

CHOOSING CHILI SEEDS USING ANALYTIC HIERARCHY PROCESS (AHP) METHOD : AN ANALYSIS AND INTERFACE APPLICATION DESIGN

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ABSTRACT

Selection of cayenne chili seeds affects the yield. Of the many varieties of cayenne chili varieties that have been issued by the Government, not necessarily all varieties are in accordance with the expectations of farmers. Farmers need to know which varieties are suitable or close to their expectations. Application of selection of cayenne chili seeds helps farmers to find out which varieties suit their expectations. AHP is one method to assist in the selection of decisions of cayenne chili seeds. By using 10 criteria selected by farmers, analysis and design of applications is made using the UML method.

Keywords: *Decision making, design, application, AHP, UML*

1. INTRODUCTION

One of the plants that is widely grown in the agricultural sector is chili. Chili is a shrub from the eggplant family. Chili comes from the Americas and Asia, including Indonesia. Chili plants have many types of growth and fruit shape. There are an estimated 20 species that mostly live in their home countries. The community in general only knows a few types, namely large chili, curly chili, cayenne chili and chili chilis [1].

Cayenne chili (*Capsicum Frutescens*) is a vegetable plant that has high economic value. It can be planted in various places and seasons, depending on the variety. The use of chili is quite a lot, from daily needs for cooking, fresh, processed, industrial and pharmaceutical forms. Therefore, this commodity is widely cultivated by smallholders conventionally or traditionally to large businesses that use agribusiness systems [1].

The selection of chilli seeds is an important thing to be considered by farmers because the seeds will affect the yield. Good seeds will produce good results, bad seeds will produce bad results. The problem faced by farmers is that not all types of seeds issued by the government produce crops that are in line with their expectations. The availability of various seeds in an area is not necessarily there. This causes farmers to keep planting the same type of seed all the time.

To introduce the chilli seed varieties that have been issued by the government and help farmers in choosing chilli seeds whose results are in line with their expectations, it is necessary to make an application for chili seed selection. The process of selecting chili seeds is made using the AHP method as a decision support tool. Analysis and application design using the Unified Modeling Language (UML) method is carried out as an application creation stage.

In this study the AHP method was used to select chili seeds with 14 alternative seed varieties along with 10 criteria. The criteria include age at harvest, old fruit color, fruit shape, yield, fruit size, number of fruit per tree, weight per fruit, fruit flavor, fruit retention and fruit skin surface. The ten criteria are the results of interviews with chili farmers in several regions on the island of Java, Indonesia. Varieties of chilli seeds used are varieties produced by producers from the 2000s. The type of chili used is hybrid cayenne chili.

In this study the hypothesis is that there is a relationship between the criteria and the types of cayenne chili varieties.

The purpose of this study was to analyze and design an application interface for the selection of high-yielding hybrid chili seeds

2. LITERATURE STUDY

Decision making is a process in choosing actions among various alternative choices to achieve a goal or several goals [2]. Decision support system (DSS) usually by describing alternative choices for decision making. Whatever and however the process, one of the most difficult further stages that decision makers will face is in terms of their application. Likewise, AHP is commonly used to construct models for simplifying problems. AHP is a mathematically based procedure that is very good and suitable for the conditions of evaluating qualitative attributes. These attributes are mathematically quantified in a set of paired comparisons. AHP advantages are compared with others because of the hierarchical structure as a consequence of the criteria chosen to the most detailed sub-criteria. Taking into account the validity up to the tolerance limit of inconsistencies of various criteria and alternatives chosen by decision makers [3]. Because it uses input from human perception, this model can process qualitative and quantitative data. So the complexity of the problems around us can be approached well by this AHP model. In addition AHP has the ability to solve multi-objective and multi-criteria problems based on a comprehensive comparison of decisions.

Design of UML (Unified Modelling Language)

According to [4], UML (Unified Modeling Language) is 'language' modeling for systems oriented or oriented paradigm object ". Modeling (modeling) is actually used for simplification complex problems such that more easy to learn and understand.

UML is described by several diagrams :

1. Use Case Diagram

Use case diagram is used to describe the system from a point of view user of the system (user), so the creation of use case diagrams is more focused on the functionality that is in the system, not based on the flow or sequence of events. A use case diagram represents an interaction between actors and systems to be developed [5].

Components in the use case diagram [5]:

a. Actor

Basically actors are not part of the use case diagram, but to be able to the creation of a use case diagram requires an actor, where the actor is present someone or something (like nother device or system) that is interact with the system created. An

actor might just give input information on the system, only receiving information from the system or both receive and provide information on the system. Actors only interact with use case, but has no control over the use case. Actor described by stick pan as shown in Figure 1.



actor

Figure 1

b. Use Case

Overview of the functionality of a system, so that system users understand and understand the usefulness of the system to be built. The use case can be seen on Figure 2.

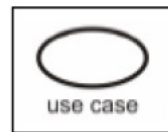












Figure 2

2. Activity Diagram

Describing a series of flows from activities, used to describe activity that is formed in an operation so that it can be used for other activities [5].

The following is a table of Activity Diagram Notations illustrated in Table 1.

Table 1. Activity Diagram Notation [5].






Symbol











3. Sequence Diagram

Sequence diagrams describe interactions between a number of objects in a sequence time. Its purpose is to show the message sequence sent between objects also interact between objects that occur at certain points in the execution system [5].

The following is the Sequence Diagram Notation presented in Table 2

Table 2. Sequence Diagram Notation[5]

Simbol	Nama
	Object
	Actor
	Lifeline
	Activation
	Message

3. RESEARCH METHOD

This study uses two stages of research, namely the data processing stage with the AHP method and the interface design stage.

3.1 Data Processing Using AHP

To do data processing using the AHP method, there are several steps that must be done, namely:

1. Identification Phase
 - a) Determine the Purpose
 - b) Determine Criteria
 - c) Determine the Alternative
2. Determine the main priorities for the criteria
3. Create a pairwise comparison matrix, which is an n x m-sized matrix with an a_{ij} element which is the relative objective of the i to the destination to j
4. Using a comparison scale of 1-9

Table 3: Comparison Scales 1-9 according to [6]

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favor one activity
5	Strong importance	Experience and judgment strongly favor one activity over another
7	Very strong importance	An activity is favored very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2,4,6,8	For compromise between the above values	Intermediate values of importance
Reciprocal	If variable i has one of the above numbers assigned to it when compared with variable j , then j has the value $1/\text{number}$ assigned to it when compared with i . More formally if $n_{ij} = x$ then $n_{ji} = 1/x$	

5. Ranking process at each price based on the comparison matrix
6. If the matrix A is flexible in pairs, the weight vector forms $(A)(WT) = (n)(WT)$ by:
 - a. Normalize each column J in a matrix

$$\sum_i a_{ij} = 1 \quad (1) \text{ call it } A'$$

- b. For each row i in A', calculate the average value

$$w = \frac{1}{n} \sum_j a'_{ij} \quad (2)$$

With W_i is the weight of the 1st goal of the weight vector

7. Test consistency, count: $(A)(W^T)$

$$t = \frac{1}{n} \sum_{i=1}^n \left| \frac{\text{elemen } i \text{ in } (A)(W^T)}{\text{elemen } i \text{ in } W^T} \right| \quad (3)$$

8. Calculate the consistency index

$$CI = \frac{t - n}{n - 1}$$

$CI = 0$ then A is consistent

$\frac{ci}{RI_n} \leq 0$ then A is pretty consistent

$\frac{ci}{RI_n} > 0,1$ then A is very inconsistent

Random Index RI_n

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	5,8	0,9	1,12	1,24	1,32	1,41	1,45	1,49

There are 10 criteria used in this study, namely the number of fruit trees, production results, fruit flavor, fruit saving power, age of harvest, old fruit color, fruit shape, fruit size, weight and fruit surface. The alternatives chili seeds selected in this study were Bhaskara, Dewata, Juwita, Kathur, Prima Agrihorti, Rabani Agrihorti, AFN CR01, Batari, CF 3251, CF 3254, FRT 598, Maruti, Red Thunder, and Robin [7] [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20]

Determination of Rating Criteria Weight (pairwise comparison stage)

From the results of interviews with chili farmers in the data collection areas, the priority criteria for chili were obtained, namely:

- First priority : number of fruits per tree (J)
- Second priority : yield (H)
- Third priority : fruit flavor (R)
- Fourth priority : fruit saving power (D)
- Fifth priority : age begins to harvest (U)
- Sixth priority : old fruit color (W)
- Seventh priority : fruit shape (Bb)
- Eighth priority : fruit size (Ub)
- Ninth priority : weight per fruit (Bp)
- Tenth priority : fruit skin surface (P)

To produce relative weights between criteria and alternatives, the pairwise comparison matrix is used. A criterion will be compared to

other criteria in terms of how important it is to achieving the objectives above [3]. The basic scale of pairwise comparisons used is as illustrated in table 3 above, and produces a comparison matrix as in table 4 below

Table 4 Chili Criteria Pairwise Comparison Matrix

Criteria	J	H	R	D	U	W	Bb	Ub	Bp	P
J	1	3	3	3	3	5	5	5	5	9
H	1/3	1	3	3	3	5	5	7	5	9
R	1/3	3	1	3	4	4	5	5	7	9
D	1/3	1/3	1/3	1	1/3	5	7	7	7	9
U	1/3	1/3	3	3	1	6	6	6	6	6
W	1/5	1/5	4	5	6	1	5	5	4	4
Bb	1/5	1/5	1/5	1/5	2	1/5	1	2	2	3
Ub	1/5	1/7	1/5	1/5	6	1/5	2	1	4	3
Bp	1/5	1/5	1/7	1/7	6	4	2	4	1	5
P	1/9	1/9	1/9	1/9	6	6	1/3	1/3	1/5	1

Table 4 above is the result of the Pairwise Comparison matrix to find out the comparison of criteria. For example, for a comparison of the criteria for the number of fruits per tree (J) with the production (H), the number is 1/3 which means the number of fruits per tree (J) is slightly more important than the production (H). The result of production (H) with the color of the old fruit (W) is 5, which means that the production (H) is more important than the color of the old fruit (W), and so is done.

The next step is to determine the ranking criteria by changing pairwise comparison to decimal form (table 5(a)) then dividing the elements of each column by the number of columns in question (table 5(b))

Table 5(a) Determination of Criteria Ranking

Criteria	J	H	R	D	U	W	Bb	Ub	Bp	P
J	1	3	3	3	3	5	5	5	5	9
H	0.333	1	3	3	3	5	5	7	5	9
R	0.333	3	1	3	4	4	5	5	7	9
D	0.333	0.333	0.333	1	0.333	5	7	7	7	9
U	0.333	0.333	3	3	1	6	6	6	6	6
W	0.2	0.2	4	5	6	1	5	5	4	4
Bb	0.2	0.2	0.2	0.2	2	0.2	1	2	2	3
Ub	0.2	0.143	0.2	0.2	6	0.2	2	1	4	3
Bp	0.2	0.2	0.142	0.142	6	4	2	4	1	5
P	0.111	0.111	0.111	0.111	6	6	0.333	0.333	0.2	1
SUM	3.244	8.521	14.99	18.65	37.33	36.4	38.33	42.33	41.2	58

Table 5(b) Determination of Criteria Ranking

KRITERIA	J	H	R	D	U	W	Bb	Ub	Bp	P	RATA-RATA
J	0.308219	0.35209	0.20017	0.16082	0.08036	0.13736	0.13043	0.11811	0.12136	0.15517	0.17640952
H	0.10274	0.11736	0.20017	0.16082	0.08036	0.13736	0.13043	0.16535	0.12136	0.15517	0.137113555
R	0.10274	0.35209	0.06672	0.16082	0.10714	0.10989	0.13043	0.11811	0.1699	0.15517	0.147302632
D	0.10274	0.03912	0.02224	0.05361	0.00893	0.13736	0.18261	0.16535	0.1699	0.15517	0.103703895
U	0.10274	0.03912	0.20017	0.16082	0.02679	0.16484	0.15652	0.14173	0.14563	0.10345	0.124180783
W	0.061644	0.02347	0.26689	0.26804	0.16071	0.02747	0.13043	0.11811	0.09709	0.06897	0.122283308
Bb	0.061644	0.02347	0.01334	0.01072	0.05357	0.00549	0.02609	0.04724	0.04854	0.05172	0.034184729
Ub	0.061644	0.01677	0.01334	0.01072	0.16071	0.00549	0.05217	0.02362	0.09709	0.05172	0.049329233
Bp	0.061644	0.02347	0.00953	0.00766	0.16071	0.10989	0.05217	0.09449	0.02427	0.08621	0.063005165
P	0.034247	0.01304	0.00741	0.00596	0.16071	0.16484	0.0087	0.00787	0.00485	0.01724	0.04248718

1 1 1 1 1 1 1 1 1 1 1 1

Calculate the Weight of Criteria and Alternative Weight

Eigen Vector normalization:

W = (0.17640952 ; 0.137113555 ; 0.147302632 ; 0.103703895 ; 0.124180783 ; 0.122283308 ; 0.034184729 ; 0.049329233 ; 0.063005165 ; 0.04248718)

To calculate the criteria weight and alternative weights there are several stages. Final results after processing each criterion as in the tables 6 till 15 below:

Table 6 Number of Fruits per Tree

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	RATA-RATA
Dewata	0.0694 63003	0.0694 63003	0.0694 63003	0.0694 63003	0.0694 63003	0.0694 63003	0.0694 63003	0.0651 34349	0.0694 63003	0.0694 63003	0.0694 63003	0.0724 03765	0.0694 63003	0.0694 63003	0.0693 63868
Bhaskara	0.0655 85214	0.0655 85214	0.0655 85214	0.0655 85214	0.0655 85214	0.0655 85214	0.0655 85214	0.0614 98209	0.0655 85214	0.0655 85214	0.0655 85214	0.0683 61807	0.0655 85214	0.0655 85214	0.0654 91613
Kathur	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0693 45521	0.0678 92232	0.0678 92232	0.0678 92232	0.0707 66494	0.0678 92232	0.0678 92232	0.0682 01342
Juwita	0.0629 86266	0.0629 86266	0.0629 86266	0.0629 86266	0.0629 86266	0.0629 86266	0.0629 86266	0.0643 3454	0.0629 86266	0.0629 86266	0.0629 86266	0.0656 52831	0.0629 86266	0.0629 86266	0.0632 7304
Prima Agrihorti	0.0399 72053	0.0399 72053	0.0399 72053	0.0399 72053	0.0399 72053	0.0399 72053	0.0399 72053	0.0408 27689	0.0399 72053	0.0399 72053	0.0399 72053	0.0416 64297	0.0399 72053	0.0399 72053	0.0401 54045
Rabani Agrihorti	0.0410 03199	0.0410 03199	0.0410 03199	0.0410 03199	0.0410 03199	0.0410 03199	0.0410 03199	0.0418 80907	0.0410 03199	0.0410 03199	0.0410 03199	0.0427 39096	0.0410 03199	0.0410 03199	0.0411 89885
CF 3251	0.0603 14974	0.0603 14974	0.0603 14974	0.0603 14974	0.0603 14974	0.0603 14974	0.0603 14974	0.0616 06066	0.0603 14974	0.0603 14974	0.0603 14974	0.0628 68447	0.0603 14974	0.0603 14974	0.0605 89585
FRT 598	0.1206 29947	0.1206 29947	0.1206 29947	0.1206 29947	0.1206 29947	0.1206 29947	0.1206 29947	0.1131 12777	0.1206 29947	0.1206 29947	0.1206 29947	0.0834 0124	0.1206 29947	0.1206 29947	0.1174 33813
Maruti	0.1055 51204	0.1055 51204	0.1055 51204	0.1055 51204	0.1055 51204	0.1055 51204	0.1055 51204	0.1078 10615	0.1055 51204	0.1055 51204	0.1055 51204	0.1100 19783	0.1055 51204	0.1055 51204	0.1060 31774
Red Thunder	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0678 92232	0.0693 45521	0.0678 92232	0.0678 92232	0.0678 92232	0.0707 66494	0.0678 92232	0.0678 92232	0.0682 01342
Robin	0.0818 82146	0.0818 82146	0.0818 82146	0.0818 82146	0.0818 82146	0.0818 82146	0.0818 82146	0.0836 34901	0.0818 82146	0.0818 82146	0.0818 82146	0.0853 4868	0.0818 82146	0.0818 82146	0.0822 54952
AFN CR01	0.0909 80162	0.0909 80162	0.0909 80162	0.0909 80162	0.0909 80162	0.0909 80162	0.0909 80162	0.0929 27668	0.0909 80162	0.0909 80162	0.0909 80162	0.0948 31867	0.0909 80162	0.0909 80162	0.0913 94391
CF 3254	0.0897 71123	0.0897 71123	0.0897 71123	0.0897 71123	0.0897 71123	0.0897 71123	0.0897 71123	0.0916 92749	0.0897 71123	0.0897 71123	0.0897 71123	0.0935 71643	0.0897 71123	0.0897 71123	0.0901 79848
Batari	0.0360 76246	0.0360 76246	0.0360 76246	0.0360 76246	0.0360 76246	0.0360 76246	0.0360 76246	0.0368 48488	0.0360 76246	0.0360 76246	0.0360 76246	0.0376 03557	0.0360 76246	0.0360 76246	0.0362 405

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 W

Table 7 Production Results

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	average
Dewata	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.0763914 15	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07543 1034	0.07549 9633
Bhaskara	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.0736631 5	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07273 7069	0.07280 3218
Kathur	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.0682066 21	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06734 9138	0.06741 9387
Juwita	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.0796653 33	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07866 3793	0.07873 5332
Prima Agrihorti	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.0818479 45	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08089 2464
Rabani Agrihorti	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.0545652 96	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05392 8309
CF 3251	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.0982175 34	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09707 0957
FRT 598	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.0254638 05	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 5517	0.03771 0395
Maruti	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.0709348 85	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07010 6802
Red Thunder	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.0545652 96	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05387 931	0.05392 8309
Robin	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.0818479 45	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08081 8966	0.08089 2464
AFN CR01	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.0654783 56	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06465 5172	0.06471 3971
CF 3254	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.0982175 34	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09698 2759	0.09707 0957
Batari	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.0709348 85	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07004 3103	0.07010 6802
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 8 Fruit Flavour

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	average
Dewata	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Bhaskara	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Kathur	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Juwita	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Prima Agrihorti	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.04557 9463	0.046
Rabani Agrihorti	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
CF 3251	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
FRT 598	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Maruti	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Red Thunder	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Robin	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.07570 8261	0.076
AFN CR01	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
CF 3254	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
Batari	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.07322 6023	0.073
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 11 Color of Old Fruit

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	rata-rata
Dewata	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09062 532	0.09062 532	0.09062 532	0.09111 2659	0.09099 5115	0.09062 532	0.09062 532	0.09062 532	0.09195 0682
Bhaskara	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09062 532	0.09062 532	0.09062 532	0.09111 2659	0.09099 5115	0.09062 532	0.09062 532	0.09062 532	0.09195 0682
Kathur	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.05910 3469	0.05910 3469	0.05910 3469	0.05942 1299	0.05934 464	0.05910 3469	0.05910 3469	0.05910 3469	0.05996 7836
Juwita	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09062 532	0.09062 532	0.09062 532	0.09111 2659	0.09099 5115	0.09062 532	0.09062 532	0.09062 532	0.09195 0682
Prima Agrihorti	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.09062 532	0.09062 532	0.09062 532	0.09111 2659	0.09099 5115	0.09062 532	0.09062 532	0.09062 532	0.07800 1617
Rabani Agrihorti	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09357 4976	0.09062 532	0.09062 532	0.09062 532	0.09111 2659	0.09099 5115	0.09062 532	0.09062 532	0.09062 532	0.09195 0682
CF 3251	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06178 9991	0.06178 9991	0.06178 9991	0.06212 2268	0.06204 2124	0.06178 9991	0.06178 9991	0.06178 9991	0.06269 3647
FRT 598	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06041 688	0.06041 688	0.06041 688	0.06074 1773	0.06066 341	0.06041 688	0.06041 688	0.06041 688	0.06130 0455
Maruti	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06041 688	0.06041 688	0.06041 688	0.06074 1773	0.06066 341	0.06041 688	0.06041 688	0.06041 688	0.06130 0455
Red Thunder	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.05910 3469	0.05910 3469	0.05910 3469	0.05942 1299	0.05934 464	0.05910 3469	0.05910 3469	0.05910 3469	0.05996 7836
Robin	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.06102 7158	0.05910 3469	0.05910 3469	0.05910 3469	0.05812 9532	0.05934 464	0.05910 3469	0.05910 3469	0.05910 3469	0.05987 5667
AFN CR01	0.06683 9269	0.06683 9269	0.06683 9269	0.06683 9269	0.06683 9269	0.06683 9269	0.06473 2371	0.06473 2371	0.06473 2371	0.06366 5678	0.06358 3543	0.06473 2371	0.06473 2371	0.06473 2371	0.06547 7076
CF 3254	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06380 112	0.06178 9991	0.06178 9991	0.06178 9991	0.06077 1783	0.06069 3382	0.06178 9991	0.06178 9991	0.06178 9991	0.06250 0845
Batari	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06238 3317	0.06041 688	0.06041 688	0.06041 688	0.05942 1299	0.05934 464	0.06041 688	0.06041 688	0.06041 688	0.06111 1937
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

w

Table 12 Fruit Forms

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	rata-rata
Dewata	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
Bhaskara	0.02985 0746	0.03141 3613	0.02272 7273	0.02985 0746	0.02985 0746	0.02985 0746	0.02985 0746	0.08510 6	0.08510 6	0.02985 0746	0.02985 0746	0.02985 0746	0.02985 1	0.02985 0746	0.03735
Kathur	0.04477 6119	0.06282 7225	0.04545 4545	0.04477 6119	0.04477 6119	0.04477 6119	0.04477 6119	0.04255 3	0.04255 3	0.04477 6119	0.04477 6119	0.04477 6119	0.05970 1	0.04477 6119	0.04686
Juwita	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
Prima Agrihorti	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
Rabani Agrihorti	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
CF 3251	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
FRT 598	0.04477 6119	0.01047 1204	0.04545 4545	0.04477 6119	0.04477 6119	0.04477 6119	0.04477 6119	0.04255 3	0.04255 3	0.04477 6119	0.04477 6119	0.04477 6119	0.01492 5	0.04477 6119	0.03992
Maruti	0.04477 6119	0.01570 6806	0.04545 4545	0.04477 6119	0.04477 6119	0.04477 6119	0.04477 6119	0.04255 3	0.04255 3	0.04477 6119	0.04477 6119	0.04477 6119	0.05970 1	0.04477 6119	0.0435
Red Thunder	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
Robin	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
AFN CR01	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
CF 3254	0.02985 0746	0.03141 3613	0.02272 7273	0.02985 0746	0.02985 0746	0.02985 0746	0.02985 0746	0.02127 7	0.02127 7	0.02985 0746	0.02985 0746	0.02985 0746	0.02985 0746	0.02985 0746	0.02823
Batari	0.08955 2239	0.09424 0838	0.09090 9091	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2239	0.08510 6	0.08510 6	0.08955 2239	0.08955 2239	0.08955 2239	0.08955 2	0.08955 2239	0.08935
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

w

Table 13 Fruit Size

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	rata-rata
Dewata	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7261	0.04156 7
Bhaskara	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4309	0.03151 4
Kathur	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 4536	0.03343 5
Juwita	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1236	0.05032 1
Prima Agrihorti	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 1532	0.10763 2
Rabani Agrihorti	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 6914	0.06353 7
CF 3251	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5441	0.04608 5
FRT 598	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 1808	0.03524 2
Maruti	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 2654	0.25663 3
Red Thunder	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2461	0.11052 2
Robin	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 8873	0.06518 9
AFN CR01	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7473	0.09318 7
CF 3254	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2239	0.03690 2
Batari	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3263	0.02823 3
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

w

Table 14 Weight per fruit

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	rata-rata
Dewata	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508	0.08127 4508
Bhaskara	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864	0.06966 3864
Kathur	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325	0.06649 7325
Juwita	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361	0.08605 5361
Prima Agrihorti	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646	0.05851 7646
Rabani Agrihorti	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796	0.10449 5796
CF 3251	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137
FRT 598	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705	0.04876 4705
Maruti	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254
Red Thunder	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318	0.04179 8318
Robin	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137	0.06360 6137
AFN CR01	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254	0.04063 7254
CF 3254	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762	0.12191 1762
Batari	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934	0.11253 3934
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

w

Table 15 Surface of Fruit Skin

ALTERNATIF	Dewata	Bhaskara	Kathur	Juwita	Prima Agrihorti	Rabani Agrihorti	CF 3251	FRT 598	Maruti	Red Thunder	Robin	AFN CR01	CF 3254	Batari	rata-rata
Dewata	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Bhaskara	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Kathur	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Juwita	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Prima Agrihorti	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Rabani Agrihorti	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
CF 3251	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
FRT 598	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Maruti	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Red Thunder	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Robin	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
AFN CR01	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
CF 3254	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Batari	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

calculating eigen vector for each criterion.
Calculation results can be seen in table 16 below.

Preferred Ranking Result

The last stage of the AHP method is determining the ranking of alternatives by

Table 16 Alternative Ranking Results

	J	H	R	D	U	W	Bb	Ub	Ep	P			
Dewata	0.069 36386	0.075 4996 3	0.073 226	0.087 3555 5	0.052 2928 4	0.091 9506 8	0.091 9506 8	0.089 3489 3	0.081 2745 0	0.125		0.17640 952	0.078 1542
Bhaskara	0.065 49161	0.072 8052 1	0.073 226	0.087 3555 3	0.064 3604 1	0.091 9506 8	0.091 9506 8	0.037 3422 2	0.069 6638 6	0.062		0.13711 3555	0.059 0078
Kathur	0.068 20134 2	0.067 4103 87	0.073 226	0.074 8761 88	0.048 2703 14	0.059 9678 36	0.059 9678 36	0.046 8624 8	0.066 4973 25	0.062		0.14730 2632	0.045 6639
Juwita	0.063 27304	0.078 7353 32	0.073 226	0.065 5166 65	0.052 2928 4	0.091 9506 82	0.091 9506 82	0.089 3489 34	0.086 0553 61	0.125		0.10370 3895	0.039 8127
Prima Agrihorti	0.040 15404 5	0.080 8924 64	0.045 579	0.047 6484 83	0.106 1946 9	0.078 0016 17	0.078 0016 17	0.089 3489 34	0.058 5176 46	0.062		0.12418 0783	0.028 7916
Rabani Agrihorti	0.041 18988 5	0.055 9283 09	0.073 226	0.052 4133 32	0.116 6532 58	0.091 9506 82	0.091 9506 82	0.089 3489 34	0.104 4957 96	0.062		0.12228 3308	0.018 7511
CF 3251	0.060 58958 5	0.097 0709 57	0.073 226	0.065 5166 65	0.057 1198 71	0.062 8936 47	0.062 8936 47	0.089 3489 34	0.063 8061 37	0.062	X	0.03418 4729	0.076 7569
FRT 598	0.117 43381	0.036 8403	0.073 226	0.104 8266	0.072 4054	0.061 3004	0.061 3004	0.039 9244	0.048 7647	0.062		0.04932 9233	0.059 9899
Maruti	0.106 03177 4	0.070 1068 02	0.073 226	0.058 2370 35	0.068 3829 44	0.061 3004 55	0.061 3004 55	0.043 4967 36	0.040 6372 54	0.062		0.06300 5165	0.053 1559
Red Thunder	0.068 20134	0.053 9283	0.073 226	0.058 2370	0.112 6507	0.059 9678	0.059 9678	0.089 3489	0.041 7983	0.062		0.04248 718	0.062 8655
Robin	0.082 25495 2	0.080 8924 64	0.075 708	0.087 3555 33	0.074 8189 86	0.059 8755 67	0.059 8755 67	0.089 3489 34	0.063 8061 37	0.062			0.059 8755
AFN CR01	0.091 39439 1	0.064 7139 71	0.073 226	0.040 3179 47	0.069 1874 5	0.065 4770 76	0.065 4770 76	0.089 3489	0.040 6372	0.062			0.069 1874
CF 3254	0.090 17984	0.097 0709	0.073 226	0.065 5166	0.052 2928	0.062 5008	0.062 5008	0.028 2286	0.121 9117	0.062			0.065 5166
Batari	0.036 2405	0.070 1068 02	0.073 226	0.104 8266 63	0.053 0973 45	0.061 1119 37	0.061 1119 37	0.089 3489 34	0.112 5339 34	0.062			0.073 2260

From the results above, the Dewata variety has the highest value, which is 0.07675691, so it can be chosen as the main variety chosen.

3.2 Application Design

The purpose of this prototype design is to initial description of the application, how the application and the application interface. This is so that the application looks more attractive and easy to understand user (farmer) when operating.

3.2.1 Structure navigation

Design the menu structure of this application using a hierarchical navigation structure that can be seen in Figure 3.

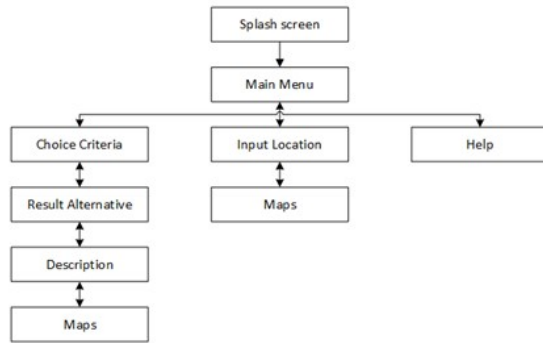


Figure 3: Structure Navigation

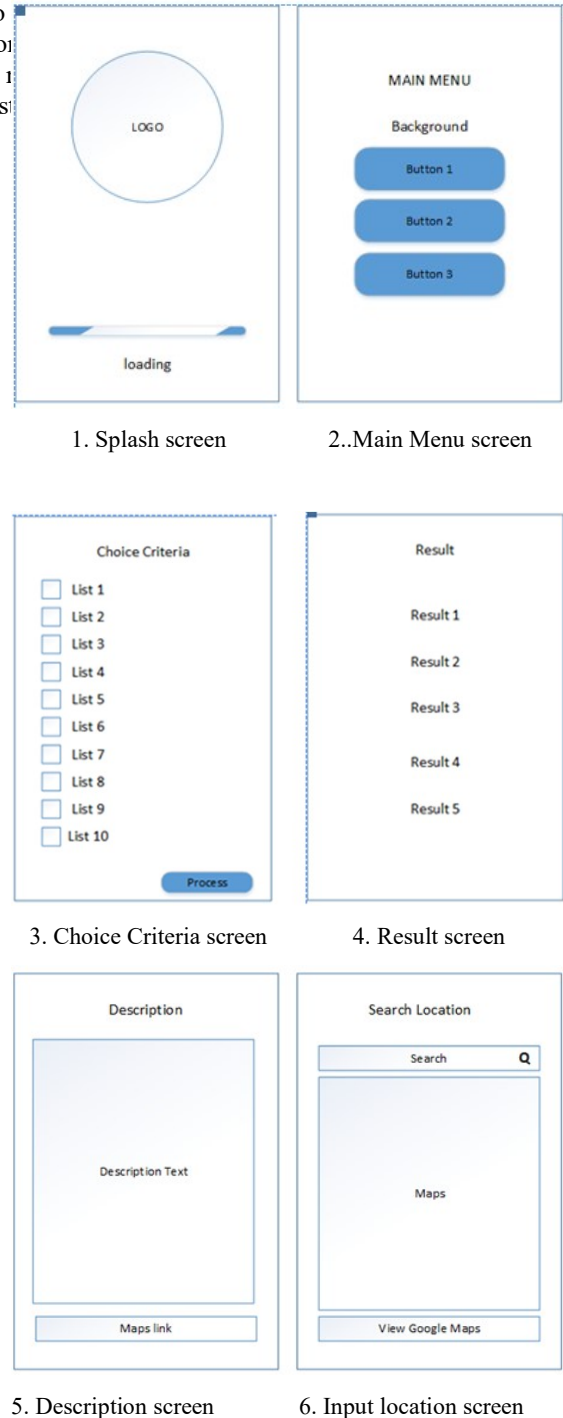
When the user starts the application, it starts with the splash screen that goes to the main menu page. In the main menu there are 3 menus, namely the Chili Seed Selection menu which will display the criteria selection, the Location Search menu to see the distribution of superior seeds in the form of a location map and the Help menu to guide the use of the application.

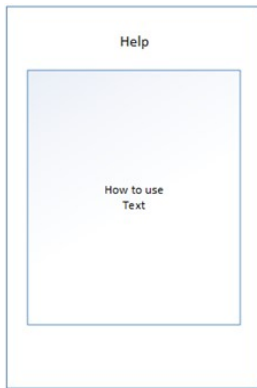
3.2.2 User Interface

This stage displays several user interfaces on the application, there are 7 views of the entire menu that the application has. In the first picture is the splash screen that starts when the application is opened and then the main page is followed. On the main page there are 3 buttons the first button selection menu is the Chili Seed Selection button, the second button is the Location Variety button and the third button is the Help button. In the third picture shows the Choice Criteria display where there are 10 list criteria choices, the Process button will continue to the Result page in the fourth image which shows the ranking of the superior chili seed varieties according to the selected criteria. When the results of the ranking of superior seed varieties are displayed, they will be able to see the detailed information of the alternatives shown in the fifth

picture. The sixth image is a design for a location search page to display the spread of superior seeds. And the Help page design view is shown in the last image

The design can be seen in figure 4 below:





7. Help screen

Figure 4: Interface Design

Splash screen describe the front page which is the start page when the application is opened. This page is a splash screen that contains a text box that displays the title of this page.

In Main menu screen there is 1 (one) text box containing the title of the page and 3 (two) button selections, namely the Chili Seed Selection button, the Location button and the Help button. If the user chooses the first button, the application will direct the user to the choice criteria page; if you choose the second button it will be directed to the Location screen, and if you choose the third button it will be directed to the Help screen.

The Choice Criteria screen is a page that appears after the user selects the menu on the Main Menu screen. Here the user can choose one or more criteria for cayenne chili they want by clicking on the existing criteria. After they have selected and pressed the process button the application will direct the user to the Results screen.

The Results page is a page that appears after the user presses the process button on the desired Chili Criteria screen. This screen will display all types of chilis that match the criteria that have been selected by the user.. If the user clicks on one of these buttons then the application will move to the Chili Description screen.

Input Location screen is designed for location search, to display the spread of superior seeds and location of chili seed producers.

The Help screen is the page that appears when the user selects this menu on the Main Menu screen. On this page there is information about using the application.

3.2.3 Use Case Diagram

In the use case diagram design there are actors presented as users. Use case is used as an overview of functions in a system, and a connecting line between the actor and use case.

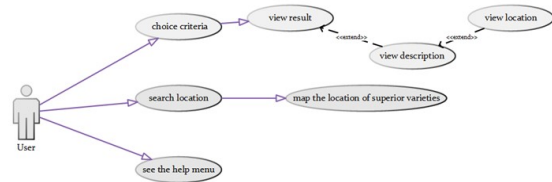


Figure 5: Use Case Diagram

3.2.4 Class Diagram

Class diagrams describe the structure of objects that make up the system and the relationships between classes of objects. There are 4 classes, namely tbl_kriteria, tbl_impoin, tbl_alternative and tbl_location.

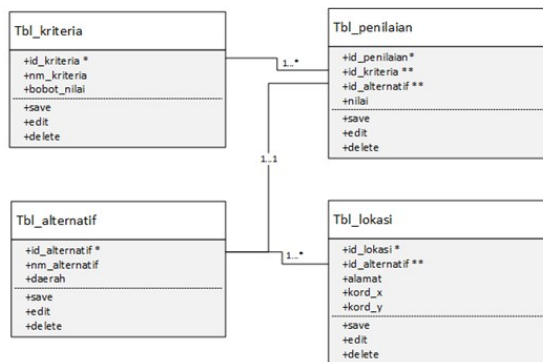


Figure 6 : Class Diagram

4. CONCLUSION

From the results of data processing using the AHP method, the chili varieties of Dewata obtained the highest value for all criteria. From the results of this processing, the interface design is made to make it easier for users to choose chili seeds according to the desired criteria. The prototype design consists of 6 (six) display pages, namely the splash screen page, main menu, choice criteria, results, chili descriptions, location and help screen.

The Future work is to add a location map of each cayenne pepper seed.

This research can still be developed, namely by entering the land height's factor in the calculation of AHP.

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- [13] Decree of the Minister of Agriculture Number: 018/Kpts/SR.120/D.2.7/3/2018 concerning the release of AFN CR01 hybrid chili as a superior variety
- [14] Decree of the Minister of Agriculture Number: 048/Kpts/SR.120/D.2.7/5/2017 concerning the release of Batari hybrid chili as a superior variety
- [15] Decree of the Minister of Agriculture Number: 96/Kpts/SR.120/D.2.7/7/2015 concerning the release of CF 3251 hybrid chili as a superior variety
- [16] Decree of the Minister of Agriculture Number: 004/Kpts/SR.120/D.2.7/1/2018 concerning the release of CF 3254 hybrid chili as a superior variety
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