





e. Preparation of Research Report

In the final stage, the researcher makes a research report to present conclusions from the results of research that has been carried out in solving the problem of selecting a cryptocurrency exchange using the Preference Selection Index (PSI) method.

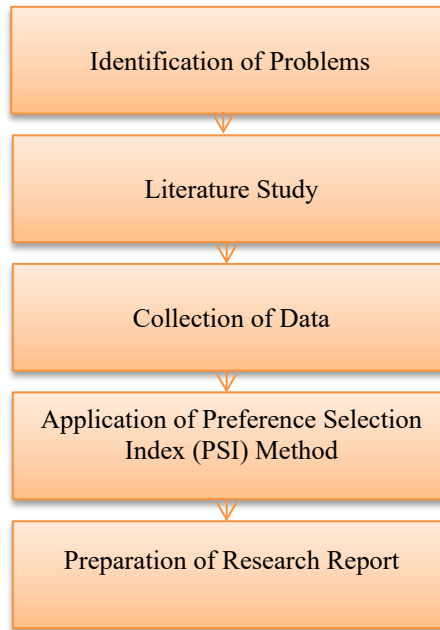


Figure 1. Research Stages

### 3 Result and Discussion

#### 3.1 Research Data Results

Based on the results of data collection conducted to solve problems in the selection of cryptocurrency exchanges, it can be seen that the research data sample is as follows:

a. Data on Criteria and Subcriteria for Cryptocurrency Exchange Selection

Table 1. Cryptocurrency Exchange Selection Criteria

Code	Criteria
C01	Security
C02	Liquidity
C03	Reputation
C04	Customer Service

Table 2. Cryptocurrency Exchange Selection Subcriteria

Code	Criteria	Subcriteria	Weight
C01	Security	Good	7
		Enough	6
		Bad	5
C02	Liquidity	Good	7
		Enough	6
		Bad	5
C03	Reputation	Good	7
		Enough	6
		Bad	5
C04	Customer Service	Good	7
		Enough	6
		Bad	5

b. Sample Cryptocurrency Exchange Selection Data

**Table 3.** Sample Cryptocurrency Exchange Selection Data

No	Alternative	Criteria			
		C01	C02	C03	C04
1	Indodax	Good	Enough	Bad	Good
2	Luno	Enough	Good	Enough	Bad
3	Pintu	Bad	Enough	Good	Enough
4	Rekeningku	Good	Bad	Enough	Good
5	Triv	Enough	Good	Bad	Enough

**Table 4.** Weighted Alternative Values on Cryptocurrency Exchange Selection

No	Alternative	Criteria			
		C01	C02	C03	C04
1	Indodax	7	6	5	7
2	Luno	6	7	6	5
3	Pintu	5	6	7	6
4	Rekeningku	7	5	6	7
5	Triv	6	7	5	6
	MAX	7	7	7	7
	MIN	5	5	5	5

**3.2 Preference Selection Index (PSI) Method**

The results of calculating the value of all alternatives using the Preference Selection Index (PSI) method in solving the problem of selecting a cryptocurrency exchange can be seen in the explanation below.

a. Determining the Decision Matrix

$$X_{ij} = \begin{bmatrix} 7 & 6 & 5 & 7 \\ 6 & 7 & 6 & 5 \\ 5 & 6 & 7 & 6 \\ 7 & 5 & 6 & 7 \\ 6 & 7 & 5 & 6 \end{bmatrix}$$

b. Normalisation of the Decision Matrix

Normalisation of criteria C01

$$R_{11} = \frac{x_{11}}{x_{j,max}} = \frac{7}{7} = 1$$

$$R_{21} = \frac{x_{21}}{x_{j,max}} = \frac{6}{7} = 0,857142857$$

$$R_{31} = \frac{x_{31}}{x_{j,max}} = \frac{5}{7} = 0,714285714$$

$$R_{41} = \frac{x_{41}}{x_{j,max}} = \frac{7}{7} = 1$$

$$R_{51} = \frac{x_{51}}{x_{j,max}} = \frac{6}{7} = 0,857142857$$

To obtain the normalisation value of criteria C02 to criteria C04, the same calculation process is carried out with the calculation of the normalisation value of criterion C01 so that the normalisation results of the overall decision matrix are obtained as shown in the table below.

**Table 5.** Decision Matrix Normalization

No	Alternative	Criteria			
		C01	C02	C03	C04
1	Indodax	1	0,857142857	0,714285714	1
2	Luno	0,857142857	1	0,857142857	0,714285714
3	Pintu	0,714285714	0,857142857	1	0,857142857
4	Rekeningku	1	0,714285714	0,857142857	1

5	Triv	0,857142857	1	0,714285714	0,857142857
Total Nilai		4,428571428	4,428571428	4,142857142	4,428571428

c. Determining the Normalized Average Value of the Matrix

$$N_1 = \frac{1}{5} * 4,428571428 = 0,885714286$$

$$N_2 = \frac{1}{5} * 4,428571428 = 0,885714286$$

$$N_3 = \frac{1}{5} * 4,142857142 = 0,828571428$$

$$N_4 = \frac{1}{5} * 4,428571428 = 0,885714286$$

d. Determining the Preference Variation Value

$$\phi_{j1}$$

$$\phi_{j11} = \sum_i^n (1 - 0,885714286)^2 = 0,013061224$$

$$\phi_{j21} = \sum_i^n (0,857142857 - 0,885714286)^2 = 0,000816327$$

$$\phi_{j31} = \sum_i^n (0,714285714 - 0,885714286)^2 = 0,029387755$$

$$\phi_{j41} = \sum_i^n (1 - 0,885714286)^2 = 0,013061224$$

$$\phi_{j51} = \sum_i^n (0,857142857 - 0,885714286)^2 = 0,000816327$$

$$\phi_{j1} = 0,013061224 + 0,000816327 + 0,029387755 + 0,013061224 + 0,000816327 = 0,057142857$$

Next, the calculation is done to get the value of  $\phi_{j2}$  up to  $\phi_{j4}$  using the formula that has been used to calculate the value of  $\phi_{j1}$ . After finishing calculating the value of  $\phi_{j1}$  up to  $\phi_{j4}$ , the final value of  $\phi_j$  is obtained below:

$$\phi_j = [0,057142857 \quad 0,057142857 \quad 0,057142857 \quad 0,028571429]$$

e. Determining the Deviation of Preference Value

$$\Omega_1 = 1 - 0,057142857 = 0,942857143$$

$$\Omega_2 = 1 - 0,057142857 = 0,942857143$$

$$\Omega_3 = 1 - 0,057142857 = 0,942857143$$

$$\Omega_4 = 1 - 0,028571429 = 0,971428571$$

$$\Omega_j = 0,942857143 + 0,942857143 + 0,942857143 + 0,971428571 = 3,8$$

f. Determining Criteria Weights

$$W_1 = \frac{0,942857143}{3,8} = 0,248120301$$

$$W_2 = \frac{0,942857143}{3,8} = 0,248120301$$

$$W_3 = \frac{0,942857143}{3,8} = 0,248120301$$

$$W_4 = \frac{0,971428571}{3,8} = 0,255639098$$

g. Determining the Preference Selection Index

$$\theta_{i1}$$

$$\theta_{11} = 1 * 0,248120301 = 0,248120301$$

$$\theta_{21} = 0,857142857 * 0,248120301 = 0,212674544$$

$$\theta_{31} = 0,714285714 * 0,248120301 = 0,177228786$$

$$\theta_{41} = 1 * 0,248120301 = 0,248120301$$

$$\theta_{51} = 0,857142857 * 0,248120301 = 0,212674544$$

Next, the calculation is done to get the value of  $\phi_{i2}$  up to  $\phi_{i5}$ , using the formula that has been used to calculate the value of  $\phi_{i1}$ . After finishing calculating the value of  $\phi_{i1}$  up to  $\phi_{i5}$ , the final value of  $\phi_i$  is obtained below:

**Table 6.** Preference Selection Index (PSI)

No	Alternative	Criteria				Total PSI
		C01	C02	C03	C04	
1	Indodax	0,248120301	0,212674544	0,177228786	0,255639098	0,893662729
2	Luno	0,212674544	0,248120301	0,212674544	0,182599356	0,856068745
3	Pintu	0,177228786	0,212674544	0,248120301	0,219119227	0,857142858
4	Rekeningku	0,248120301	0,177228786	0,212674544	0,255639098	0,893662729
5	Triv	0,212674544	0,248120301	0,177228786	0,219119227	0,857142858

Based on the Preference Selection Index (PSI) table above, the following alternative rankings can be generated:

**Table 7.** Alternative Ranking

Alternative	Value	Ranking
Indodax	0,893662729	1
Rekeningku	0,893662729	2
Pintu	0,857142858	3
Triv	0,857142858	4
Luno	0,856068745	5

Based on the results of calculations that have been carried out using the Preference Selection Index (PSI) method, of the 5 alternatives taken into account, the priority choice to be used as a cryptocurrency exchange is Indodax with a value of 0.893662729..

#### 4 Conclusion

- a. The Preference Selection Index (PSI) method can be used to support decision making in determining the selection of cryptocurrency exchanges.
- b. The alternative with the highest value of the 5 alternatives considered in the selection of cryptocurrency exchanges in this study is Indodax with a value of 0.893662729.

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