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# Expert System Detecting Automated Teller Machine (Atm) Damages at Indonesian Sharia Bank Using Naïve Bayes Method

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A R T I C L E I N F O

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ABSTRACT

Automatic Teller Machine or better known as ATM is a tool used in the banking world for cash withdrawal transactions, cash deposits, balance check transfers and for various types of bill payments made to serve customers who can operate 24 hours a day without the service of a person. teller. However, Automatic Teller Machine (ATM) is very susceptible to damage and it takes a long time to find out the damage. Naïve Bayes is a method for generating parameter estimates by combining various available information from samples and other information that has been previously available and has a high success rate of calculation by taking a statistical approach to inference and induction on classification problems which uses conditional probability as the basis. Based on the results of the application of the expert system algorithm, the Naive Bayes Method is suitable for designing a damage detection system for ATM machines, the system built can help Indonesian Sharia Banks in Diagnosing ATM machine damage using the Naïve Bayes Method.



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## 1. INTRODUCTION

Bank Syariah Indonesia (BSI) is a banking institution or financial institution owned by the government in this case is a subsidiary company included in the auspices of BUMN in Indonesia, BSI is the oldest commercial bank in Indonesia which was founded by a member of BPUPKI at the beginning of independence. Over time this bank has grown rapidly and has more than 1000 branch offices throughout Indonesia, one of which is located in the Medan Tuntungan area. BSI has the determination to become one of the financial institutions that is very superior in service and competent in work, to meet all consumer needs, BSI always improves their facilities and services. At this time revolution 4.0 is something that must be followed by all individuals and institutions.

## 2. RESEARCH METHOD

The system is a set of interrelated elements that are responsible for the occurrence of the input process so that it can create output, while the expert is someone who is very well versed in a particular field of knowledge, has experience, is very careful in making decisions. and master a method, and can take advantage of their talents in providing advice or suggestions on a problem [6]. Clearly the Expert System is included in an artificial intelligence group that has special abilities, namely the ability to solve all existing problems [7]. In another study, it was revealed that the Expert System can also be interpreted as an expert system which is a software unit or computer program package that is used as a provider of advice and a means of assistance to solve problems in certain areas of specialization such as science, engineering mathematics, education, health. and so on [8]. Expert systems are generally structured based on two main components, namely, an environmental component for development and an environmental component as a means of consultation, if the development environment is used by experts or experts, the consultation environment is used by ordinary people.

## 3. RESULTS AND DISCUSSIONS

The data taken in the research object for this thesis is data from the Indonesian Islamic Bank (BSI) in the profit area as the main place of research. Data taken using techniques commonly used in research such as the following. Interview is one of the methods used in data collection which is considered more effective because this method requires researchers to conduct interviews directly or verbally with technicians face-to-face, using telephone media, or via teleconference. Interviews were conducted with the manager of Bank Syariah Indonesia (BSI) in the tuntungan area for two weeks, the data obtained by the author is the result of telephone and face-to-face interviews, the data obtained is data related to the detection of automated teller machine (ATM) damage at Bank Syariah Indonesia (BSI) in the field of profit.

An expert system is an information system that contains the knowledge of an expert so that it can be used for consultation. The knowledge of an expert possessed by this expert system is used as a basis for answering questions. The success of an expert system is found from the knowledge of the experts with the adopted experts, and how to manage the knowledge obtained from the results of the interview is then carried out as a probability table to make it easier for Automated Teller Machine (ATM) Damage Detection and can be seen in the table below this

**Table 1:**
Probability

| No | Symptom Code | Damage |
|---|---|---|
| | | **P001** |
| 1 | G001 | 0.9 |
| 2 | G002 | 0.8 |
| 3 | G003 | 0.4 |
| 4 | G004 | 0.3 |
| | | **P002** |

The login scenario of an expert system for detecting automated teller machine (ATM) damage at Bank Negara Indonesia Syariah (BNI) in the Medan Tuntungan area using the Bayes theorem method. From the scenario above, the following is a use case diagram, namely.

**Table 2:**
Login Scenarios

| User | <<System>> |
|---|---|
| 1. Fill in the Username and Password<br>2. Pressing the Login button | |
| | 3. Checking Username and *Password* on Database |
| | 4. Display the Main page *Website* |

From the scenario above, the following is a use case diagram, namely.

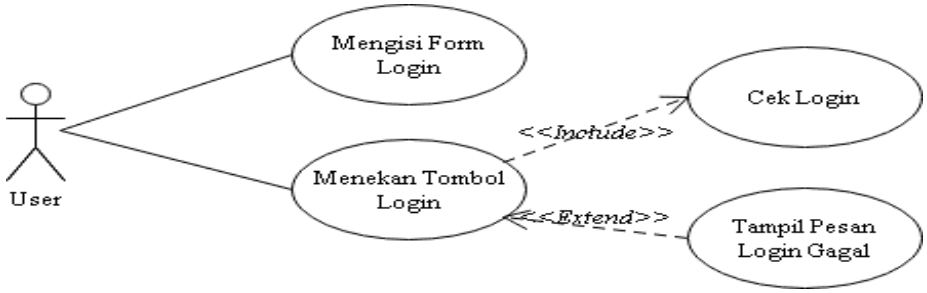


Figure 1 Use case diagram login

From the login use case image above, the following is a picture of the activity diagram.

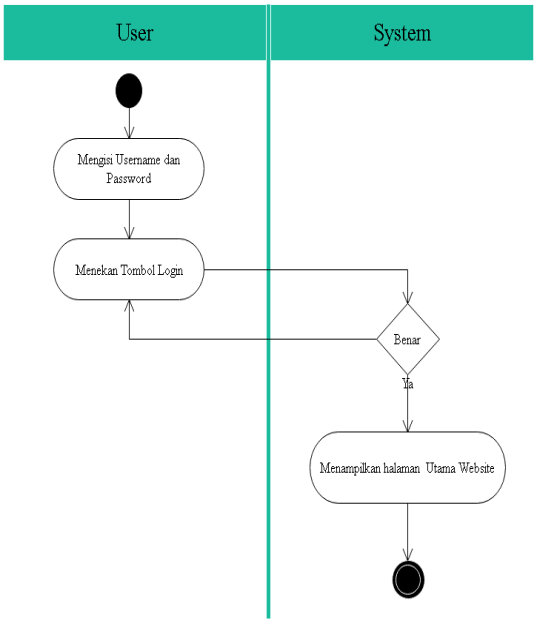


Figure.2 Activity login diagram

Scenario diagnosis of automated teller machine (ATM) damage detection expert systems at PT. Bank Negara Indonesia Syariah (BNI) in the field of profit

**Table 3:**
Diagnostic scenarios

| User | <<System>> |
|---|---|
| 1. Choose diagnostic menu<br>2. Fill out the diagnosis form andpressing the process button | |

| | |
|---|---|
| | 3.Processing data using Bayes' theorem algorithm |
| | 4. Showing Results |
| 5. Push print button | |
| | 6. Keep results into *Databases*and print the result |

From the scenario above, the following is a use case diagram, namely

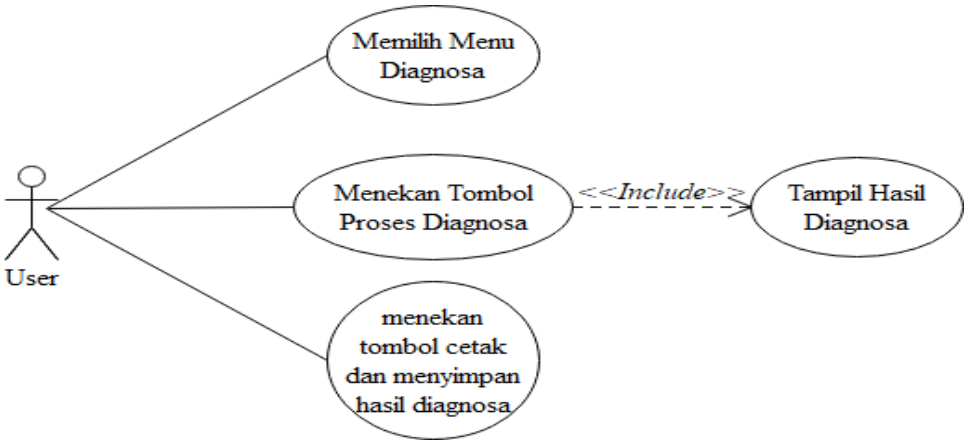


Figure.3 Use case diagram of diagnosis

### 3.1 Interface Design

User Interface (User Interface) is a communication mechanism between the user (user) with the system. The user interface can receive information from the user (user) and provide information to the user (user) to help direct the flow of troubleshooting until a solution is found. User Interface, serves to input new data into the expert system knowledge base. displays an explanation of the system and provides guidance on how to use the system as a whole step by step so that the user understands what to do with a system. The most important thing in building a user interface is the ease of using / running the system, interactive, communicative, while the difficulty in developing / building a program should not be shown too much.

### 3.2 Database Design

The following is the table design used in the database as follows

**Table 4:**
Login Table Design

| No | Field Name | Data Type | Data Length |
|---|---|---|---|
| 1 | No | int | 3 |
| 2 | Username | Varchar | 30 |
| 3 | Password | Varchar | 50 |

**Table 5:**
Damage Data Table Design

| No | Field Name | Data Type | Data Length |
|---|---|---|---|
| 1 | No | int | 3 |
| 2 | Fault_Code | Varchar | 10 |
| 3 | Name_Damage | Varchar | 100 |

## 4 CONCLUSION

Based on the description of the previous chapters, it can be concluded from this research as follows: Based on the results of the application of the expert system algorithm, the Naive Bayes method.So, the algorithm can be applied in diagnosing damage to the ATM (Automated Teller Machine). Based on the results of the implementation, the system built canassist BNI Syariah BANK in Diagnosing ATM Damage Using Bayes' Theorem Method. Based on the research obtained, there are several suggestions for further system development, the following are the suggestions: For the next researcher, the expert system algorithm can use other methods such as Certainty Factor and others. For the next researcher can use the algorithmanother as a comparative study in improving research results related to problems in diagnosing rubella in children under five. For BANK BNI Syariah, you can use this application so that the work becomes lighter and more efficient. This application can be developed into desktop and android programming.

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