

## Decision Support System To Determine The Loan Nominal at KUD Mupakat Jaya Using Decision Tree Method

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### **Abstract**

*Koperasi Unit Daerah (KUD) Mupakat Jaya is one of cooperative which has members who often loan some money from it. The KUD has 1.571 members who work as a rubber farmer in Prabumulih. Decision support system (dss) is important for cooperative, its to determine how much money that can loan, and also can speed up the process. So KUD Mupakat Jaya needs a system that can help calculate the nominal that can be loaned. The purpose of this research is to build a decision support system to determine the loan nominal and also to increase the service of cooperative KUD Mupakat Jaya. The method that used in this research is decision tree method which can take a right decision. With the decision supported by the system, we expected can help the cooperative in making a decision and to determine how much money that will be given to members of KUD Mupakat Jaya.*

**Keywords :** DSS, Loan nominal, Decision Tree, Mupakat Jaya, KUD

### **1 INTRODUCTION**

The age and technology is growing very rapidly, we can estimated lending money in a credit union will increase. With so many people who apply for loans to cooperatives, it would cause a problem if the cooperative can not organize lending management side.

Regional Unit Cooperatives (KUD) Mupakat Jaya is one of the co-operative distribution of processed rubber in Prabumulih (Sudianto, Abdillah, & Andryani, 2013). This cooperation allow its members to apply a lon in cooperative. The cooperative is located in the Jungai Village, District Rambang Kapak Tengah Prabumulih. With total membership of 1,571 people, whose members are rubber farmers who lived in Prabumulih and surrounding. This cooperative has business such as warung serba ada (Waserda), usaha simpan pinjam (USP), and Marketing BOKAR (Bahan olahan karet) to support the cooperative fund. This KUD applied TPK system (Cooperative Services place) to help serving the rubber farmers according to their respective TPK, tempat pelayanan koperasi. So farmers doesnt need to come directly to the cooperatives but they just need to come to TPK to doing a saving and loan transaction ordering some fertilizer in cooperatives. To support the productivity, cooperatives allow the farmers to loan some money in the cooperative, but the farmers must follow BOKAR,

bahan olahan karet, marketing which carried by the cooperative. So if the member wants to loan some money, they come to TPK in their places, and TPK will submit their loans to cooperatives Mupakat Jaya to fill the form of loan who will be processed by the cooperatives. Then KUD will decide how much money that will be given to the TPK.

In the cash loan process, the cooperative providing loans to each TPK which applied for a loan. The impact for cooperative is having trouble to determine the nominal that given to every TPK. It is because the cooperative has limited budgets and fund. So to make a lending decision requires so many time. So cooperative requires a decision support system (DSS) which can calculating all the criteria that can support to making decision and to help speed up and simplifying the decision making process.

Decision suport method that used in this research is Decision Tree method. Decision tree is a classification and prediction methods are very powerful and famous. Decision tree method to change the fact that a very large into a decision tree that represents the rule . Rules can be easily understood with natural language. And they also can be expressed in the form of data base language such as Structured Query Language to find records in a particular category (Kusrini, 2009), and decision tree in here used algorithm C4.5. This C4.5 algorithm is an extension of ID3 algorithm which has a function to generate a decision tree. C4.5 algorithm is not limited to binary numbers and generating a decision tree with many variables. Attributes in C4.5 by default generate a branch for each branch of the category attribute (Maimon, 2005).

The method that can support the decision is decision tree (DT). This method is used to modeling the problem that consists of complex decisions become simpler so to make decisions to determine the nominal lending will be more easy and efficient. The results of this process will show the approximate loan nominal that given to members of the Mupakat Jaya cooperative. By calculating the tonnage (rubber results), the assurance that given and the farmers income that would borrow some money.

Based on the problem above the researchers want to make a decision support system to facilitating the cooperative to make a decision, with the title "Decision Support System to Determine the loan nominal At KUD Member Jaya Mupakat with *Decision Tree Method*.

## 2 RESEARCH METHODOLOGY

### 2.1 Development system methods

The system development method that used in DSS method is a method that provides information, modeling and manipulating the data that used to help making a decision in the semi-structured situation and unstructured situation where no one knows for sure how the decision should be made (Alter, 2002) and decision suport system also mean an interactive information system that provides information, modeling, and manipulating data (Kusrini, 2007).

### 2.2 Research method

This research is using a descriptive method. According to Zikmund William (2003), descriptive method is a research that design to describe the characteristic from a population or a phenomenon.

### 3 RESULT AND DISCUSSION

#### 3.1 Result

Based on the research that has been done at KUD Mupakat Jaya, the result is a decision support system determines the loan nominal at KUD Mupakat Jaya with Decision Tree method. These systems are expected to help the performance of the employee of KUD Mupakat Jaya in the process of determining the loan nominal to be given to the cooperative members that applying for loans. To make these systems, the writer used the C4.5 Decision Tree Algorithm with PHP programming language.

#### 3.2 Discussion

The result of a decision support system is determines the loan nominal at KUD Mupakat Jaya has an output such as loan nominal consideration that can be given to the members according to the KUD Mupakat Jaya terms.

#### 3.3 Dataset Page

This dataset pages function is to view the data or rule that has been made based on the criteria established by KUD Mupakat Jaya, on this page there are 12 rules that have been set by KUD Mupakat Jaya. This page have an add button, edit and delete its for if there is any change in the rule.

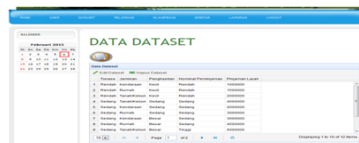


Figure 1: Data Set

#### 3.4 Training Pages

The training pages are the dataset training C4.5 algorithm. This dataset training pages only used once, its when this system started at KUD Mupakat Jaya. And will be used again if there is a change of the rule set.



Figure 2: Training Page

### 3.5 Classification pages

The classification page is a page for inputting cooperative members data that will apply for loans and calculate how much money that could be given. On this page there is a debtor classification button.

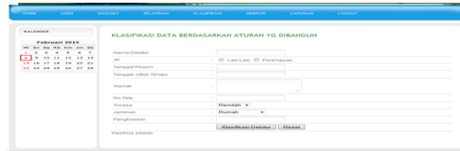


Figure 3: Classification Page

### 3.6 Notification pages

Notification pages is a page to display the notification member data that has lend every month in KUD Mupakat Jaya and also addressed to the head of KUD Mupakat Jaya. In here administrators will select the month and year to print out the notification.

Figure 4: Notification Page

## 4 CONCLUSION

Based on the explanation that has been described in the previous sections, it can be concluded belows:

1. This study produced a decision support system to determine the loan nominal at KUD Mupakat Jaya, which can help the employee to determine the loan nominal that will be given to cooperatives members.
2. Producing a decision support system determines the loan nominal at KUD Mupakat Jaya using Decision Tree method, and implemented by using the PHP programming language.
3. With the decision support systems determines the loan nominal at KUD Mupakat Jaya, and can speed up the process of determining the loan nominal so the cooperative members can more quickly receive their loan money.

## References

- Alter., (2002), *Analisis dan Perancangan Sistem Informasi dengan Metodologi Berorientasi Objek*, Informatika, Bandung.
- Kusrini. (2007). *Konsep dan Aplikasi Sistem Pendukung Keputusan*. Yogyakarta: Andi.
- Kusrini, E. T. L. (2009). *Algoritma data mining*. Yogyakarta, Indonesia: Andi.
- Maimon, O., & Rokach, L. (2005). *Decomposition methodology for knowledge discovery and data mining*: Springer.
- Sudianto, E., Abdillah, L. A., & Andryani, R. (2013). Analisis dan perancangan e-supply chain management pada distribusi karet olahan. *Paper presented at the Seminar Nasional Teknologi Informasi dan Komunikasi (Semnastik) V*, Hotel Aryaduta, Palembang.
- Kusrini. (2007). *Strategi Perancangan dan Pengelolaan Basis Data*. Yogyakarta: Andi.