

c. Optimization of Attributes

The results of attribute optimization for solving the problem of selecting digital investment instruments using the Multi-Objective Optimization by Ratio Analysis (MOORA) method in this study, namely:

C1
 $A_{11} = 0,45091 * 0,23 = 0,10371$
 $A_{21} = 0,51532 * 0,23 = 0,11852$
 $A_{31} = 0,51532 * 0,23 = 0,11852$
 $A_{41} = 0,51532 * 0,23 = 0,11852$

C2
 $A_{11} = 0,39653 * 0,22 = 0,08723$
 $A_{21} = 0,47583 * 0,22 = 0,10468$
 $A_{31} = 0,55513 * 0,22 = 0,12213$
 $A_{41} = 0,55513 * 0,22 = 0,12213$

C3
 $A_{11} = 0,41478 * 0,20 = 0,08296$
 $A_{21} = 0,41478 * 0,20 = 0,08296$
 $A_{31} = 0,51848 * 0,20 = 0,10370$
 $A_{41} = 0,62217 * 0,20 = 0,12443$

C4
 $A_{11} = 0,56443 * 0,18 = 0,10160$
 $A_{21} = 0,56443 * 0,18 = 0,10160$
 $A_{31} = 0,47036 * 0,18 = 0,08466$
 $A_{41} = 0,37629 * 0,18 = 0,06773$

C5
 $A_{11} = 0,39057 * 0,17 = 0,06640$
 $A_{21} = 0,52076 * 0,17 = 0,08853$
 $A_{31} = 0,39057 * 0,17 = 0,06640$
 $A_{41} = 0,65094 * 0,17 = 0,11066$

$$X_{wj} = \begin{bmatrix} 0,10371 & 0,08723 & 0,08296 & 0,10160 & 0,06640 \\ 0,11852 & 0,10468 & 0,08296 & 0,10160 & 0,08853 \\ 0,11852 & 0,12213 & 0,10370 & 0,08466 & 0,06640 \\ 0,11852 & 0,12213 & 0,12443 & 0,06773 & 0,11066 \end{bmatrix}$$

Based on the value of the X_{wj} matrix, the calculation of the Y_i value can be seen in the description below:

Preference Value Y_i A1 = $(-0,10371) + 0,08723 + 0,08296 - 0,10160 + 0,06640 = 0,03128$
 Preference Value Y_i A2 = $(-0,11852) + 0,10468 + 0,08296 - 0,10160 + 0,08853 = 0,05605$
 Preference Value Y_i A3 = $(-0,11852) + 0,12213 + 0,10370 - 0,08466 + 0,06640 = 0,08905$
 Preference Value Y_i A4 = $(-0,11852) + 0,12213 + 0,12443 - 0,06773 + 0,11066 = 0,17097$

d. Ranking of Alternatives

The results of ranking alternatives based on the Preference value Y_i obtained from the previous calculation process, namely:

Table 4. Ranking of Alternatives

Code	Alternative	Preference Value Y_i	Ranking
A1	Gold	0,03128	4
A2	Mutual Fund	0,05605	3
A3	Foreign Exchange	0,08905	2
A4	Trading	0,17097	1

4 Conclusion

- a. The application of the Multi-Objective Optimization by Ratio Analysis (MOORA) method can determine the best choice of digital investment instruments in the alternative ranking results in Table 4 based on the highest Y_i preference value compared to other alternatives, namely A4 (Trading) with a value of 0.17097.

- b. The Multi-Objective Optimization by Ratio Analysis (MOORA) method can help decision making in the selection of digital investment instruments objectively and transparently.

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