Optimization Neural Network of Election of Investment Sector and Mapping of The Best Investment Are in The Terrible Area

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Abstract. The problem of this is still very interested domestic and foreign investors to invest in remote areas of Indonesia (3T) Disadvantaged, Outermost, Frontline whereas 3T Region has a very promising potential from various sectors. The purpose of this paper is to see what is best and best for investments that will provide positive results for both foreign and domestic investors. The analytical process used is the neural network and sensitivity analysis used to predict and determine what is most likely to be done investment. The results of the analysis in this paper are from the sector which analysed that is the sector of Hotel and Tourism Industry, Trade and Retail Sector, The most profitable E-commerce, Infrastructure and Construction, Plant and Agriculture business in 3T area is 1. Infrastructure & Construction, with value output 0.8269 2. Factory & Agriculture with output 0.7995 3. Hotels and Industries with output 0.7688 4 Retail trade & sector with output 0.8269 5. Ecommerce and Business with output 0.0261. Furthermore from 5 Regions which are sampling 3T area that is Aceh Singkil, Nias, South Nias, Coastal west Lampung, Mentawai Islands, Potential area for investment is 1. Five with output 0.8219 2. Mentawai with output 0.8021 3. West Lombok with output 0.7719 4. Nias with output 0.7072 and 5. South Nias with output 0.0272.

1. Introduction
Investment Sector In Indonesia the reserves are very promising. Based on Head of BKPM, Thomas Trikash Lembong after the signing of Memorandum of Understanding on Data and Statistical Information on Capital Placement, said BKPM as a consultant for investors to direct investment activities in potential strategic sectors in the country. The Investment Coordinating Board (BKPM) is establishing and mapping potential investment in Indonesia with data and information from the Central Bureau of Statistics (BPS). Tourism, agriculture, manufacturing and other services provide foreign and domestic investors. "BKPM should certainly promote investment and investment-friendly sectors, but we are investors for promising industries," he said at the BKPM office in Jakarta on Monday (8/8/2016). On the other hand Internet-based business, ranging from the field of transportation to trade goods and services are growing rapidly, including the digital economy sector developed in Indonesia. The population of Indonesia, which amounts to 257 million people, is certainly a major area of the digital economy is growing. This led to President Jokowi launched Indonesia to become the largest digital power economy in ASEAN in the next few years (bkpm.go.id). Furthermore, President Joko Widodo through Nawacita's national strategy policy prioritizes the development of regions with villages and villages in integrating the Unitary State of the Republic of Indonesia. The readiness of human resources is key to village development, especially in rural villages.
in Indonesia. This is a major challenge for the success of the village development program. Including 58.4 million of 125 million workforce in Indonesia are in the village.

The role of development in disadvantaged areas, certain areas in the leading position and outermost of the Unitary State of the Republic of Indonesia on the border, and outer islands, using an approach consisting of a security approach, prosperity approach and investment approach (investment approach). It is to realize the area as a sovereign, competitive, and secure (front page) page. But the current problem is not yet optimal. The Selection of Potential Sectors of Investment and Mapping of Areas Potentially Investing in Suburbs Indonesia. Whereas Pinggiran area has a high potential value and digital economic opportunities are still very high. That's why in this article trying to analyze the most appropriate Investment Potential Sector Selection and Mapping of Potential Areas Investments in Suburbs to optimize the opportunities and innovations of Indonesia's digital economy using the Neural Network Method.

2. Problem Statement
The Problem Statement In this paper is What Investment Sector is Best and Right In Applying In Suburbs Or 3T (Behind, Outermost And Inside) In An Effort To Build Opportunities And Innovation Of The Digital Economy and Which Suburbs / 3T are very potential for investment In Building Digital Opportunities and Innovation Opportunities.

3. Research Objective
The research objectives of this study are as follows to analyze and predict Investment Sector What is the best and the right one to apply in the suburbs or 3T (backward, outermost and inner) in an effort to build opportunities and innovation of digital economy and to Analyze which suburbs / 3T are very potential for investment In Building Digital Opportunities and Innovation Opportunities.

4. Limitation Problems
The Restrictions Problem In This article is This article discusses only 5 sectors analyzed: Hotel and Tourism Industry, Retail and Sector Sector, Ecommerce Business, Infrastructure and Construction, Plant and Agriculture and This article only samples 5 suburbs (3T) (Disadvantaged, Outermost and Inward) for the analysis of Aceh singkil, Nias, Nias Selatan, west coast of Lampung, Mentawai Islands.

4.1 Predict Using Neural Networks
According [1], Back propagation or backpropagation is one of the most widely used learning / training of supervised learning. This method is one of the most excellent methods of dealing with the problem of recognizing complex patterns. In the back propagation network, each unit in the input layer is connected to each unit in the hidden layer.

4.2 Architecture ANN
The Artificial Neural Network architecture used in this case is the backpropagation algorithm network, which consists of: a. The input layer with 9 nodes is (x1, x2, x3, x4, x5, x6, x7, x8). The hidden layer with the number of vertices specified by the user is one node or one hidden with two neurons ie (y1, y2). Output layer with 1 node is prediction accuracy.

Figure 1. Backpropogation[1] Network architecture in Neural Network
The Artificial Neural Network is one of the most popular methods for conducting predictive research. Many studies using ANN algorithms include research conducted by [1] [2], where the results of these studies can be stated as follows: prediction of dengue fever has an accuracy rate of up to 90%. Next is the research conducted by [3][4], with the results of the study in predicting the energy obtained by using ANN, and the results of ANN research with modified models can make predictions more accurately. Several other studies also support this statement. So based on previous research, the prediction method can be more accurate if it can find and modify the best model [5] [6][7] [8] [9][10].

5. Methodology

5.1. Data collection methods
We took the data and information derived from Journal, Theory, and Book to support the writing of the article. We made observations by taking data from BPS Indonesia, Province, and Bank Indonesia. The data of potential value of investment sector from 5 samples of (3T) as follows:

5.2. Data Analysis Methods
We used the Data Analysis Method as A Neural Network Backpropagation. The method Neural Network or Backpropagation are the techniques of learning/training of excellent supervised learning in handling the problem of recognizing complex variable data patterns and predicting [11], and sensitivity analysis according to the journal hidayat[12], where sensitivity analysis aims to see changes in the output of the model obtained when a model input change is made. In addition, this analysis is useful to know which variables are more influential or sensitive to achieve the accurate output of the developed model. With sector variables as follows: X1 are the Tourism Industry Potential, X2 are the Trade and Retail Sector, X3 are the Business Ecommerce, X4 are the Infrastructure and Construction, X5 are the Factory and Agriculture. Z are the Best sector prediction, here in after the variable used for Selection of potential area Investment as follows: Y1 is a West Lombok, Y2 is Nias, Y3 is South Nias, Y4 is Bima, Y5 is a Mentawai Islands, and Z are regional selection the best investment potential.

![Network Architecture Backpropagation](image)

**Figure 2.** Network Architecture Backpropagation

The Artificial Neural Network architecture used in this case is the backpropagation algorithm network, which consists of the input layer with 7 nodes is (x1, x2, x3, x4, x5) and the hidden layer with the number of vertices specified by the user is one node or one hidden with two neurons ie (y1, y2). Output layer with 1 node are the prediction accuracy of the added value of a product (Z). Network architecture can be seen as in the picture below, X is Inputs, V is Weights in the hidden layer, W is Weights in the output layer, Vn is Number of processing units in hidden layer, Wb is Bias in hidden layer and output layer, Y = Output result, J = 1 until 7 and Y is 0.
6. Result And Discussion
The Data analysis performed with initial data processing were used by all variables that will though into Neural Network system and sensitivity analysis known result as follows with experiment data to find best pattern for predictive analysis with input variable 5 - 7 - 1, 5 - 5 - 1 and 5-9-1 note the following results:

![Figure 3. Result of Neural Network data analysis](image.png)

From result of analysis of best pattern data next done sensitivity analysis from result of output given by experiment 3 best pattern to conduct election of Region and sector have potential to Investment good of foreign investment and domestic investment

| Table 1. Result Prediction Neural Network Backpropogation base on potential sectors |
|---------------------------------|------------------|-----------------|-----------------|-----------------|
| Input                          | Performance      | Output          | Rangking        | Epoch           |
| Hotel and Tourism Industry     | 999,670,001      | 0.7688          | 3               | 3003            |
| Retail and Trade Sector        | 99999999.8       | 0.7085          | 4               | 2601            |
| Ecommerce and Bussines         | 999,745          | 0.0261          | 5               | 2381            |
| Constraction and Infrastructure| 99999999.8       | 0.8269          | 1               | 2601            |
| Factory and Agriculture        | 999,745          | 0.7995          | 2               | 2381            |

| Table 2. Result Prediction Neural Network Backpropogation base on potential island |
|---------------------------------|------------------|-----------------|-----------------|-----------------|
| Input                          | Performance      | Output          | Rangking        | Epoch           |
| Nias                           | 999,670,001      | 0.7688          | 3               | 3003            |
| West lombok                    | 99999999.8       | 0.7085          | 4               | 2601            |
| South Nias                     | 999,745          | 0.0261          | 5               | 2381            |
| Mentawai Island                | 99999999.8       | 0.8269          | 1               | 2601            |
| Bima                           | 999,745          | 0.7995          | 2               | 2381            |

7. Conclusion
The Best and The Right Investment Sector In Apply In The Outskirts Or 3T (Left, Outside And Inside) is 1. Infrastructure & Construction, 2. Factory & Agriculture 3. Hotel and Tourism Industry 4 Retail and trade Sector 5. Ecommerce and Bussines and Which Suburbs / 3T is very potential for investment In Effort to Build Opportunity And Innovation Economic Digitala is 1. Bima 2. Mentawai 3. Westt Lombok 4. Nias and 5.is South Nias.
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