INTRODUCTION

The enactment of the regional autonomy based on Undang Undang Nomor 22 1999 provides direction for state governance changes. One of them is in terms of governance, where it is possible for the local government to recruit the contract employee (Prasetya, 2017). Bahrin (2016) states that the selection of the contract employee is a process of selecting several people with a specific preference. Selecting the contract employee is common in the regional, even worldwide, as a potential instrument to shorten citizen unemployment and increase income (Sheikh, Naveed, & Iqbal, 2011). As is a contract, the work has a certain period of time and can be classified as a temporary employee (Sethi & Kataria, 2016). Schoukens & Barrio (2017) add that the contract employee also has a work standard as well as a certain amount of work time by agreement with the employer. The contract employee's selection is a common activity by the office of Public Order Enforcers and Fire Department of Tanah Laut Regency. In reality, the recruitment of the contract employee is not objective. It does not satisfy the predetermined standard, thus hinder the practice of the main duty such as shift duty, report writing, physical endurance and discipline that the work of the office of public order enforcers and fire department become ineffective. In the future, in the selection of contract staff the office will provide a series of tests to determine the abilities and personalities of the participants. Data on the results of the test participants will later be used as material for decision making. Tests as a basis for decision making have been carried out in various institutions to select potential workers for several years (Carrigan, 2007). According to Hanackiewicz & Hulleman (2010), The test also serves to determine how much interest the prospective worker has to contribute to an institution. Besides, the quality of prospective workers can be seen from the assembling of the test (Campion, Campion, & Campion, 2019). An assessment must be made using predetermined criteria (Ekwoaba, Ikeije, & Ufoha, 2015). There are six criteria to select an employee: physical, health, knowledge, personality, religion, and education. Apart from the test scores, other criteria needed in the contracting system are the experiences and results of the relevant psychological test. So from the results of the assessment, the office can decide on an evaluation material to receive the Contractor who registers at the Office of the Public Order Enforcers Unit and the Fire Department of Tanah Laut Regency. These six criteria become standard criteria in the recruitment of workers. Aslan (2017) states that adequate physical condition is the main support in doing work. Besides, health factors both physically and mentally affect the productivity endurance at work and the safety of other workers from the possibility of contracting

DEVELOPMENT OF THE RECRUITMENT OF CONTRACT EMPLOYEE WITH SIMPLE MULTI ATTRIBUTE RATING TECHNIQUE METHOD

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(Jonathan & Mbogo, 2016). For example, a worker has a higher likelihood of making a wrong decision when in an unhealthy state. Furthermore, person or personality criteria are considered important because they determine effectiveness in work management, such as high or low turnover rates (Kaluginana & Shvydun, 2014). Besides, Nuckchaddy (2018) proves that a friendly personality in the world of work is also proven to increase the motivation of other coworkers. Finally, work experience is no less important, given that experience is a more guaranteed assurance of one's talents (lapina & Sceulovs, 2014). Therefore, following the problems explained above, it is important to design a system that can help the office to make decisions about the selection of Contract Workers by implementing the Simple Multi-Attribute Rating Technique (Smart) method. This Simple Multi-Attribute Rating Technique (Smart) method was chosen because it can maximize the number of criteria involved in making decisions on contracting. Each decision-maker must choose an alternative under the objectives that have been formulated. Each alternative consists of a set of attributes, and each attribute has a prospective contractor candidate value. This value is averaged by the scale set by the agency. With more criteria used, the decision-making results obtained will be more accurate. Based on the problems above, this study aims to create a decision support system that aims to build a decision support system for the recruitment of Contract Personnel at the Public Order Enforcers Office and the Fire Department in Tanah Laut Regency using the Simple Multi-Attribute Rating Technique (SMART) method.

LITERATURE REVIEW

Definition of Decision Making Support System: The decision support system has become a general term for employers to assist in making strategic decisions (Dulcic, Pavlic, & Silic, 2012). Although initially only intended to help decision-making about structured problems, but as the development, DSS is also able to help policymakers to decide unstructured problems (Suduc, Bizoï, Cioca, & Filip, 2010). Noteworthy then is the arrangement of algorithms for analytical prediction and the formulation of decision possibilities (Song, Liu, Wu, & Mao, 2018). According to Aboelmagd (2018), the possibilities formulation will be calculated on a priority scale as well as an alternative scale.

Purpose of the Decision Support System: Another DSS pioneer Peter G. W. Keen (Saliman, 2016), in collaboration with Scott Morton, defines three goals that DSS must achieve. These goals relate to three basic principles of the DSS concept - problem structure, decision support, and decision effectiveness. They believe that DSS must:

- Help managers make decisions to solve semi-structured problems.
- Support the manager's judgment rather than trying to replace it.
- Improve the effectiveness of manager decision making rather than efficiency.

Khodashahri and Sarabi (2013) explain that DSS helps us to make sure the accuracy of the decision and the provision of various alternative decisions.

SMART: SMART (Simple Multi Attribute Rating Technique) is a multi-attribute decision-making method developed by Edward in 1977. This multi-attribute decision-making technique is used to support decision-makers in gathering information about all related data in the form of criteria (Siregar, Arisand, Usman, Irwan, & Rahim, 2017). Each decision-maker must choose an alternative under the objectives that have been formulated. Each alternative consists of a set of attributes, and each attribute has values (Risawandi & Rahim, 2016). This value is then averaged on a certain scale. Each attribute has a weight that illustrates how important it is compared to other attributes (Edwards, 1977). This weighting and ranking are used to assess each alternative to obtain the best alternative. Weighting on Simple Multi-Attribute Rating Technique (smart) uses a scale between 0 to 1, making it easier to calculate and compare values for each alternative. The model used in the Simple Multi-Attribute Rating Technique (smart):

\[ u(a_i) = \sum_{j=1}^{m} w_j u_c(e_i) \]

Information:

- \( w_j \) = the weighting value of the jth and k criteria
- \( u(a_i) \) = value of the ith criteria utility for the ith criteria
decision making is identifying which of the n alternatives has the greatest functional value.

Nofriansyah et al. (2017) explained the technical steps of the SMART Method as follows:

- Step 1: determine the number of criteria
- Step 2: the system by default gives a scale of 0-100 based normalized priorities.
- Normalization = 1

Information:

- \( w_j \): the weight of a criterion
- Step 3: provide criteria values for each alternative.
- Step 4: calculate the utility value for each criterion.

\[ u_i(a_j) = \frac{C_{max} - C_{out}}{C_{max} - C_{min}} \]

Information:

- \( u_i(a_j) \): value of the ith criteria utility for the jth criteria
- \( C_{max} \): maximum criterion value
- \( C_{min} \): minimum criterion value
- \( C_{out} \): jth criterion value

- Step 5: calculate the final value of each.

RESEARCH METHODOLOGY

In this research, the software development method used is the approach to the waterfall model. The waterfall is a method of software development where between one phase to another is done sequentially or linearly. So, if step one is not complete, it cannot continue steps 2, 3, and so on. In other words, a stage of waterfall is an input for the next stage.
The use of this development method in this research is because the requirements must be defined in depth before the next process and allow for changes as the project progresses. The software development method with the waterfall model approach has stages shown in Figure 1 below.

**RESULT AND DISCUSSION**

The database is analyzing the data needed in this research case study. The data needed for this study are Family Card Registration Number, Citizenship Number of the Head of Family, Full Name, Gender, Place and Date of Birth, Religion, Address, No. Phone, Email, and the final scores from the entire set of tests. Smart Method Manual Calculation steps.

- Determine the number of criteria.
- The system by default to a scale of 0-100 based on the priorities that have been entered then normalize. The formula used for the simulation process is as shown below.
- Information:

\[
\frac{w_j}{\sum w}
\]

3. Provide criteria values for each alternative specified.
4. Calculate utility value of each criterion.

\[
u_i(a_i) = \left(\frac{c_{max} - c_{out}}{c_{max} - c_{min}}\right) \times w_i
\]

Information:

- ui(ai): utility value of 1th criterion for ith criterion
- Cmax: maximum value of criteria
- Cmin: minimum value of criteria
- Cout i: the value of the I criteria {16}

Calculate the final value of each.

For the example of the Manual Calculation of the Smart Method is as follows:

**Criteria used:** Here is the Criteria Table that goes along with Calculating Weight Normalization (Wj).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight (wj)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>85</td>
</tr>
<tr>
<td>Health</td>
<td>75</td>
</tr>
<tr>
<td>Knowledge</td>
<td>70</td>
</tr>
<tr>
<td>Personality</td>
<td>63</td>
</tr>
<tr>
<td>Religion</td>
<td>50</td>
</tr>
<tr>
<td>Education</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL</td>
<td>383</td>
</tr>
</tbody>
</table>

**Determining Normalization:** Table 2 Determine the normalization of wj weights based on the normalization formula, the wj weight values for each criterion value will be divided by the total number of criteria weights.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Normalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>85/383 = 0.22</td>
</tr>
<tr>
<td>Health</td>
<td>75/383 = 0.19</td>
</tr>
<tr>
<td>Knowledge</td>
<td>70/383 = 0.18</td>
</tr>
<tr>
<td>Personality</td>
<td>63/383 = 0.16</td>
</tr>
<tr>
<td>Religion</td>
<td>50/383 = 0.13</td>
</tr>
<tr>
<td>Education</td>
<td>40/383 = 0.10</td>
</tr>
</tbody>
</table>

**Parameter**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Health</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Personality</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Religion</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Education</td>
<td>Quantitative</td>
</tr>
</tbody>
</table>

**Utility Value:** Calculates the Utility Value of each criterion in the Smart Method manual calculation.

**Table 4. Utility Value**

<table>
<thead>
<tr>
<th>A1</th>
<th>A2</th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>K4</th>
<th>K5</th>
<th>K6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4</td>
<td>0.48</td>
<td>0.42</td>
<td>0.57</td>
<td>0.7</td>
<td>0.33</td>
<td>0.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Final Calculation:** Here will calculate the utility value of each criterion in the Smart Method manual calculation.

A1 = (0.22, 0.4) + (0.19, 0.42) + (0.18, 0.1) + (0.16, 0.33) + (0.13, 0.5) + (0.1, 0.0) + 0.088 + 0.079 + 0.18 + 0.52 + 0.065 + 0 = 0.932

A2 = (0.22, 0.48) + (0.19, 0.57) + (0.18, 0.7) + (0.16, 0.33) + (0.13, 0.5) + 0.105 + 0.108 + 0.126 + 0.052 + 0.13 + 0.05 = 0.569

If the data is implemented in the system, it will be seen as follows.

**Open the Admin Login Page**

![Login Admin Page](image-url)
From the explanation above, the development of a decision support system for recruitment of contract staff with the Simple Multi-Attribute Rating Technique (SMART) method has been successfully carried out. The system is capable of calculating values and ranking automatically. With the availability of the decision support system, contract employee selection will be carried out more objectively. An online and digital system will help the effectiveness and efficiency of work (Dalle & Anifin, 2018).

Coherent with this, Chan, Song, Sarker, dan Plumlee (2017) also said that the Decision Support System (DSS) has features to measure existing problems, measure a person’s motivation level, and measure the level of performance. As seen in the system implementation drawings, it can be said that the system developed already has the required features. So, it can be said that the system developed has been proven capable of asking. Conclusion and Recommendation: From the research that has been done by looking at and completing the system and through the testing stages of the decision support system, the conclusions can be drawn as follows:

- The Smart Method can be applied as a support decision in recruitment for contract employees at the Public Order Enforcers Office and Fire Department.
- The classification process is done using the Smart method. This method works by ranking each prospective Participant's data.

As for the suggestions of the authors for further research are:

- Similar systems can be developed with other methods to produce a greater and better level of conformity.
- This decision-making support system can also be developed to classify other studies.

All authors read and approved the paper.

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