

Decision Support System For The Feasibility Of Firearms With Fuzzy Methods

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ABSTRACT

Objective : A decision support system is expected to be used to the eligibility of firearms giving to participants psychological tests.

Method : To determine the eligibility of firearms used fuzzy method with calculations of specific hormone impulsive, susceptible, aggressive, impulses to self-injury, show off, prejudice, negligent, household problems, adjustment, self-control, strong ego, humanism, decision-making, and stress resistance. Fuzzy with eligibility problem of firearms giving is expected to provide an accurate solution to the provision of firearms.

Results : The test results with the system show match with the results of manual calculations. The value of the psychological test result is 44.4. The minimum requirement of firearms is 50.

Conclusion : Thus, the system gives a decision to the participants of the psychological test that is not qualified to use firearms.

Keywords: Decision-Making, Fuzzy, Stress Resistance.

I. INTRODUCTION

The recent cases of police misuse of firearms have become increasingly widespread. Starting from the case of the shooting of civilians, the shooting of police to shoot yourself. The argument can be built with various rationality. For example, police are also human beings who can suffer from depression and stress and lose control of emotions. But the issue of killing each other among the police can not be seen as simple. There is a very important and terrible thing, namely the arbitrariness in the hands of those who by the state are privileged to hold weapons [1].

The question of the importance of the feasibility test of handling firearms in the police force surfaced after seeing the sequence of events that occurred in the chocolate corps. With the authority to hold firearms and see some of the events that exist, of course the question arises what exactly is raging in the minds of the police. The police immediately take the necessary measures, such as withdrawing the firearms held prior to knowing the member's personality, also conducting re-feasibility tests. The series of tests that must be undertaken before members of the police are eligible to receive firearms one of them is a psychological test or commonly called psychotest. In addition there

are still more tests that are lived, such as shooting skills test. Psychological tests are needed to see how far the triggering and inhibiting factors of members are to use firearms. Psychological results can be used as a consideration in determining the feasibility of providing firearms to members of the police [1].

Seeing the many constraints that exist then it takes a system that can handle these constraints. Therefore, a decision support system that incorporates fuzzy logic is built. Decision Support System is a computer-based information system that has a primary function to provide information for executive level management in decision making. Basically, Decision Support System is assisted from other systems such as Artificial Intelligence, Expert System, Fuzzy Logic, etc [2].

Application of Fuzzy Logic because this method modeled qualitative aspects of human knowledge by setting the rule base and is one system that can help processing decision support system. One application that implements the fuzzy logic method is the application for psychology, such as to analyze the behavior of personnel. One of them can be used for the implementation of decision support system of determining the feasibility of giving firearms to members with fuzzy method [3].

The methodology used in this research are:

1. System Analysis

Stage analysis is the stage used to determine the needs of the development of a system. At this stage will be analyzed data to be taken for the purposes of the system by:

- (a). Data Collection
- (b). Interviews
- (c). Observation
- (d). Library Studies

2. System Design

At this stage the system design based on the results of interviews and observations. The design consists of database design and interface design. This stage also aims to provide an overview of the system workflow.

3. Implementation

The design of the resulting system will be implemented into a design of decision support system of determining the location of housing with fuzzy method. Fuzzy System is a system that uses a fuzzy set to map an input into a particular output. The fuzzy set has 2 attributes, as follows [4]:

- a. Linguistics, which is the naming of a group that represents a particular state by using natural language, such as Good, Enough, Less.
- b. Numerical, which is a value (number) that shows the size of a variable such as: 40, 25, 50, etc.

Fuzzy logic is an appropriate way to map an input space into an output space. There are

II. METHODS

several reasons why people use fuzzy logic, among other things [5]:

- a. The concept of fuzzy logic is easy to understand because the mathematical concepts underlying fuzzy reasoning are very simple and easy to understand.
- b. Fuzzy logic is very flexible, has a tolerance to the data is not appropriate and able to model the functions of nonlinear very complex.
- c. Fuzzy logic can build and apply the experience of experts directly without having to go through the training process.
- d. Fuzzy logic can work in conjunction with conventional control techniques.

4. Testing

Testing is done to avoid errors of the system created. In the event of an error, then the system will be repaired again until the results of the process in accordance with what is expected.

III. RESULTS

In the process of collecting data obtained some data such as participant data and membership degree data. From the data will be analyzed that will be input, namely:

1. Participant Data

Participant data is recording of information data from athletes in the form of nrp, name, gender, address, city, rank, position, unity and region.

2. Membership Degrees Data

Data degrees of membership are data from impulsive, irritable, aggressive, self-induced, show-off, prejudice, neglect, RT problems, self-adjustment, self-control, strong super ego, humanism, decision-making and stress-suppression.

While the data will be output in the system that is as follows:

1. Participant Report.
2. Membership Degrees Report.
3. Report on Psychological Test Results

Fuzzy form is used to enter membership degree data and psychological test results. Here is one of the fuzzy implementation is the degree of membership.

Figure 1 Form of Membership Degrees

Figure 2 Results Form

IV. DISCUSSION

Psychological tests are essentially objective measurements and are performed on specific behavioral samples. Psychological tests are also called psychotes. Psychological

tests can provide emotional levels and emotional control of a test participant [6].

To determine the feasibility of firearms, it must pass the psychological test which is the determining criterion, which is the determining factor and the trigger factor. The purpose of the trigger factor is about arrogance or high

arrogance level, unstable certainly can not. Similarly for the inhibiting factor if not the same as what you want [7].

Decision-making with multiple criteria is a very difficult task. If we have a clear conflicting objective there is usually no optimal solution that will meet all the criteria at once. On the other hand, if we have goals that support the couple wisely, so achieving one goal helps us achieve another goal, then we must utilize this property to find the optimal solution. to help get optimal results hence required method of decision support system that is fuzzy logic [8].

The initial process of logging in by entering a username and password. Then the system will do the validation. When the admin enter the correct data, then the user will go to the next page, While if the admin data is input incorrectly it will appear error message that password entered wrong. Then, do input on master data form in this application that is master participant, and user. Master form consists of input data, save data, edit data, delete data and display data.

Fuzzy form is used to enter membership degree data and psychological test results. Membership function is a curve showing the mapping of data input points into membership values (membership degrees) that have intervals between 0 and 1. One way can be used to get membership value is through a function approach.

The test results with the system show match with the results of manual calculations.

Where the value of psychological test results have the same value of 44.4. Then the system gives a decision for the psychological test participants that is not meet to use firearms.

V. CONCLUSION

From the results of research and observations of the system that has been made, it can be concluded as follows: The feasibility of giving firearms to POLRI members can be seen from the calculations performed based on the criteria weight. So that resulted eligibility for participants.

The model of decision support system for the purchase of firearms is adjusted to the participant's eligibility value.

Fuzzy produces a decision in the eligibility of participants in possession of firearms based on predetermined criteria.

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