



Implementation of Northwest Corner Transportation Method for Optimizing Item Shipping Cost

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Article Info

Article history:

Received, Apr 04, 2019

Revised, Apr 28, 2019

Accepted, May 25, 2019

Keywords:

Delivery,
Optimization,
North West Corner (NWC).

ABSTRACT

The development of the existence and need for information today is very rapid. One use of information technology is the cost of shipping goods among companies. The shipping cost system is defined as. North West Corner (NWC) is a method for compiling the initial table by allocating the cost distribution of goods starting from the cell located in the upper left corner. In this method, it applies the calculation of the cost of shipping goods. Goods Shipping Cost Information System with the NWC Method was built with the Microsoft Visual Basic 2008 programming language. The current system will produce output in the form of processing the cost of shipping goods using the NWC method. This system is expected to help companies to determine the cost of shipping goods.

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1. INTRODUCTION

Definition of shipping goods at PT. POS Indonesia is all efforts carried out or carried out individually or jointly in an organization to provide services effectively and efficiently. Cost is the cash or cash equivalent value incurred by the company to obtain the goods or services expected to provide a benefit that is increasing profits.

To meet this need, an application will be designed in writing this journal by applying the North West Corner method which contains the calculation of the cost of shipping goods[1]. The making of this application is expected to help the staff of PT. POS Indonesia to simplify the process of calculating the cost of shipping goods. To solve this problem can be done by applying the North West Corner method. The North West Corner method is expected to be able to maximize the cost of shipping goods because the North West Corner method is often applied to optimize the variables used to solve the problem of transportation costs. Including the problem of shipping goods, shipping goods, or raw materials from several sources to several destinations with the most optimal cost.

North West Corner method is a method used for initial cost search for example allocating initial cell values that depend on supply and demand constraints for cells[2]. In the NWC it is assumed to be sorted from left to right and from top to bottom on the map[3]. The method of calculating costs using the NWC method in accordance with its name starts from the top left

(Northwest in the map), then moves to the right or down in accordance with the capacity or demand. The purpose of this method is to obtain optimal costs in shipping goods.

2. RESEARCH METHOD

To work on the stages in research need to be arranged systematic research methods. As for the stages, it can be arranged in diagram form like Figure 1 below:

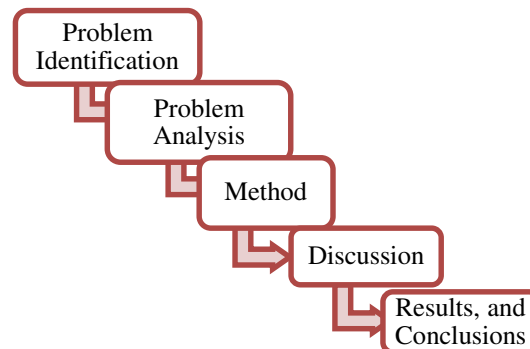


Figure 1. Diagram of Methods and Research Stages

2.1. Basic theory

A. North West Corner

North West Corner is a method started by allocating the maximum amount that can be allowed by supply and demand of these variables located in the upper left corner or the northwest corner according to its name. A column or row that is filled in indicates that the rest of the variables in that column (row) are equal to zero, if any are automatically generated[4].

If a column and row are filled together, this condition determines the basic zero variable, if it exists automatically[4].

The North West Corner method is a method for arranging the allocation of initial cell values assigned to the cell at the top left of the table. The initial cell value depends on the supply and demand constraints for the cell[5][6].

1. The cell / box filling starts from the top left corner.
2. The allocation of the maximum (largest) amount according to the conditions so that it is eligible to meet demand.
3. Move to the right box if there is sufficient supply. If no, move to the box below according to demand. Move to supply exhausted and demand fulfilled

The formula for calculating the cost of distributing goods using the North West Corner method, namely:

$$Z = (H_1 * K_1) + (H_2 * K_2) + (H_n * K_n)$$

Information:

Z = Total cost of shipping goods

H_n = Shipping price of goods specified

K_n = Needs of goods that have been determined

3. RESULTS AND DISCUSSION

Delivery of goods has been done using a computer but is still using the excel program and still requires further delivery to produce information that is fast, precise, and accurate. Delivery of goods is still done manually and there are complicated stages that will be replaced using information systems so that delivery of goods can be done quickly and accurately. Making it easier for employees to do work, information systems that will be made to benefit various office work to overcome the tasks of employees who often accumulate and procrastinate in their work because the equipment used is inadequate.

Table 1. Goods Shipping Costs

Location / destination	Goods	Price / Kg
Balige	Paket 1	27000

Binjai	Surat	6000
Jakarta Pusat	Dokumen	8500
Medan	Surat	2500
Padang	Surat dan Paket 2	6000/48500
Pekan Baru	Kado	30500

In this analysis, we will soon see the author will describe how the process of shipping goods using the NWC method. Problem analysis can be defined as the decomposition of a complete information system into its component parts with a view to identifying and evaluating problems, opportunities, obstacles that occur and the needs that are expected so that improvements are proposed.

Table 2. Matrix of Freight Cost

Barang Lokasi	Paket 1	Dokumen	Kado	Surat	Paket 2	Total
Balige	50	40	60	80	30	27000
Jakarta Pusat	80	60	10	70	50	8500
Pekan Baru	70	90	40	80	30	30500
Binjai	30	50	20	60	10	6000
Medan	40	70	50	80	20	2500
Padang	70	40	60	90	40	54500
H	27000	8500	30500	14500	48500	133500

Table 3. Settlement

Barang Lokasi	Paket 1	Dokumen	Kado	Surat	Paket 2	Total
Balige	50 27000	40 0	60 0	80 0	30 0	27000
Jakarta Pusat	80 0	60 8500	10 0	70 0	50 0	8500
Pekan Baru	70 0	90 0	40 30500	80 0	30 0	30500
Binjai	30 0	50 0	20 0	60 6000	10 0	6000
Medan	40 0	70 0	50 0	80 2500	20 0	2500
Padang	70 0	40 0	60 0	90 6000	40 48500	54500
H	27000	8500	30500	14500	48500	

Total Cost:

$$Z = (50) 27000 + (60) 8500 + (40) 30500 + (60) 6000 + (80) 2500 + (90) 6000 + (20) 53000 \\ = 5.240.000$$

4. CONCLUSION

Based on the discussion of the calculation of the cost of shipping goods using the North West Corner method, it can be concluded that: To find out the results of shipping costs incurred at the company PT. Indonesian post. Optimizing the calculation of the cost of shipping goods at the company PT. POS Indonesia with the application of the North West Corner Method. The design of the application of the calculation of the cost of shipping goods can help the staff of PT. POS Indonesia to make it easier to calculate the cost of shipping goods.

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