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Optimizing Transportation Costs for Distribution of Food Products Using the Modified Distribution (Modi) Method in Medan City

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ABSTRACT

Every company in the world always hopes for the maximum possible profit so that the company's life cycle runs well. For this reason, companies need to be able to manage the costs used to maintain a balance between expenses and income. One of the challenges faced by companies operating in the food products sector is determining the right method to optimize transportation costs. The type of research used in this study is quantitative research, which emphasizes collecting and analyzing data in the form of numbers or numbers that can be measured objectively. This research aims to obtain optimal transportation costs using the Modified Distribution (MODI) method. The research results show that before implementing the Modified Distribution (MODI) method, the transportation costs incurred by the company were IDR. 61,510,000. After using the Modified Distribution (MODI) method, the transportation costs obtained are IDR. 55,565,000. This shows that the company has succeeded in optimizing transportation costs for the distribution of food products in December 2023, with cost savings of IDR. 5,945,000 or around 10.7%.

Keywords: Modified Distribution (MODI), Optimal Solution, Transportation Costs

INTRODUCTION

Every company in the world always hopes for the maximum possible profit so that the company's life cycle runs well. For this reason, the company is able to regulate the costs that must be used in such a way so that there is a gap between the company's expenses and income. The greater the range between the company's income and expenses, the greater the profits that will be obtained with the hope that expenses will always be lower than the company's income (Apriani, 2016).

Basically, a company, be it a company operating in the service or manufacturing industry, always tries to ensure the smooth running, survival and growth of both the long and short term of the company, even though the company has many goals that must be achieved, but basically the main goal of the company is to gain maximum possible profit (Ardhyani, 2017).

A distribution company is a company that buys goods from producers and then resells the goods to make a profit. PT. Indomarco Adi Prima is a company that was formed in 1951. Where, PT. IndomarcoAdi Prima is a business unit of PT. Indofood Sukses Makmur Tbk which is engaged in manufacturing and distributing consumer products. PT. Indomarco Adi Prima has branches in various regions in Indonesia, one of which is located in Medan City, North Sumatra Province.

In terms of minimizing transportation costs in allocating food products to several agent destination stores, it is still a problem for the company. Therefore, PT. Indomarco Adi Prima requires the right method so that the product can be distributed from several agents (sources) to several consumers (customers) so as to produce minimum transportation costs.

Several previous studies that have been carried out relate to methods Modified Distribution (MODI) includes: Optimizing the Distribution of 3 Kg LPG Gas in Medan City Using the Least Cost Method and Modified Distribution Method (MODI) which results in savings in distribution transportation costs of p. 2,509,000 or around 8.7% (Labaso, 2015). As well as the application of the Modified Distribution Method (MODI). In minimizing transportation costs for shipping goods at PT. Tirta Makmur Perkasa (Taufiq, 2017).

Where the research results produce a minimum cost of Rp. 15,990,365 or around 18%. So researchers are interested in solving the problem of transportation costs for distributing food products at PT. Indomarco Adi Prima in the city of Medan uses the initial solution of the Least Cost method and to find the optimal solution uses the Modified Distribution (MODI) method which aims to obtain optimal transportation costs. PT INDOMARCO ADI PRIMA is one of the PT INDOFOOD companies.

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LITERATURE REVIEW

Morse and Kimball (1951) defined Operations Research as a scientific method that allows managers to understand what is happening with the projects they work on using a quantitative approach. In contrast, Churchman, Arkoff, and Arnoff (1957) described the definition of operations research as a collection of scientific methods, techniques, and scientific tools that can be used to overcome problems that arise throughout a company's operations with the aim of finding the best solution to the problem. Miller and MK Star (1960) define Operations Research as a management system that combines science, mathematics and logic into a framework for solving problems handled daily, so that these problems can be solved in the most efficient way possible.

Operations research with optimal decision making in preparing models of both deterministic and probabilistic systems originating from real life, according to the definition above. These applications are characterized by the need to allocate limited resources in government, business, engineering, economics, and natural and social sciences. Research Operations. The terms “research” and “operations” form two words that make up operations research. operations are a stage of manufacturing activities, while research specifically uses scientific methods for research. Meanwhile, according to Operational Research, it is a method that formulates and solves problems related to the business, economic and social fields of mathematical modeling to obtain optimal solutions. This optimization model is one of the system analysis models identified through operational research with a series of analysis and mathematical modeling activities for decision making purposes.

The Modified Distribution Method (MODI) is a technique in transportation methods that is used to find optimal solutions to transportation problems. Transportation problems are problems that involve the distribution of goods from several sources (e.g. factories or warehouses) to several destinations (e.g. customers or shops) with transportation costs varying between sources and destinations. The goal of this problem is to determine the delivery route that minimizes total transportation costs (Hadi, 2003).

The advantage of the Modified Distribution (MODI) method lies in its ability to produce optimal solutions more efficiently compared to the Stepping Stone method. One of MODI's main advantages is its speed and efficiency in achieving optimal solutions. By using potential values to evaluate possible cost savings, MODI can find the most efficient distribution in less time, even when facing complex transportation problems with multiple sources and destinations. Additionally, MODI allows companies to optimize transportation costs, which are critical in managing supply chains and logistics, resulting in significant cost savings. The flexibility of this method is also an added value, because it can be applied to various types of transportation problems, both simple and more complex, with many sources and destinations. (Wijaya, 2013).

Despite its many advantages, a weakness of MODI is its reliance on a good initial solution. If the initial solution used is not close to optimal, the iteration process may be longer and require more time to reach the optimal solution (Ibnas et al., 2019). In addition, the MODI method requires a good understanding of how to calculate potential values (U and V) and item distribution adjustments, which can be complicated for users who are not experienced with this method. Therefore, although MODI is efficient in many cases, the challenges in calculating and fitting distributions can be prohibitive if not done carefully.

METHOD

The type of research used in this study is quantitative research, which emphasizes the collection and analysis of data in the form of numbers or figures that can be measured objectively. This quantitative research aims to analyze the relationship between the variables involved, using a statistical approach to produce findings that can be generalized. In this research, the data collected is secondary data obtained from PT Indomarco Adi Prima. This secondary data includes information about product demand, raw material supplies, distribution costs, and other relevant data that supports research. This data was taken directly from sources related to this study, such as internal company reports. The main variables studied include the inventory of goods in each warehouse before distribution, consumer demand for the product, and the distribution costs required to send goods to communities throughout the Medan City area. Analysis of these variables will provide an overview of the efficiency of product distribution and the factors that influence inventory in the company's supply chain.

The type of data needed in this research is by collecting secondary data originating from PT Indomarco Adi Prima. This data is data taken and collected by individuals themselves directly from the research site, which is taken and collected in the form of product demand data, inventory data raw materials and distribution cost data, as well as other data related to the author's research

The research begins with formulating a data processing problem, which includes collecting data related to product supply, demand, and product distribution costs. After the data is collected, the next step is to determine the sequence

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of activities that will be carried out to achieve the research objectives. In the data processing stage, the Least Cost Method is used to determine initial distribution costs. This process includes steps such as calculating the highest distribution costs, creating transportation tables, and balancing supply and demand with iterations. Next, the lowest transportation costs are calculated using the RAM method (Russell's Approximation Method). At this stage, an evaluation is carried out on the highest distribution costs and the difference in distribution costs for each cell. After that, optimization steps are carried out by applying the Modified Distribution (MODI) method to obtain optimal solutions in product distribution. The results of this optimization are then analyzed to draw conclusions, which become the basis for recommendations or decisions in research. Finally, the research ends with the preparation of conclusions that answer the main objectives of the process carried out.

RESULT

The research began by identifying distribution problems at PT. Indomarco Adi Prima, namely high transportation costs in distributing food products from three main agents to ten customer shops. This problem requires a solution that can reduce distribution costs without sacrificing product availability in destination stores.

Distribution of mixed goods by PT. Indomarco Adi Prima is carried out through three main agents who are responsible for distribution to various regions. Each agent has responsibility for managing mixed goods inventory and ensuring product availability on the market according to consumer needs. Data regarding mixed goods inventory at each agent is presented in detail in Table 3.1. This table provides an overview of the amount of inventory in each agent, which is an important indicator in monitoring distribution efficiency and stock management. Through inventory data analysis, companies can assess the distribution performance of each agent, determine the right replenishment strategy, and ensure adequate availability of goods in all distribution areas.

Table 3.1: PT. Food Product Inventory Data. Indomarco Adi Prima in December 2023

No	Agent Name	Address	Inventory (Carton)
1.	CV. Makmur	Jl. Ruko Permata	1750
2.	PT. Atmajaya Berkah	Jl. Citra Indah City	1735
3.	PT. Mega Perkasa	Jl. Keadilan Raya	1125
	Amount		**4610**

Request data from each customer shop collaborating with PT. Indomarco Adi Prima can be seen in detail in Table 2. This table presents information regarding the number of product requests from each store, which is the basis for distribution planning and inventory management. Through analysis of this data, companies can understand demand patterns in various locations, identify consumption trends, and determine optimal product allocation for each store. That way, PT. Indomarco Adi Prima can respond to customer needs more efficiently and ensure the availability of goods according to market demand in each region. This data is also important to help companies design more effective sales and distribution strategies.

Table 3.2: Customer demand for Food ProductsIn December 2023

No	Customer	Address	Request (Carton)
1.	Toko Aneka Makmur (T_1)	Jl. Tanjung Manimbaya	475
2.	Toko Rahe (T_2)	Jl. Ciktidiro	430
3.	Toko Setia (T_3)	Jl. Gajah Mada	550
4.	Toko Salex (T_4)	Jl. Gatot Subroto	465
5.	Toko Indah Sentosa (T_5)	Jl. Zebra	470
6.	Toko Jaya Abadi (T_6)	Jl. Imam Bonjol	495
7.	Toko Nusa Agung (T_7)	Jl. Dr. Suharso	430
8.	Toko Baskara (T_8)	Jl. Kemiri	345
9.	Toko Sinar Wajo (T_9)	Jl. Veteran	410
10.	Toko Abadi (T_{10})	Jl. Munginsidi	540
	Jumlah		**4610**

Souerce : PT. Indomarco Adi Prima

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Table 3.2 records demand from ten customer stores, ranging from 345 cartons to 550 cartons per store, with total demand equal to total inventory, namely 4,610 cartons

Table 3.3: Data on Food Product Offerings for Ten Stores from Each Agent

No	Shop	CV. Makmur (Karton) (S_1)	PT. Atmajaya Berkah (Karton) (S_2)	PT. Mega Perkasa (Karton) (S_3)	Total Request
1.	T_1	180	190	105	475
2.	T_2	165	170	95	430
3.	T_3	210	190	150	550
4.	T_4	185	185	95	465
5.	T_5	190	180	100	470
6.	T_6	155	255	85	495
7.	T_7	170	140	120	430
8.	T_8	145	100	100	345
9.	T_9	170	110	130	410
10.	T_{10}	180	215	145	540

Source : PT. Indomarco Adi Prima

Below is presented data regarding transportation costs incurred for the distribution of food products from agents to each customer, which can be seen in detail in Table 4. This data includes costs associated with shipping products from each distribution unit, including fuel costs, maintenance vehicles, as well as other operational costs required in the distribution process. This information is critical for analyzing distribution efficiency, identifying savings opportunities, and planning more effective distribution strategies. By understanding the transportation costs for each unit, PT. Indomarco Adi Prima can optimize distribution channels, reduce operational costs and increase profitability without sacrificing service quality to customers.

Table 3.4: Data on transportation costs for each delivery of food products from agents to each customer

Ke Dari	Toko 1	Toko 2	Toko 3	Toko 4	Toko 5	Toko 6	Toko 7	Toko 8	Toko 9	Toko 10
Agen 1	Rp 13.000	Rp 11.000	Rp 12.000	Rp 11.000	Rp 15.000	Rp 12.000	Rp 11.000	Rp 14.000	Rp 14.000	Rp 13.000
Agen 2	Rp 12.000	Rp 13.000	Rp 14.000	Rp 14.000	Rp 11.000	Rp 15.000	Rp 14.000	Rp 15.000	Rp 15.000	Rp 11.000
Agen 3	Rp 16.000	Rp 14.000	Rp 15.000	Rp 14.000	Rp 17.000	Rp 15.000	Rp 14.000	Rp 16.000	Rp 11.000	Rp 15.000

Sumber : PT. Indomarco Adi Prima

From all the data that has been collected, a transportation model matrix will be prepared which functions to map the relationship between distribution sources and product delivery destinations. This matrix, which can be seen in Table 5, contains information regarding costs, shipping volume, and distribution channels used in the transportation process. Through the use of this matrix, companies can analyze distribution efficiency, identify the most optimal delivery channels, and evaluate potential cost savings in the distribution process. Apart from that, this transportation model matrix also allows PT. Indomarco Adi Prima to make more precise decisions regarding the allocation of transportation resources, so as to increase productivity and service to customers.

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Tabel 3.5 : Matriks Transportasi

Dari / Ke	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	(S_1)
S_1	13 X_{11}	11 X_{12}	12 X_{13}	11 X_{14}	15 X_{15}	12 X_{16}	11 X_{17}	14 X_{18}	14 X_{19}	13 $X_{1.10}$	1750
S_2	12 X_{21}	13 X_{22}	14 X_{23}	14 X_{24}	11 X_{25}	15 X_{26}	14 X_{27}	15 X_{28}	15 X_{29}	11 $X_{2.10}$	1735
S_3	16 X_{21}	14 X_{22}	15 X_{23}	14 X_{24}	17 X_{25}	15 X_{26}	14 X_{27}	16 X_{28}	11 X_{29}	15 $X_{3.10}$	1125
(P_J)	475	430	550	465	470	495	430	345	410	540	4610

Source : PT. Indomarco Adi Prima

Based on Table 5 which contains the transportation model, a linear programming model will then be formulated to optimize the distribution process. This linear programming model aims to minimize transportation costs by taking into account the capacity of each agent, customer demand, and other distribution constraints. This model formulation will include an objective function, which is oriented to minimize total distribution costs, as well as various constraints that must be met, such as delivery capacity and market demand. By applying a linear programming model, PT. Indomarco Adi Prima can determine the most efficient allocation of goods delivery, so that product distribution to customers can be carried out with minimal costs while still optimally meeting market needs and demands.

Minimize:

$$F = 13000X11 + 11000X12 + 12000X13 + 11000X14 + 15000X15 + 12000X16 + 11000X17 + 14000X18 + 14000X19 + 13000X1{,}10 + 12000X21 + 13000X22 + 14000X23 + 14000X24 + 11000X25 + 15000X26 + 14000X27 + 15000X28 + 15000X29 + 11000X2{,}10 + 16000X31 + 14000X32 + 15000X33 + 14000X34 + 17000X35 + 15000X36 + 14000X37 + 16000X38 + 11000X39 + 15000X3{,}10$$

With limitations:

$$X11 + X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X1{,}10 \leq 1750$$
$$X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X2{,}10 \leq 1735$$
$$X31 + X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X3{,}10 \leq 1125$$
$$X11 + X21 + X31 \geq 475$$
$$X12 + X22 + X32 \geq 430$$
$$X13 + X23 + X33 \geq 550$$
$$X14 + X24 + X34 \geq 465$$
$$X15 + X25 + X35 \geq 470$$
$$X16 + X26 + X36 \geq 495$$
$$X17 + X27 + X37 \geq 430$$
$$X18 + X28 + X38 \geq 345$$
$$X19 + X29 + X39 \geq 410$$
$$X1{,}10 + X2{,}10 + X3{,}10 \geq 540$$

The first step to complete the transportation model is to use the Least Cost method. This method calculates an initial distribution based on the route with the lowest transportation costs. The results of the Least Cost method show total transportation costs of IDR 61,510,000.

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Table 3.6: Table of Initial Solutions to Transportation Problems

Ke Dari	Shop 1	Shop 2	Shop 3	Shop 4	Shop 5	Shop 6	Shop 7	Shop 8	Shop 9	Shop 10	S_i
S1		430	425	465			430				1750
S2	475		125		470	125				540	1735
S3						370		345	410		1125
P_J	475	430	550	465	470	495	430	345	410	540	4610

From Table 6, you can see the details of transportation costs incurred in the process of distributing food products. This table provides detailed information regarding the costs spent for each delivery route, from the agent to the individual customer. These transportation costs include various components, such as fuel costs, vehicle maintenance costs, toll costs, and other operational costs related to shipping. By understanding the details of these costs, PT. Indomarco Adi Prima can evaluate distribution efficiency, as well as identify potential areas for cost savings. This analysis is also important in developing a more effective and economical distribution strategy, to ensure that operational costs can be reduced without sacrificing the quality of service to customers.:

F = 430(X12) + 425(X13) + 465(X14) + 430(X17) + 475(X21)
+ 125(X23) + 470(X25) + 125(X26) + 540(X2,10)
+ 370(X36) + 345(X38) + 410(X3,9)
= 430(11000) + 425(12000) + 465(11000) + 430(11000)
+ 475(12000) + 125(14000) + 470(11000)
+ 125(15000) + 540(11000) + 370(15000)
+345(16000)+410(11000)
=4.730.000+5.100.000+5.115.000+4.730.000+5.700.000
+1.750.000+5.170.000+1.875.000+5.940.000
+ 5.550.000 + 5.520.000 + 4.510.000
= 55.690.000

After the initial solution was obtained using the Least Cost method, the total transportation costs of the three PT agents. Indomarco Adi Prima to ten customer stores was recorded at IDR 55,690,000 per month. Although the Least Cost method has provided an initial solution that is quite efficient, the next step is to look for a more optimal solution to reduce transportation costs further. For this reason, further optimization was carried out using the Modified Distribution (MODI) method, which aims to evaluate and perfect the initial solution by assessing the cost distribution on each delivery route.

The optimization process using the MODI method is carried out by calculating the improvement index for each distribution route. The results of the index evaluation are used to adjust the distribution allocation, and this process is continued iteratively until no more negative improvement indices are found. This condition indicates that the optimal solution has been reached, with a more efficient distribution pattern than the initial solution. The MODI method allows PT. Indomarco Adi Prima finds route combinations that produce the lowest transportation costs, thereby increasing distribution efficiency.

The optimization results show that total transportation costs can be reduced to IDR 55,565,000, resulting in savings of IDR 5,945,000 or around 9.7%. These savings reflect the success of the MODI method in achieving maximum efficiency in the distribution of food products, while reducing operational costs and increasing company profitability. By implementing this method, PT. Indomarco Adi Prima can ensure that product distribution to ten customer stores is carried out at minimal costs without sacrificing service quality

After carrying out a series of steps to determine the optimal solution, the most efficient transportation costs were obtained, which are shown in Table 7. This optimization process involves using the Modified Distribution (MODI) method to evaluate the initial solution and improve delivery allocation based on the lowest transportation costs. The optimization results show that transportation costs can be reduced further compared to the initial solution produced by the Least Cost method. Thus, PT. Indomarco Adi Prima can ensure that the distribution of food products is carried out more cost-effectively, without sacrificing speed and accuracy of delivery to each customer's shop. Table 7 provides

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a clear picture of more optimal allocation of goods and shipping costs, so that the company can increase overall operational efficiency and profitability.

Table 7: Optimal Transportation Costs

K_j		K_1	K_2	K_3	K_4	K_5	K_6	K_7	K_8	K_9	K_{10}	Penaw
R_i		10	11	12	11	9	12	11	13	8	9	aran
												(S_1)
	Dari	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	
	Ke											
R_1	S_1	13	11	12	11	15	12	11	14	14	13	1750
0			430	425	465			430				
R_2	S_2	12	13	14	14	11	15	14	15	15	11	1735
2		475		125		470			125		540	
R_3	S_3	16	14	15	14	17	15	14	16	11	15	1125
3							497		220	410		
Permintaan		475	430	550	465	470	495	430	345	410	540	4610
(P_j)												

Transportation costs = 430(11000) + 425(12000) + 465(11000)
+ 430(11000) + 475(12000) + 125(14000) + 470(11000) + 125(15000) +
540(11000) +495(15000)+220(16000)+410(11000)
= 4.730.000+5.100.000+5.115.000+4.730.000+5.700.000
+1.750.000+5.170.000+1.875.000+5.940.000 +7.425.000 + 3.520.000 + 4.510.000
= 55.565.000

DISCUSSIONS

Distribution of food products by PT. Indomarco Adi Prima is carried out through three main agents with different inventories, namely Agent 1 has 1,750 cartons, Agent 2 has 1,735 cartons, and Agent 3 has 1,125 cartons. These three agents are tasked with distributing their products to ten shops which are regular customers. In December 2020, the number of requests from each store was recorded as follows: T1 = 475 cartons, T2 = 430 cartons, T3 = 550 cartons, T4 = 465 cartons, T5 = 470 cartons, T6 = 495 cartons, T7 = 430 cartons, T8 = 345 cartons, T9 = 410 cartons, and T10 = 540 cartons. Transportation costs for each shipment vary depending on the distribution distance from the agent to each store.

Total transportation costs incurred to distribute food products from the three agents to ten PT customer stores. Indomarco Adi Prima in December 2023 will reach IDR 61,510,000. To optimize transportation costs, calculations are carried out using a transportation model using the Modified Distribution (MODI) method. After going through the calculation and evaluation process using the MODI method, no negative Improvement Index was found, so the transportation table is considered to have reached the optimal solution and cannot be modified further. Thus, the transportation costs obtained are already in the most efficient condition for distributing these food products.

Table 7 presents the optimal solution for distributing food products to ten destination stores, namely Toko Aneka Makmur (T1), Toko Rahe (T2), Toko Setia (T3), Toko Salex (T4), Toko Harmoni Indah Sentosa (T5), Toko Jaya Abadi (T6), Toko Nusa Agung (T7), Toko Baskara (T8), Toko Sinar Wajo 2 (T9), and Toko Abadi (T10), with a total of 4,610 cartons of demand and supply fulfilled. This distribution is carried out by three main agents. Agent 1 distributes products to four stores, namely T2, T3, T4, and T7. Agent 2 sends products to five stores, namely T1, T3, T5, T8, and T10, while Agent 3 distributes products to three stores, namely T6, T8, and T9. With this distribution pattern, the total transportation costs incurred in December 2023 will reach IDR 55,565,000. These costs show optimal efficiency in the distribution process, where the delivery distance and capacity of each agent have been well calculated to reduce costs without sacrificing the accuracy of product delivery to each store.

This research shows significant changes in the distribution pattern of food products by PT. Indomarco Adi Prima. Before optimization, distribution was carried out without considering route efficiency, where each agent distributed products to all stores without structured delivery allocation. This distribution pattern causes high transportation costs, with total expenditure reaching IDR 61,510,000. This condition shows the need for improvements in distribution management to reduce operational costs.

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After optimization using the Modified Distribution (MODI) method, the distribution pattern becomes more structured. Agent 1 is responsible for distributing products to four stores, namely T2, T3, T4, and T7, while Agent 2 sends products to five stores, namely T1, T3, T5, T8, and T10. Agent 3 is tasked with distributing products to three stores, namely T6, T8, and T9. This division of responsibilities allows each agent to focus on certain routes, so that distribution becomes more efficient. With this optimization, total transportation costs can be reduced to IDR 55,565,000, resulting in savings of IDR 5,945,000 or around 9.7% compared to the previous condition.

This change reflects the success of MODI's method in optimizing product distribution. With more efficient route allocation, distribution is not only more economical but also still pays attention to timely delivery and meeting customer needs. Table 7 provides an overview of the optimal solution, where all demand and supply of 4,610 cartons have been met. These results show the importance of implementing transportation methods to increase operational efficiency and reduce operational costs, which ultimately contributes to increasing company profitability. The MODI method has proven effective in providing more economical and structured solutions to optimally meet customer needs

CONCLUSION

Based on the results and discussion, it can be concluded that PT. Indomarco Adi Prima succeeded in optimizing transportation costs for distributing food products in December 2023 by implementing a more efficient transportation model. In the initial solution, using the Least Cost Method, transportation costs were recorded at IDR 55,690,000. Furthermore, by implementing the optimization method using Modified Distribution (MODI), the optimal transportation costs obtained decreased to IDR 55,565,000. Meanwhile, before the optimization process was carried out, the transportation costs borne by the company reached IDR 61,510,000. These results show that the application of transportation methods can provide significant distribution cost savings. PT. Indomarco Adi Prima managed to save IDR 5,945,000 or around 10.7% of the initial distribution costs incurred. These savings not only reflect efficiency in distribution management, but are also a strategic step for the company in optimizing its operations, especially in the areas of logistics and product distribution.

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