	Woman	Very Good	Affordable	Long	Affordable
Nurhaidah Siregar	Woman	Not Good	Affordable	Long	Expensive
Pika Puspita Yani	Woman	Good	Affordable	On Schedule	Expensive
Pristi Saputra	Man	Very Good	Cheap	Fast	Expensive
Putra Jaya Jiliwu	Man	Good	Cheap	Fast	Cheap
Rahmad Hidayat	Man	Good	Cheap	Fast	Cheap
Rahmadiah Ritonga	Woman	Very Good	Affordable	On Schedule	Expensive
Ribi Anggreyani	Woman	Very Good	Affordable	On Schedule	Affordable
Rika	Woman	Not Good	Expensive	On Schedule	Expensive
Rika Adetia Vitaloka	Woman	Very Good	Cheap	On Schedule	Cheap
Riyan Putra Utama	Man	Good	Cheap	Fast	Affordable
Rodiah Br Pohan	Woman	Very Good	Cheap	Fast	Affordable
Rohani Ritonga	Woman	Good	Cheap	Fast	Cheap
Rudi Arman Silalahi	Man	Not Good	Expensive	Long	Expensive
Ruhul Hayati	Woman	Very Good	Expensive	On Schedule	Cheap
Sabaruddin Ritonga	Man	Good	Affordable	On Schedule	Expensive
Saiful Anwar Ritonga	Man	Good	Affordable	On Schedule	Expensive
SeLongt	Man	Good	Affordable	On Schedule	Expensive
Siti	Woman	Good	Affordable	On Schedule	Expensive
Siti Aisyah	Woman	Good	Cheap	On Schedule	Affordable
Sri Erma Yanti	Woman	Good	Affordable	On Schedule	Expensive
Sri Ningsih	Woman	Good	Affordable	On Schedule	Expensive
Sri Rahayu	Woman	Good	Affordable	On Schedule	Expensive
Suhandoko	Man	Not Good	Expensive	Fast	Expensive
Sukemi	Man	Not Good	Affordable	Long	Expensive
Sunarti	Woman	Good	Cheap	On Schedule	Affordable
Supiyanti	Woman	Very Good	Affordable	On Schedule	Expensive
Suriyono	Man	Very Good	Cheap	Fast	Affordable
Suriyono	Man	Very Good	Affordable	Fast	Expensive
Susila Wati	Woman	Very Good	Cheap	On Schedule	Affordable
Tiono	Man	Good	Affordable	On Schedule	Expensive
Tolomano Hulu	Man	Good	Cheap	On Schedule	Affordable
Uci Nurhayati	Woman	Good	Expensive	On Schedule	Affordable
Ulfha Oktaviani	Woman	Not Good	Affordable	Long	Expensive
Vira Andriyani	Woman	Very Good	Affordable	On Schedule	Affordable
Wahyudi	Man	Good	Affordable	Fast	Affordable

*name of corresponding author

Widya andiani	Woman	Not Good	Cheap	Long	Expensive
Wilda Andiani	Woman	Very Good	Affordable	Fast	Expensive
Yanti Simatupang	Woman	Good	Affordable	On Schedule	Expensive
Yuli Latifah	Woman	Very Good	Affordable	On Schedule	Expensive
Yunus Syukron	Man	Very Good	Affordable	On Schedule	Affordable
Yusrizal Dalimunthe	Man	Very Good	Cheap	Long	Affordable
Zakaria	Man	Good	Affordable	On Schedule	Expensive

Table 2 is community data obtained from a questionnaire of 100 community data which is the research sample data in the classification process. Data table above is the data of people who have used and who are still using the Lazada application. Data was obtained by distributing questionnaires to people who have used and are still using the Lazada application. Questionnaires were distributed to the public by sending a google form link to the public. This is because the questionnaire shared is a form of google forms.

Table 3. Community Data Attributes

No	Attribute	Text	Description
1	Full Name	Text	Community full name
2	Gender	Categorical	Student Gender
3	Product Quality	Categorical	Preferred type of laptop
4	Product Price	Categorical	Reasons to choose the laptop
5	Product Delivery Time	Categorical	Preferred Laptop Design
6	Product Shipping Costs	Categorical	The quality of the laptop hardware

Table 3 is community data attributes that become research parameters. On Table above each attribute there is a description that can help writers and readers mean the meaning of each attribute used.

Data Training

Training data explained previously in the method section, that the training data is the data used as a reference in this study. Data training will help the classification process in data mining. Training data is data that has been compiled and compiled in the form of an excel file with the .xlsx format, this is done so that the data can be used in the data mining process.

Table 4. Data Training

Full Name	Gender	Product Quality	Product Price	Product Delivery Time	Product Shipping Costs	Category
Abdul Rifai Rambe	Man	Not Good	Expensive	Fast	Expensive	Not Satisfied
Ali Akbar	Man	Not Good	Expensive	On Schedule	Expensive	Not Satisfied
Andi Nova Surya	Man	Very Good	Affordable	On Schedule	Affordable	Satisfied
Andy Afandy	Man	Not Good	Affordable	Long	Expensive	Not Satisfied
Andy Florencius	Man	Not Good	Affordable	Long	Expensive	Not Satisfied
Ardiansyah	Man	Good	Expensive	Long	Expensive	Not Satisfied
Asriful	Man	Not Good	Expensive	Long	Cheap	Not Satisfied
Devi Novha	Woman	Good	Affordable	On Schedule	Expensive	Satisfied
Dwi Yanti	Woman	Good	Affordable	On Schedule	Expensive	Satisfied
Eka Damayanti	Woman	Not Good	Expensive	On Schedule	Expensive	Not Satisfied
Haposan Sidabukke	Man	Good	Affordable	On Schedule	Expensive	Satisfied
Imam Tholabi	Man	Good	Affordable	On Schedule	Expensive	Satisfied
Inyan Diah	Woman	Not Good	Expensive	Long	Cheap	Not Satisfied
Irma Kurniati	Woman	Very Good	Affordable	Fast	Expensive	Satisfied
Josep Karo Karo	Man	Not Good	Cheap	On Schedule	Affordable	Satisfied
Khoiril Abdy Ritonga	Woman	Very Good	Expensive	On Schedule	Affordable	Satisfied
Khoirul Syah	Man	Not Good	Expensive	Long	Expensive	Not Satisfied
Melida Alrani	Woman	Not Good	Cheap	Fast	Cheap	Satisfied
Misdi	Man	Very Good	Affordable	On Schedule	Expensive	Satisfied
Muhammad Ilham	Man	Not Good	Expensive	Long	Expensive	Not Satisfied
Mujahidah Ulya	Woman	Very Good	Cheap	On Schedule	Cheap	Satisfied
Murti Ritonga	Woman	Very Good	Cheap	Fast	Affordable	Satisfied
Putra Andika	Man	Not Good	Expensive	Fast	Expensive	Not Satisfied
Rahliana	Woman	Not Good	Expensive	Fast	Expensive	Not Satisfied
Rahmad Ritonga	Man	Not Good	Expensive	Fast	Expensive	Not Satisfied
Riatha Br Ginting	Woman	Very Good	Affordable	On Schedule	Affordable	Satisfied
Risnul Efendi	Man	Good	Affordable	Fast	Affordable	Satisfied
Rohani Ritonga	Woman	Not Good	Expensive	Long	Expensive	Not Satisfied
Rosniah Rambe	Woman	Not Good	Affordable	Long	Expensive	Not Satisfied
Rusmiati Hasibuan	Woman	Not Good	Cheap	Long	Expensive	Not Satisfied

*name of corresponding author

Sabar Ruddin	Man	Very Good	Expensive	On Schedule	Cheap	Satisfied
Siti Hajah	Woman	Not Good	Expensive	Fast	Expensive	Not Satisfied
Solehuddin Siregar	Man	Not Good	Expensive	On Schedule	Expensive	Not Satisfied
Sukmawati Dalimunthe	Woman	Good	Affordable	On Schedule	Expensive	Satisfied
Suwarno	Man	Very Good	Affordable	On Schedule	Expensive	Satisfied
Taufiq Hidayat	Man	Not Good	Expensive	On Schedule	Expensive	Not Satisfied
Tiara Andini	Woman	Very Good	Cheap	Long	Affordable	Satisfied
Warse	Man	Good	Affordable	On Schedule	Expensive	Satisfied
Yogi Novri	Man	Good	Cheap	On Schedule	Affordable	Satisfied

Table 4 is community data that is used to assist the classification process in data mining using the neural network method.

Table 5. Community Column Data

No	Attribute	Type	Role	Values
1	Full Name	Text	Meta	
2	Gender	Categorical	Feature	Man, Woman
3	Product Quality	Categorical	Feature	Good, Not Good, Very Good
4	Product Price	Categorical	Feature	Affordable, Cheap, Expensive
5	Product Delivery Time	Categorical	Feature	Fast, Long, On Schedule
6	Product Shipping Costs	Categorical	Feature	Affordable, Cheap, Expensive
9	Category	Categorical	Target	Satisfied, Not Satisfied

Table 5 is the data for each attribute used in this study. This data is a parameter used to determine the level of community satisfaction with the Lazada application. So in each attribute there are several parameters that become values to get done a data classification. To be able to determine the classification results, there are category attributes that contain 2 values, namely satisfied and dissatisfied. These attributes determine the classification. On the category attribute, type the attribute must be changed first from the feature to the target so that the classification process can be carried out and the data can be classified properly.

Data Selection Process (Preprocessing)

Preprocessing is a process for selecting data that is feasible to use. This process is carried out in the absence of fault when the classification process was carried out on data mining (Negara, Muhardi, & Putri, 2020). Data will be collected and selected based on the provisions of the feasibility of the data in the research to be carried out. After determining the data to be used, the data will be arranged in a table that will be used in the classification process (Al-Rasheed, 2021). After this process is complete, the data can be used in data mining.

Data Mining Process

The data mining process will be carried out using a classification model in the data mining process. The classification model will later group the data based on the same data using the neural network method. In this study, the data will be classified based on people who are satisfied and dissatisfied with shopping on the Lazada application. This is because satisfaction is one factor Which influences the success usage of an application (Ariska & Amelia, 2020). So with this research can meet the needs of its users. In other cases it is meant that people are satisfied with the applications used (Jakaria & Utamajaya, 2022). The need also application lazada is used as material for this research, so that the Lazada application can meet the needs of its users in order to provide users with a sense of satisfaction (Najib, Dewi, & Suryoko, 2022). So this research was conducted because it aims to provide good quality in the applications used, this is done so that there is a sense of community satisfaction for users, because the applications they use are of good quality.

Figure 2 below is the process of designing a widget design that will be used as a data mining system so that it can be classified on community satisfaction level data on the Lazada application. Design System This is done so that the data can be classified properly and get good results.
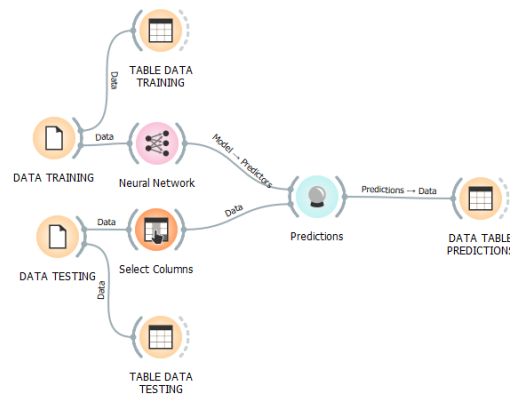
*name of corresponding author

Fig 2. System Design Process in Data Mining

Classification Model Testing Process

This stage is the testing process system with a classification model in data mining. This process is carried out in order to get the classification results of the level of community satisfaction in the Lazada application.
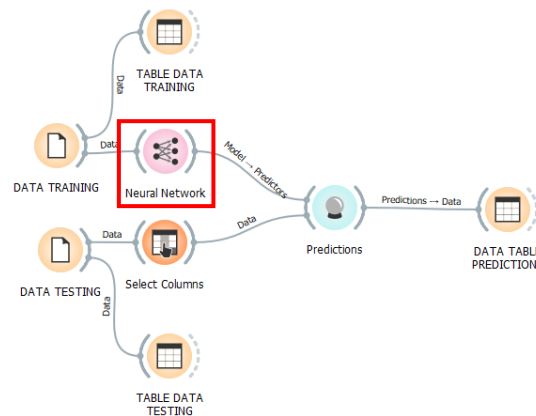

Fig 3. Classification Process in Data Mining

Figure 3 is the testing process system on data mining with a classification model using the neural network method. By doing this process, the sample data used will get predetermined classification results. In the widget located inside a box color red is neural network method used for classification in data mining.

Classification Model Predictions Process

Table below are the prediction results obtained with the classification model in the data mining process. This result is also the result of a classification performed on data mining using the neural network method.

Table 6. Classification Model Prediction Results

Full Name	Gender	Product Quality	Product Price	Product Delivery Time	Product Shipping Costs	Category
Abdul Rahman	Man	Good	Affordable	On schedule	Expensive	Satisfied
Adimina Harefa	Woman	Good	Affordable	On schedule	Cheap	Satisfied
Aditya Dimas Pradipta	Man	Bagus	Expensive	Long	Expensive	Not Satisfied
Afandi	Man	Good	Cheap	Fast	Affordable	Satisfied
Agustina Br Jebua	Woman	Good	Affordable	Fast	Affordable	Satisfied
Agustina Leoni	Woman	Not Good	Expensive	On schedule	Expensive	Not Satisfied
Agustini	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Ahmad Yunan	Man	Good	Affordable	On schedule	Expensive	Satisfied
Andri Frengki Pinem	Man	Not Good	Expensive	Fast	Expensive	Not Satisfied
Anik Sriwahyuni	Woman	Good	Cheap	On schedule	Affordable	Satisfied
Ar Miah	Woman	Very Good	Cheap	Long	Affordable	Satisfied

*name of corresponding author

Ardo Nduru	Man	Good	Cheap	On schedule	Cheap	Satisfied
Arwil Munthe	Man	Good	Cheap	Fast	Cheap	Satisfied
Bayu Syaputra	Man	Very Good	Expensive	On schedule	Cheap	Satisfied
Cantika Sulistiyani	Woman	Very Good	Cheap	Long	Affordable	Satisfied
Chesi Ruth Violand	Woman	Not Good	Expensive	Fast	Expensive	Not Satisfied
Dani Alim	Man	Bagus	Affordable	On schedule	Affordable	Satisfied
Desy Muliyani	Woman	Good	Cheap	On schedule	Affordable	Satisfied
Ernawati	Woman	Good	Cheap	Fast	Cheap	Satisfied
Faridah	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Fitri Yusvita	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Grisma	Woman	Very Good	Expensive	On schedule	Affordable	Satisfied
Hapsah Silaen	Woman	Bagus	Affordable	On schedule	Affordable	Satisfied
Hariyani	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Hayaitul Fitri	Man	Very Good	Cheap	On schedule	Cheap	Satisfied
Heriyati	Woman	Very Good	Affordable	On schedule	Expensive	Satisfied
Hermanda	Man	Good	Affordable	On schedule	Expensive	Satisfied
Husein Ahmad	Man	Very Good	Affordable	On schedule	Affordable	Satisfied
Ikrima	Woman	Very Good	Cheap	Fast	Affordable	Satisfied
Indra Mawansyah	Man	Very Good	Affordable	Fast	Expensive	Satisfied
Indra Wati	Woman	Not Good	Expensive	Long	Cheap	Not Satisfied
Irwal Munthe	Man	Good	Cheap	Fast	Expensive	Satisfied
Joni Putra	Man	Good	Cheap	On schedule	Affordable	Satisfied
Joni Zefriansyah	Man	Not Good	Cheap	On schedule	Affordable	Satisfied
Juliana	Woman	Very Good	Expensive	On schedule	Affordable	Satisfied
Julitina Liliwu	Woman	Good	Affordable	Long	Cheap	Satisfied
Junaini Ritonga	Woman	Not Good	Expensive	Fast	Expensive	Not Satisfied
Kari Muda Harahap	Man	Not Good	Expensive	On schedule	Expensive	Not Satisfied
Karno	Man	Bagus Banget	Expensive	On schedule	Affordable	Satisfied
Kasino	Man	Not Good	Expensive	Long	Cheap	Not Satisfied
Kasnia	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Kasturi Halawa	Man	Not Good	Expensive	On schedule	Expensive	Not Satisfied
Khairul Basri Siregar	Man	Good	Cheap	Fast	Affordable	Satisfied
Lestari	Woman	Not Good	Cheap	Long	Expensive	Not Satisfied
Lodewyk Siregar	Man	Good	Affordable	On schedule	Expensive	Satisfied
Mayaruddin	Man	Very Good	Cheap	On schedule	Expensive	Satisfied
Menilia Nduru	Woman	Very Good	Expensive	On schedule	Cheap	Satisfied
Metaria Delau	Woman	Not Good	Cheap	Fast	Affordable	Satisfied
Mia Silvana	Woman	Good	Cheap	Long	Cheap	Satisfied
Michael Siregar	Man	Good	Cheap	Fast	Expensive	Satisfied
Muhammad Marsito	Man	Not Good	Expensive	Long	Expensive	Not Satisfied
Muhdani	Man	Good	Cheap	On schedule	Affordable	Satisfied
Nasya Siregar	Woman	Good	Cheap	On schedule	Expensive	Satisfied
Ngadinem	Woman	Not Good	Expensive	Fast	Expensive	Not Satisfied
Ngadino	Man	Very Good	Expensive	On schedule	Affordable	Satisfied
Ngadiso	Man	Good	Affordable	On schedule	Affordable	Satisfied
Nisa Wulandari	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Normah	Woman	Very Good	Affordable	Long	Affordable	Satisfied
Nurhaidah Siregar	Woman	Not Good	Affordable	Long	Expensive	Not Satisfied
Pika Puspita Yani	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Pristi Saputra	Man	Very Good	Cheap	Fast	Expensive	Satisfied
Putra Jaya Jiliwu	Man	Good	Cheap	Fast	Cheap	Satisfied
Rahmad Hidayat	Man	Good	Cheap	Fast	Cheap	Satisfied
Rahmadiah Ritonga	Woman	Very Good	Affordable	On schedule	Expensive	Satisfied
Ribi Anggreyani	Woman	Very Good	Affordable	On schedule	Affordable	Satisfied
Rika	Woman	Not Good	Expensive	On schedule	Expensive	Not Satisfied
Rika Adetia Vitaloka	Woman	Very Good	Cheap	On schedule	Cheap	Satisfied
Riyan Putra Utama	Man	Bagus	Cheap	Fast	Affordable	Satisfied
Rodiah Br Pohan	Woman	Very Good	Cheap	Fast	Affordable	Satisfied
Rohani Ritonga	Woman	Bagus	Cheap	Fast	Cheap	Satisfied
Rudi Arman Silalahi	Man	Tidak Bagus	Expensive	Long	Expensive	Not Satisfied
Ruhul Hayati	Woman	Very Good	Expensive	On schedule	Cheap	Satisfied
Sabaruddin Ritonga	Man	Bagus	Affordable	On schedule	Expensive	Satisfied
Saiful Anwar Ritonga	Man	Good	Affordable	On schedule	Expensive	Satisfied
SeLongt	Man	Good	Affordable	On schedule	Expensive	Satisfied
Siti	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Siti Aisyah	Woman	Good	Cheap	On schedule	Affordable	Satisfied
Sri Erma Yanti	Woman	Bagus	Affordable	On schedule	Expensive	Satisfied
Sri Ningsih	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Sri Rahayu	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Suhandoko	Man	Not Good	Expensive	Fast	Expensive	Not Satisfied

*name of corresponding author

Sukemi	Man	Not Good	Affordable	Long	Expensive	Not Satisfied
Sunarti	Woman	Good	Cheap	On schedule	Affordable	Satisfied
Supiyanti	Woman	Very Good	Affordable	On schedule	Expensive	Satisfied
Suriyono	Man	Very Good	Cheap	Fast	Affordable	Satisfied
Suriyono	Man	Very Good	Affordable	Fast	Expensive	Satisfied
Susila Wati	Woman	Very Good	Cheap	On schedule	Affordable	Satisfied
Tiono	Man	Good	Affordable	On schedule	Expensive	Satisfied
Tolomano Hulu	Man	Good	Cheap	On schedule	Affordable	Satisfied
Uci Nurhayati	Woman	Good	Expensive	On schedule	Affordable	Satisfied
Ulfha Oktaviani	Woman	Not Good	Affordable	Long	Expensive	Not Satisfied
Vira Andriyani	Woman	Very Good	Affordable	On schedule	Affordable	Satisfied
Wahyudi	Man	Good	Affordable	Fast	Affordable	Satisfied
Widya andiani	Woman	Not Good	Cheap	Long	Expensive	Not Satisfied
Wilda Andiani	Woman	Very Good	Affordable	Fast	Expensive	Satisfied
Yanti Simatupang	Woman	Good	Affordable	On schedule	Expensive	Satisfied
Yuli Latifah	Woman	Very Good	Affordable	On schedule	Expensive	Satisfied
Yunus Syukron	Man	Very Good	Affordable	On schedule	Affordable	Satisfied
Yusrizal Dalimunthe	Man	Very Good	Cheap	Long	Affordable	Satisfied
Zakaria	Man	Good	Affordable	On schedule	Expensive	Satisfied

Table 6 is the results of the data mining process using the neural network method with a classification model. The classification process was carried out using 100 community data, resulting in 81 community data (representation obtained by 81%) of the public who are satisfied with shopping on the Lazada application and by 19 (representation obtained by 19%) of people who are dissatisfied with shopping on the Lazada application.

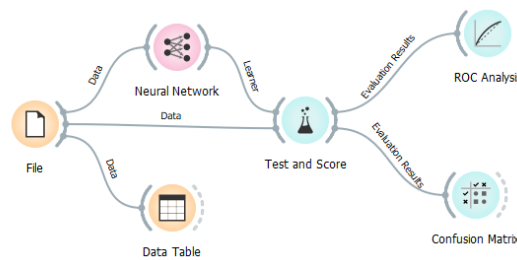**Classification Model Evaluation Results**

Fig 4. *Design Widget Evaluation Process*

Figure 4 is the process of evaluating the classification results using the neural network method. Above is a widget design that is used to determine the accuracy of the data mining process that has been done before. Accuracy results will be obtained by using the test and score widget and the confusion matrix widget. For the analysis roc widget is used to determine the graph of the results of the classification that has been done before in data mining. This process is carried out to see the suitability of the method used for the classification model.

Table 7. Result of Test and Score

Model	AUC	CA	F1	Precision	Recall
Neural Network	1.000	1.000	1.000	1.000	1.000

After the authors carry out an evaluation with the Classification model using the neural network method, the results for the test and score are obtained. The results obtained are AUC 1,000, CA results 1,000, F1 results 1,000, Precision results 1,000 and Recall results 1,000.

3.1. Evaluation Result with Confusion Matrix

The confusion matrix is a widget that is used as a measuring tool for classification techniques by calculating the correctness of data that has been classified using the neural network method.

*name of corresponding author

Table 8. Results of the Confusion Matrix

		Predicted		
		Satisfied	Not Satisfied	$\sum$
Actual	Satisfied	81	0	81
	Not Satisfied	0	19	19
	$\sum$	81	19	100

Table 8 is the result of the confusion matrix obtained from the evaluation of the Classification model. The results of the confusion matrix are True Positive (TP) is 81. True Negative (TN) is 19, False Positive (FP) is 0 and False Negative (FN) is 0. Then the values for accuracy, precision and recall are as follows:

$$Accuracy = \frac{81+19}{81+19+0+0} + 100\%$$ Then the Accuracy value $=$ 100%

$$Presisi = \frac{81}{81+0} + 100\%$$ Then the Precision value $=$ 100%

$$Recall = \frac{81}{81+0} + 100\%$$ Then the Recall value $=$ 100%

3.2. Evaluation Result with ROC Curve

Roc Analysis is obtained from the evaluation results of the Classification model with the addition of the ROC Analysis widget. The ROC Analysis results will be displayed in the form of graphic images obtained from data mining processing.
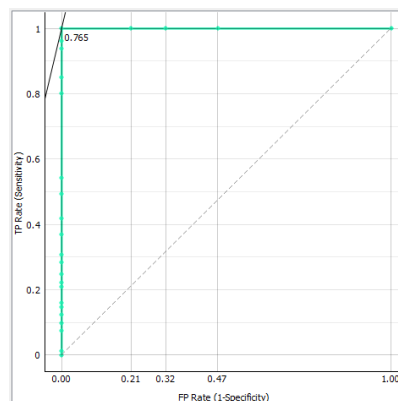
Fig 5. *ROC Analysis of People who are satisfied shopping on the Lazada application*

Figure 5 is the result of the ROC analysis of people who are satisfied shopping on the Lazada application using the neural network method. The evaluation results obtained were 0.765.
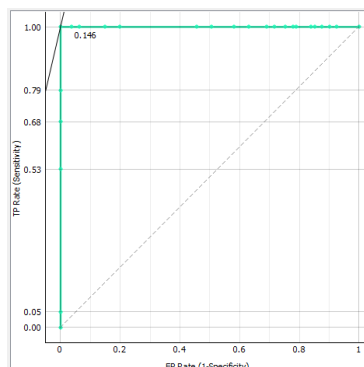

Fig 6. *ROC Analysis of People who are dissatisfied with shopping on the Lazada application*

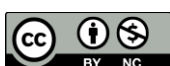*name of corresponding author

Figure 6 is the result of the ROC analysis of people who are dissatisfied with shopping on the Lazada application using the neural network method. The evaluation results obtained were 0.146.

DISCUSSIONS

This research was conducted using the Neural Network method to classify the level of satisfaction of the shopping community on the Lazada application. The first stage is collecting data by distributing questionnaires to the public. This research was conducted on data mining using the orange application. During the data classification process using the neural network method, the author uses as many as 100 data sample public which will be classified in data mining. The results of the classification carried out using the neural network method in data mining, the results of classification of data on 100 sample data obtained results of 81 community data (representation obtained by 81%) public who are satisfied shopping on the Lazada application and by 19 (representation obtained by 19%) of people who are dissatisfied with shopping on the Lazada application. From the two results there is a very large difference. And the result of classification is that many people are satisfied shopping on the Lazada application.

From the results of the classification, the authors conducted an evaluation with the aim of determining the results of the accuracy of the methods used to carry out the classification process. For accuracy results, the author uses 2 gadgets which can be used to determine the value of accuracy. The result of the first widget is the test and score widget, which gets a result of 1,000 (a representation of 100%) and the second widget, the confusion matrix widget, gets a result of 100%. Comparison of the results of the two widgets is 1: 1, that's because the two widgets both provide perfect results, namely 100%. So the neural network method is very suitable to be used as a method with a classification model.

CONCLUSION

The author concludes that this research results are as follows: 1) The classification process can be carried out using data mining, 2. The neural network method can be used to classify data, because this method is very good when used for classification. With the accuracy results obtained by 100% stated that method neural networks are very good when used to classify data, 3. Classification results Which is already done on data mining can be used as a reference for the public who are still hesitant to shop on the Lazada application. This is because the results of the classification that have been carried out state that many people are satisfied shopping on the Lazada application, 4. It turns out that there are still many satisfied purchases on the lazada app. This is because the classification results obtained state that there are still very many people who are satisfied shopping on the Lazada application.

REFERENCES

Aguni, L., Chabaa, S., Ibnyaich, S., & Zeroual, A. (2021). Predicting the notch band frequency of an ultra-wideband antenna using artificial neural networks. *Telkomnika (Telecommunication Computing Electronics and Control)*, *19*(1), 1–8. https://doi.org/10.12928/TELKOMNIKA.V19I1.15912

Agustina, N., Adrian, A., & Hermawati, M. (2021). Implementasi Algoritma Naïve Bayes Classifier untuk Mendeteksi Berita Palsu pada Sosial Media. *Faktor Exacta*, *14*(4), 1979–276. https://doi.org/10.30998/faktorexacta.v14i4.11259

Al-Rasheed, A. (2021). Identification of important features and data mining classification techniques in predicting employee absenteeism at work. *International Journal of Electrical and Computer Engineering*, *11*(5), 4587–4596. https://doi.org/10.11591/ijece.v11i5.pp4587-4596

Almasinejad, P., Golabpour, A., Ahouz, F., Meybodi, M. R. M., Mirzaie, K., Khosravi, A., … Bastani, A. (2022). Predicting the status of COVID-19 active cases using a neural network time series. *International Journal of Electrical and Computer Engineering*, *12*(3), 3104–3117. https://doi.org/10.11591/ijece.v12i3.pp3104-3117

Ariska, I., & Amelia, R. (2020). Analisis Tingkat Kepuasan Pengguna Marketplace Shopee Dan Lazada Menggunakan Metode End User Computing Satisfaction (Eucs). *Bina Darma Conference on Computer Science*, 321–327.

Baker, S. A., Mohammed, H. H., & Aldabagh, H. A. (2020). Improving face recognition by artificial neural network using principal component analysis. *Telkomnika (Telecommunication Computing Electronics and Control)*, *18*(6), 3357–3364. https://doi.org/10.12928/TELKOMNIKA.v18i6.16335

Cases, C. M. P., Rapliza, A. A., Munsayac, F. E. T., Bugtai, N. T., Billiones, R. K. D., & Baldovino, R. G. (2019). Quality assessment and prediction of philippine mangoes: A convolutional neural network approach. *International Journal on Advanced Science, Engineering and Information Technology*, *9*(6), 2128–2133. https://doi.org/10.18517/ijaseit.9.6.9951

Chai, S. S., Wong, W. K., Goh, K. L., Wang, H. H., & Wang, Y. C. (2019). Radial basis function (RBF) neural network: Effect of hidden neuron number, training data size, and input variables on rainfall intensity forecasting. *International Journal on Advanced Science, Engineering and Information Technology*, *9*(6), 1921–1926. https://doi.org/10.18517/ijaseit.9.6.10239

*name of corresponding author

Firdaus, A. A., Yunardi, R. T., Agustin, E. I., Putri, T. E., & Anggriawan, D. O. (2020). Short-term photovoltaics power forecasting using Jordan recurrent neural network in Surabaya. *Telkomnika (Telecommunication Computing Electronics and Control)*, *18*(2), 1089–1094. https://doi.org/10.12928/TELKOMNIKA.v18i2.14816

Hussain, S., Dahan, N. A., Ba-Alwib, F. M., & Ribata, N. (2018). Educational data mining and analysis of students' academic performance using WEKA. *Indonesian Journal of Electrical Engineering and Computer Science*, *9*(2), 447–459. https://doi.org/10.11591/ijeecs.v9.i2.pp447-459

Indrayuni, E. (2019). Klasifikasi Text Mining Review Produk Kosmetik Untuk Teks Bahasa Indonesia Menggunakan Algoritma Naive Bayes. *Jurnal Khatulistiwa Informatika*, *7*(1), 29–36. https://doi.org/10.31294/jki.v7i1.1

Jakaria, J., & Utamajaya, J. N. (2022). Analisis Kepuasan Pengguna Aplikasi Lazada Masyarakat Penajam Menggunakan Metode Pieces Framework. *JURIKOM (Jurnal Riset Komputer)*, *9*(2), 464. https://doi.org/10.30865/jurikom.v9i2.4091

Khrisat, M. S., & Alqadi, Z. A. (2022). Solving multiple linear regression problem using artificial neural network. *International Journal of Electrical and Computer Engineering*, *12*(1), 770–775. https://doi.org/10.11591/ijece.v12i1.pp770-775

Najib, R. G., Dewi, R. S., & Suryoko, S. (2022). Pengaruh Kualitas Produk dan E-Service Quality terhadap Kepuasan Pelanggan (Studi pada Konsumen Lazada di Semarang). *Jurnal Ilmu Administrasi Bisnis*, *11*(2), 347–358. https://doi.org/10.14710/jiab.2022.34731

Negara, A. B. P., Muhardi, H., & Putri, I. M. (2020). Analisis Sentimen Maskapai Penerbangan Menggunakan Metode Naive Bayes dan Seleksi Fitur Information Gain. *Jurnal Teknologi Informasi Dan Ilmu Komputer*, *7*(3), 599. https://doi.org/10.25126/jtiik.2020711947

Normawati, D., & Prayogi, S. A. (2021). Implementasi Naïve Bayes Classifier Dan Confusion Matrix Pada Analisis Sentimen Berbasis Teks Pada Twitter. *Jurnal Sains Komputer & Informatika (J-SAKTI*, *5*(2), 697–711. Retrieved from http://ejurnal.tunasbangsa.ac.id/index.php/jsakti/article/view/369

Patil, R., & Tamane, S. (2018). A comparative analysis on the evaluation of classification algorithms in the prediction of diabetes. *International Journal of Electrical and Computer Engineering*, *8*(5), 3966–3975. https://doi.org/10.11591/ijece.v8i5.pp3966-3975

Pour, E. S., Esmaeili, M., & Romoozi, M. (2022). Breast cancer diagnosis: a survey of pre-processing, segmentation, feature extraction and classification. *International Journal of Electrical and Computer Engineering*, *12*(6), 6397–6409. https://doi.org/10.11591/ijece.v12i6.pp6397-6409

Priatna, M. A., & Djamal, E. C. (2020). Precipitation prediction using recurrent neural networks and long short-term memory. *Telkomnika (Telecommunication Computing Electronics and Control)*, *18*(5), 2525–2532. https://doi.org/10.12928/TELKOMNIKA.V18I5.14887

Rustam, Z., Yuda, R. P., Alatas, H., & Aroef, C. (2020). Pulmonary rontgen classification to detect pneumonia disease using convolutional neural networks. *Telkomnika (Telecommunication Computing Electronics and Control)*, *18*(3), 1522–1528. https://doi.org/10.12928/TELKOMNIKA.v18i3.14839

Toradmalle, D., Muthukuru, J., & Sathyanarayana, B. (2019). Certificateless and provably-secure digital signature scheme based on elliptic curve. *International Journal of Electrical and Computer Engineering*, *9*(4), 3228–3231. https://doi.org/10.11591/ijece.v9i4.ppxx-xx

Uçar, T., & Karahoca, A. (2021). Benchmarking data mining approaches for traveler segmentation. *International Journal of Electrical and Computer Engineering*, *11*(1), 409–415. https://doi.org/10.11591/ijece.v11i1.pp409-415

Watratan, A. F., B, A. P., Moeis, D., Informasi, S., & Makassar, S. P. (2020). Implementation of the Naive Bayes Algorithm to Predict the Spread of Covid-19 in Indonesia. *Journal of Applied Computer Science and Technology*, *1*(1), 7–14.

Yun, H. (2021). Prediction model of algal blooms using logistic regression and confusion matrix. *International Journal of Electrical and Computer Engineering*, *11*(3), 2407–2413. https://doi.org/10.11591/ijece.v11i3.pp2407-2413

*name of corresponding author