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CLASSIFICATION OF POOR ASSISTANCE RECIPIENTS AT THE VILLAGE BALANCE OFFICE

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Abstract: The poor community is a condition in which the community does not have adequate facilities and infrastructure and an adequate environment, with the quality of housing and settlements far below the eligibility standard and uncertain livelihoods covering all multidimensional dimensions. The Pasiran Village Office, Sei Dadap District, is one of the agencies located in the Pasiran area, Sei Kamah. Where the Pasiran Village Hall Office carries out activities to distribute assistance to village communities who are declared to be underprivileged or have low incomes below 3.5 million. With such a large number of village people, an in-depth analysis is needed to determine which poor people are entitled to receive Non-Cash Food Assistance from the government. The solution to this problem is to use data mining with the Naïve Bayes algorithm for data classification. Data mining is the science of extracting information by utilizing data sets to obtain valuable information with a large enough data size through the process of extracting data or filtering data. The classification application uses the naïve Bayes algorithm used at the Pasiran Village Office to produce a classification of beneficiaries, namely Worthy and Unworthy based on the attributes of Citizenship, Family Group, ASN Status, and Having a Healthy Family Card.

Keywords: data mining; naïve bayes; classification, beneficiary

Abstrak: Masyarakat miskin merupakan suatu kondisi dimana keadaan masyarakat yang tidak memiliki sarana dan prasarana serta lingkungan yang memadai, dengan kualitas perumahan dan pemukiman yang jauh dibawah standar kelayakan serta mata pencaharian yang tidak menentu yang mencakup seluruh multidimensi. Kantor Balai Desa Pasiran Kecamatan Sei Dadap merupakan salah satu instansi yang berada di daerah Pasiran, Sei Kamah. Dimana Kantor Balai Desa Pasiran melakukan kegiatan pembagian bantuan terhadap masyarakat desa yang dinyatakan kurang mampu atau memiliki penghasilan rendah dibawah 3,5 juta. Dengan jumlah masyarakat desa yang begitu banyak, diperlukan analisis yang mendalam untuk menentukan masyarakat tidak mampu yang berhak untuk mendapatkan Bantuan Pangan Non Tunai dari pemerintah. Solusi dari permasalahan tersebut adalah menggunakan data mining dengan algoritma naïve bayes untuk klasifikasi data. Data mining merupakan suatu ilmu untuk menggali informasi dengan memanfaatkan kumpulan data untuk mendapatkan berbagai informasi yang berharga dengan ukuran data yang cukup besar melalui proses penggalian data atau penyaringan data. Aplikasi klasifikasi menggunakan algoritma naïve bayes yang terapkan pada Kantor Balai Desa Pasiran menghasilkan klasifikasi warga penerima bantuan yaitu Layak dan Tidak Layak berdasarkan atribut Kewarganegaraan, Golongan Keluarga, Status ASN dan Memiliki Kartu Keluarga Sehat.

Kata kunci: data mining; naïve bayes; klasifikasi, penerima bantuan

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INTRODUCTION

The era of the industrial revolution 4.0 as it is today demands all activities in every aspect of life using information technology, starting from government and private agencies. The role of information technology is very influential in daily work to achieve the goal of the organization.

Poor is a condition where the condition of a society that does not have adequate facilities and infrastructure and environment, with a quality of housing and settlements that are far below the standard of service and uncertain livelihoods that cover the entire multidimensional [1]. poor is based on a standard that is by comparing the income level of a person or family with the level of income needed to meet the minimum basic needs [2].

Pasiran Village Hall Office, Sei Dadap District, is one of the agencies located in the Pasiran area, Sei Kamah. Where the Pasiran Village Hall Office carries out assistance distribution activities to village communities who are declared underprivileged or have low incomes below 3.5 million. With such a large number of rural communities, an in-depth analysis is needed to determine the underprivileged communities that are entitled to non-cash food assistance (BPNT) from the government. From the existing community data, a survey will be carried out first, then analyzed, and the results of the analysis used to determine the poor who are entitled to assistance. In fact, in the distribution of assistance, many people do not get it, even some of them are not on target because the determination of the status of the poor who are entitled to receive assistance is not optimal.

Therefore, science is needed to dig up information by utilizing data sets to obtain various valuable information with a large enough data size through the process of data mining or data filtering.

The main purpose of data mining is to find valuable and useful information from existing data [3]. This data mining can turn a data set into necessary knowledge or information. The data mining process involves a variety of statistical, mathematical, and computational techniques and algorithms used to analyze data from various sources, such as databases, and data warehousing [4].

The purpose of classification is to accurately predict the target class for each case in the data [5]. Naive Bayes is used to predate the class of an object based on its features. This algorithm works by calculating the probability of each feature against each class and then using this probability to estimate the most likely class [6].

The objectives of this study are to design and build a classifieds system to determine the poor receiving Non-Cash Food Assistance (BPNT) using the Visual Basic programming language and MySQL database, applying the naïve Bayes algorithm to the created beneficiary classification system and making it easier for the Pasiran Village Hall Office, Sei Dadap District to determine the classification of recipients of Non-Cash Food Assistance.

The research conducted by Dian Ade Setiawan et al [7] with the title "Application of the Naïve Bayes Method for the Classification of PKH Beneficiaries" where this research implies that the system can help find out who receives PKH assistance only with the family master number that has been submitted for PKH assistance application and this system is made a wituser-friendlyndly appearance to make it easier for users.

Next research conducted by Nurul

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Alfiah [8] with the title "Classification of Recipients of Social Assistance for the Family Hope Program Using the Naive Bayes Method" where the study concluded that the most influential attributes in determining whether these residents are entitled to receive PKH or not are influenced by the ownership of boats, laptops, motorboats, telephones, refrigerators, how to obtain drinking water, source of lighting, type of roof, land status, type of toilet, type of floor, immovable assets and several household members Because if these attributes are eliminated, the level of accuracy is reduced and from the results of the classification, a pattern is obtained that residents who have several household members above 3 and do not have refrigerators, telephones, laptops, motorboats, boats, and immovable assets tend to get PKH.

While the research with the title "Application of the Naive Bayes Algorithm for the Classification of Incapacity Certificate Beneficiaries" researched by Nurulfah Riyanah dan Fatmawati [9] concluded that using the naïve Bayes algorithm classification that the final result of data processing using the Rapid Miner application, from 35 sample data of SKTM beneficiaries and 1 testing data was categorized as feasible with an overall accuracy value of 62.86% and the recall class was feasible 78.57%, the Class recall was not feasible 52.38%, Class precision was feasible 52.38% and Class precision was not feasible 78.57%.

METHOD

This research is quantitative research by interacting directly with the Head of Administration, taking notes, and finding out and digging for information about the data requirements for recipients of Non-Cash Food Assistance.

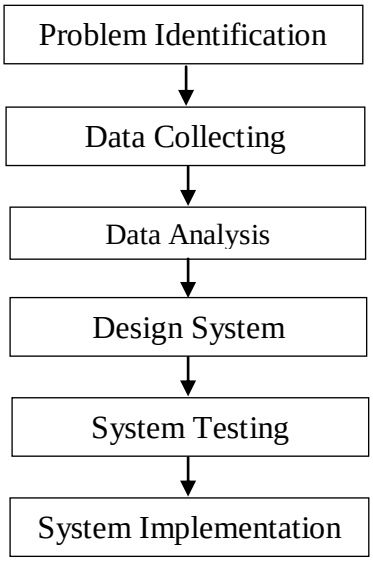

Image 1. Research Framework

1. Problem Identification
   Make observations to find out the problems that occur in the administrative section of the Pasiran Village Hall Office regarding the classification of Non-Food Aid recipients
2. Data Collecting
   Conduct interviews or interviews with the Village Head and Pasiran Village Officials to obtain information and data on how to determine the classification of recipients of Non-Cash Food Assistance and the data is processed using Microsoft Excel.
3. Data Analysis
   Analyze the data that has been collected, analyze data related to the requirements for recipients of Non-Cash Food Assistance
4. Design System
   System design uses a design model using Information System Flow to describe system workflow and UML (Unified Modeling Language) then makes database designs and the tables needed the final step is to design the interface on the program that will

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be used in determining acceptance of Non-Cash Food Assistance.

5. System Testing
   Test the system before the system is implemented to find out whether the system is running well and smoothly. At this stage, the author uses the black-box method in testing the system.
6. System Implementation
   The implementation of the system will be done by installing the software. The software used is Microsoft Visual Studio 2010 and the database used is MySQL.

Naïve Bayes is a simple probabilistic classification that calculates a set of probabilities by summing the frequency and combination of values from a given dataset. In the process, naïve bayes assumes that the presence or absence of a feature in a class is unrelated to the presence or absence of other features in the same class [10]. At the time of classification, the Bayes approach will result in the category labels that are the most probability. The naive Bayes method can be calculated using the formula :

$$P(H|X)= \frac{P(X|H).P(H)}{P(X)} \quad (1)$$

Information :
X : Data with unknown class
H : Data hypothesis
P(H| X) : Probability hypothesis H based on X value
P(X|H) : Probability of hypothesis H based on H value
P(X) : Probability X

RESULTS AND DISCUSSION

Calculating the value of the probability bag requires preliminary data or training data. Here is the training data used :

Table 1. Data Training

Number	Name	Nationality	Class	Status	KKS	Classification
1	Adnan Nasution	Ind	Not Poor	Not a Civil Servant	No	Unworthy
2	Amri S	Ind	Poor	Not a Civil Servant	No	Unworthy
3	Ani	Ind	Poor	Not a Civil Servant	Yes	Worthy
4	Anijar Sitorus	Ind	Poor	Not a Civil Servant	Yes	Worthy
5	Anjani	Ind	Poor	Not a Civil Servant	No	Unworthy
6	Arif Hasan	Ind	Poor	Not a Civil Servant	No	Unworthy
7	Arif Simangunsong	Ind	Poor	Not a Civil Servant	No	Unworthy
8	Asni	Ind	Poor	Not a Civil Servant	Yes	Worthy
9	Bambang Handoko	Ind	Poor	Not a Civil Servant	Yes	Worthy
10	Beni Iskandar	Ind	Poor	Not a Civil Servant	No	Unworthy
…	……..	…	…..	…..	…..	…..
192	Yuyud Wahyudi	Ind	Poor	Not a Civil Servant	No	Unworthy

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Data Testing

Represents data from new events that are calculated based on previous data. Data testing is calculated using a classification system by entering data into the data form for prospective beneficiaries.

Input New Data (Data Testing)

This menu is a menu where the admin inputs new assistance receipt data into the system.

Image 2. Prospective Beneficiaries

Classification

Next, the system will classify based on Nationality, Class Status, and KKS to get the probability value.

Image 3. Classification

Bayes Calculation

The Bayes calculation system will calculate the final probability value and if the X value is greater then it is said to be feasible and if the Y value is greater then it will be said to be not feasible.

Image 4. Bayes Calculation

Report Classification

This report views reports from classification calculations from the naïve bayes method and in this menu admins can also print reports to archive.

Image 5. Report Classification

CONCLUSION

From the research that has been carried out at the Pasiran Village Hall Office, Sei Dadap District, Asahan Regency, it can be concluded that the classification system for recipients of Non-Cash Food Assistance (BPNT) at the Pasiran Village Hall Office, Sei Dadap District, Asahan Regency, is used for classification properly or inappropriately as the community receives Non-Cash Food Assistance (BPNT) using the naïve bayes method and this system can facilitate performance in classifying recipients of Non-Cash Food Assistance Cash to

the people who are entitled to receive it quickly and precisely.

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