



## Application Of Analytical Hierarchy Process In Choosing The Best Pawnshop

Teduh Primandaru

Fakultas Ekonomi,  
Universitas Nasional Pasim, Jl. Dakota No.8A, Sukaraja, Kec. Cicendo, Kota Bandung, Jawa Barat  
40175

Email: [tprimandaru@pasim.ac.id](mailto:tprimandaru@pasim.ac.id)

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### ABSTRACT

Crowded pawn shops or places have sprung up in the present. The more pawn shops appear, the fiercer the competition. In order to face competition in today's highly competitive business climate, an appropriate analysis is needed to implement reliable business strategies and policies. The Analytical Hierarchy Process is one of the most reliable methods for making the right decision in determining the best choice of mortgage.

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## 1. Introduction

In the past there was only one place of pawning, namely a pawnshop that was owned by the government, aka a State-Owned Enterprise (BUMN). Now many pawn places have appeared. This fact certainly creates intense competition. Intense competition is a necessity that can not be avoided by pawn service business operators. Therefore the right attitude is to deal with it by applying the right strategy. On the other hand, taking strategic decisions at the same time is not an easy matter. Required methods or methods that are reliable so that these decisions can be implemented and ultimately provide benefits for the progress of the company. A pawnshop service company is unique that is not found in other types of financial sector businesses. Therefore applying the right decision-making method is a must. Analytical Hierarchy Process was chosen as a method in helping to make the right decision.

## 2. Theory

### 2.1. Gadai Business Services

A pawn service business, or better known as a pawnshop, is a financial-based service business, with its main activity providing loans based on lien laws (Usman, 2003). With this concept, consumers of pawning service businesses are those who need money loans. People who need a sum of money for any purpose, can become pawn service business customers. Pawn service business has become a public servant to meet the need for money easily, quickly, safely, and economically (Usman, 2003). A business, especially one based on services as its service is obliged to provide services to the community (Erisman and Gautsch, 2015)

### 2.2. Development Of Gadai Businesses

Pegadaian is a service business. At first the pawnshop business was just a government monopoly which was started by the Dutch colonial government. In 1746, the VOC established a bank called Bank Van Leening which aimed to extend credit by pawning. The government holds control and monopoly with the aim of preventing the public from loan sharks, thus providing broad benefits. In order to maintain its dominance and monopoly, the Dutch East Indies government issued a government regulation called Staatsblad (Stbl) No. 131 dated March 12, 1901. On April 1, 1901, the country's first pawnshop was established in Sukabumi, West Java. In terms of the structure and form of legal entities, the country's pawnshop continues to change according to the economic situation and dynamics of the non-bank service industry. company service (penjan). Since January 1, 1961 in the form of a State Enterprise (PN), then changed to a Bureau Company (PERJAN) since 1969, which then changed to a Public Company (PERUM) in 2000, and finally since December 13, 2011 changed to the Company Limited (PT). In the current development, private pawnshops, both whose capital comes from individuals, joints, and cooperatives, have sprung up. Their existence is overseen by the Financial Services Authority (OJK). The first private pawnshop to get an operational permit was PT. HBD Gadai Nusantara, which has been domiciled in DKI Jakarta since 2016. Until May 2019, the number of private pawnshops that received operational licenses amounted to 26 companies. Then as many as



72 companies in the registered status. However, outside those who have obtained operational licenses and registered there are more than 500 companies that have served the community without any status. So to see the priority choices of the community, in this case the pawnshop consumer, this research was conducted using the analytical hierarchy process (AHP) approach.

**2.3. Analytical Hierarchy Process**

Analytical hierarchy process, commonly abbreviated as AHP, is a scientific method that helps make appropriate decisions based on several criteria. The AHP was first introduced by Thomas L. Saaty in the late 1970s. The basic essence of the AHP method is determining priorities due to the complexity of the issues and choices. The beginning of the AHP is to compile a hierarchical structure. The highest level is the main goal, and the lowest part is the final action or alternative plan that is considered to have a positive or negative effect on the main goal (Saaty, 2012). The main level is called focus and only contains 1 element. The next level, which is below the main level, varies, consisting of 5 to 9 elements. In the same structural level, the criteria for each element must be of equal weight. For example, two jobs with the same level of difficulty cannot be compared equally. The work of factory workers, is not equivalent to the work of doctors, in the complexity of its difficulties.

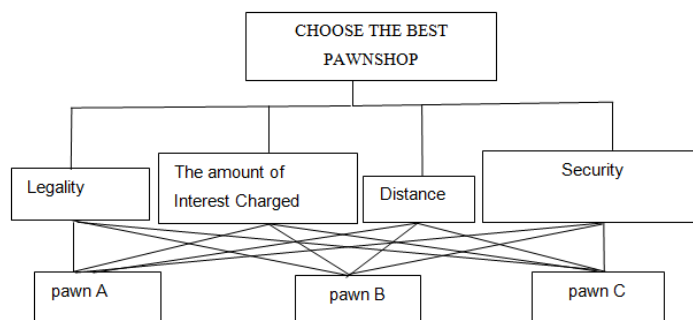
**3. Research Methods**

Given the increasingly fierce competition in the pawn business, so in order to get the right pawn, the authors use the Analytical Hierarchy Process (AHP) approach. AHP is done by arranging an election hierarchy, which is implemented into several levels (Saaty, 1987). The level at the top layer is the goal, then consider some selection criteria (Mocenni), as the second level. In this second level, it is developed into an alternative level. The research data was carried out by distributing questionnaires to obtain criteria for selecting pawn places. The criteria for pawn places were divided into several alternative considerations. Thus the goal, which is to choose the best mortgage, will be achieved. The questionnaire was distributed to visitors and customers of the pawnshop. The pawnshop chosen is based on a number of circumstances, namely:

- a. Government-owned pawnshop, BUMN PT. Pawnshop (Pawn A)
- b. A private pawn place that has received an official permit from the Financial Services Authority (OJK) (Pawn B)
- c. Private pawn places that are waiting for operational permits and that have not been licensed by the FSA. (Pawn C)

Customers and visitors are also very concerned about the distance between the pawnshop and their place of residence, because this will affect their smooth access to the pawnshop. The amount of the pawn flower also determines the selection of the mortgage. Besides that, the comfort and security of the pawnshop is a consideration because in general the mortgaged goods are valuable objects.

The hierarchy of pawnshop selection can be illustrated in the following chart:



**Fig. 1.** Pawn Place Selection Level

In Figure 1 above, the top level is level 1 which is the goal, which is to choose the best mortgage. The next level, one level below is a criterion consisting of four things, namely:

- a. The legality of the pawnshop, whether it has been legally registered with the Financial Services Authority (OJK) or not. A pawnshop that has received legality, is preferred over a newly registered or moreover one that does not have any legality.



- b. The amount of interest charged on each pawning product. The greater the interest, the more it is avoided to visit.
- c. Location determines distance. Customers and visitors of the pawnshop pay close attention to where the location is. The farther the distance from the location of their residence, the more they are not chosen to visit.
- d. Safety and comfort related to the product to be mortgaged. The majority of pawning products that have high estimated values are gold jewelry and other valuables such as electronics or motor vehicles.

After determining the criteria, the next level is an alternative. From a set of criteria a pawnshop will be obtained as expected so that it can make the right decision.

Information on the three levels above is compiled into pairwise comparisons. Pairwise comparison is a fundamental element in AHP (Saaty, 2012). Pairwise comparisons are modeled in the form of a matrix n. Many of the elements being compared are as many as  $n(n-1) / 2$  and are reciprocal. The elements in the main diagonal are of equal value, namely 1. Then the three alternatives are compared to the requested criteria and finally to the conclusion which is the final priority of the election.

The importance or not of the criteria is assessed by the numbers whose references are as follows (Saaty, 2012):

**Table 1.**  
Level of Importance Criteria

Level of Importance	Definition
1	Worth the same
3	A little important
5	Urgent
7	Very important
2,4,6	Middle Value between the two options above

After the criteria values for each choice are determined, the normalization step is carried out to get the priority scale or weight of each choice. This weight is also called local priority (Saaty, 2012), because it is obtained from the initial criteria value of each choice. Referred to as the local priority value is to distinguish it from the global priority value which is the criterion value of all the choices made.

In order to test the consistency of the values over the choice of criteria, the allowable tolerance ratio must be less than 10% ( $CR \leq 0.1$ ).

#### 4. Results And Discussion

The first step is to make a table which is a matrix of the second level, namely the criteria with the following assessment:

**Table 2.**  
Criteria Comparison Matrix

CRITERIA	Legality	Amount of Pawn Interest (BBG)	Distance	Security
Legality	1	1/3	5	4
Amount of Pawn Interest (BBG)	3	1	7	5
Jarak	1/5	1/7	1	1/3
Security	1/4	1/5	3	1

Based on the matrix table above, it can be stated that in cell (2.1), that is the ratio (BBG, Legality) is 3, that BBG is considered more important than legality. This means that if the legality of the pawnshop is still in the process of filing at the OJK, but gives a lower mortgage interest, then consumers will prefer companies with a smaller BBG. However, the difference in preference is not too far away. Then according to the reciprocal principle, cell (2,1) has the opposite value of 1/3.

Next is normalizing which is an eigenvector matrix. After processing the eigenvector matrix is presented in the following table:

**Table 3.**  
Normalized Eigenvector Matrix

CRITERIA	Legality	Amount of Pawn Interest (BBG)	Distance	Security
Legality	0,2247	0,1988	0,312	0,3870
Amount of Pawn Interest	0,6741	0,5965	0,437	0,4838



CRITERIA (BBG))	Legality	Amount of Pawn Interest (BBG)	Distance	Security
Distance	0,0449	0,0852	0,062	0,0322
Security	0,0561	0,1193	0,187	0,0967

Table 3 above is used to then get the priority scale. The data processing is displayed in the following table:

**Table 4.**

Priority Scale

KRITERIA	Legality	Amount of Pawn Interest (BBG)	Distance	Security	Priority Scale
Legality	0,2247	0,1988	0,312	0,3870	0,2807
Amount of Pawn Interest (BBG)	0,6741	0,5965	0,437	0,4838	0,5480
Distance	0,0449	0,0852	0,062	0,0322	0,0562
Security	0,0561	0,1193	0,187	0,0967	0,1149

**Table 5.**

Global Priority Values Initial Criteria

Priority Scale	Criterion X Priority	Global Priority
0,2682	1,322	4,289
0,5466	2,517	4,304
0,0546	0,226	4,072
0,1306	0,548	4,032

Global scale data is important for testing the consistency ratio (CR), which is derived from the provisions of:

$$CR = \frac{CI}{RI}$$

CI is the consistency index, and RI is the random consistency index. The CI value obtained was 0.0581, while the RI value was 0.99. Therefore

$$CR = \frac{0,0581}{0,99} = 0,0587$$

Consistency is achieved if  $CR < 0.1$ . Thus the above criteria data is stated to have been consistent.

The next analysis is for the purpose of comparing pawn A, pawn B, and pawn C related to the criteria. In the initial stage, the criteria analyzed are legality. The legality matrix for the mortgage is shown in the following table:

**Table 6.**

Analysis of Legality Criteria

Legality	Pawn A	Pawn B	Pawn C
Pawn A	1	3	5
Pawn B	1/3	1	2
Pawn C	1/5	1/2	1

Then normalization of the legality criteria is done by forming the eigenvector matrix as follows:

**Table 7.**

Normalization of Legality Criteria

Legality	Pawn A	Pawn B	Pawn C
Pawn A	0,6522	0,6667	0,625
Pawn B	0,2174	0,2222	0,25
Pawn C	0,1304	0,1111	0,125

From the normalization matrix the priority scale is obtained as follows:

**Table 8.**

Priority Scale

Legalitas	Pawn A	Pawn B	Pawn C	Priority Scale
Pawn A	0,6522	0,6667	0,6250	0,6479



Legalitas	Pawn A	Pawn B	Pawn C	Priority Scale
Pawn B	0,2174	0,2222	0,2500	0,2299
Pawn C	0,1304	0,1111	0,1250	0,1222

From the priority scale table, we get the global priority values:

**Table 9.**

Global Priority Value of Legality

Priority Scale	Criterion X Priority	Global Priority
0,6479	1,9484	3,0071
0,2299	0,6902	3,0026
0,1222	0,3667	3,0013

Then from the data we do a consistency test, which after processing results are obtained:

$$CR = 0.0019 / 0.66 = 0.0028$$

Then it can be said that the value of legality taken is consistent.

Next is the choice analysis of the amount of interest. The process is the same as analysis on legality. First is given an assessment on each mortgage on the amount of interest given, as follows:

**Table 10.**

Analysis of the Amount of Interest Criteria

Magnitude of Interest	Pawn A	Pawn B	Pawn C
Pawn A	1	2	5
Pawn B	1/2	1	3
Pawn C	1/5	1/3	1

After normalization, the global priorities and priority scales are as follows:

**Table 11.**

Scale of Priorities and Global Priorities Amount of Interest

Priority Scale	Criterion X Priority	Global Priority
0,5813	1,7475	3,0064
0,3092	0,9285	3,0035
0,1096	0,3289	3,0012

Consistency ratio, CR obtained is: 0.0028, and is declared consistent because it is less than 10% ( $CR \leq 0.1$ )

The next analysis is the distance, which is displayed in the following data:

**Table 12.**

Analysis of Distance Criteria

Distance	Pawn A	Pawn B	Pawn C
Pawn A	1	2	6
Pawn B	1/2	1	7
Pawn C	1/6	1/7	1

As before, after normalizing, the global priorities and priorities are as follows:

**Table 13.**

Priority Scale and Distance Priority

Priority Scale	Criterion X Priority	Global Priority
0,5550	1,7342	3,1248
0,3727	1,1563	3,1022
0,0723	0,2180	3,0159

The consistency ratio, the CR obtained is: 0.061, and is declared consistent because it is less than 10% ( $CR \leq 0.1$ ). The last part is an analysis of safety factors. Analysis of the criteria for safety factors is as follows:

**Table 14.**

Analysis of Security Factor Criteria

Safety Factor	Pawn A	Pawn B	Pawn C
Pawn A	1	4	7
Pawn B	1/4	1	3
Pawn C	1/7	1/3	1



After normalizing, we get the following global priorities and priorities:

**Table 15.**  
Priority Scale and Priority of Safety Factors

Priority Scale	Criterion X Priority	Global Priority
0,7014	2,1517	3,0675
0,2132	0,6446	3,0228
0,0853	0,2566	3,0074

The consistency ratio, the CR obtained is: 0.025, and is declared consistent because it is less than 10% ( $CR \leq 0.1$ ). After all the analysis of the objective level is completed, overall priority vector results are obtained. Here are the results:

**Table 16.**  
Priority Vector Recapitulation

	Legality	Magnitude of Interest	Distance	Security
Weight	0,2807	0,5480	0,0562	0,1149
Pawn A	0,6479	0,5812	0,5549	0,7014
Pawn B	0,2298	0,3091	0,3727	0,2132
Pawn C	0,1221	0,1095	0,0722	0,0853

To get priority ranking, weighting is done, the results of which are displayed in the following table:

**Table 17.**  
Priority Ranking

Pawn A	0,1819
Pawn B	0,0645
Pawn C	0,0343

## 5. Conclusion

Based on the analysis above, it can be concluded that the pawnshop A, which is a state-owned company, owned by the government of the Republic of Indonesia (PT. Pegadaian), is still the main choice, and even the best one. This first choice is based on valid legality and is undoubtedly in accordance with its long history of founding. In addition, the factors of interest rates, distance, and security encourage customers to choose PT. Pegadaian as the first and best choice reference.

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