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Hybrid Ism and Smart Methods for Selection of Shipping Expedition

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ABSTRACT: Shipping services play a crucial role in ensuring smooth operational processes and cost efficiency. This is particularly relevant for one of the manufacturing companies in Riau, a company engaged in the production of precast concrete using a make-to-order system. However, the selection of shipping services has so far been based solely on the experience of the purchasing department, without the application of clear criteria or prioritization systems. This has led to delays in material delivery, resulting in increased operational costs and failure to meet production targets. This study aims to provide the company with a method and relevant information for selecting an efficient and timely shipping service. This research will be using hybrid methods with Interpretive Structural Modeling (ISM) and the Simple Multi Attribute Rating Technique (SMART). Through the ISM method, four key influential criteria were identified: cost, availability of delivery units (trucks), timeliness, and delivery coverage area. These criteria were then used in the SMART method to assess 11 shipping service providers. The analysis shows that the most recommended shipping service is Lancar Jaya, with a score of 97.09, while the least recommended is Cakra, with a score of 40.15. These findings are expected to serve as a reference for one of the manufacturing companies in Riau in determining effective shipping service providers.

KEYWORDS: Logistics, ISM, SMART.

1. INTRODUCTION

The remarkable impact of industrial revolution is the consumers were given an excessive external access to wide variety of product. This condition leads to the increasing of rivalry among businesses. One of the preference of consumers is quality of service and the availability of product [1]. To achieve the indicator, business needs to improve their logistic system to become more efficient and effective. Therefore, selecting the right delivery service is crucial in decision-making of a business.

Moreover, the advent of Industry 4.0 has further necessitated the optimization of logistics and supply chains. As businesses transition into this new era, they are compelled to adopt advanced technologies and automated processes to enhance their operational frameworks (Gleason, 2018). This transition boosts efficiency and aligns business practices with contemporary consumer expectations surrounding sustainability and quality. According to Rocha-Lona and Chávez, firms are now tasked with embracing disruptive technologies that reshape traditional operational paradigms, thereby enhancing their ability to respond to market fluctuations (Rocha-Lona & Chávez, 2023). Consequently, as firms seek to differentiate themselves in an increasingly competitive landscape, the integration of advanced logistical strategies and effective delivery systems will be vital for satisfying consumer preferences and ensuring long-term success.

The concept of disruptive innovation plays a vital role in this context. As Christensen et al. argue, disruptive innovation theories extend beyond product-based frameworks to incorporate platform-driven business models that capitalize on technological advancements (Christensen et al., 2018). The systemic nature of these innovations can significantly grant firms competitive leverage by facilitating more agile responses to market demands (Christensen et al., 2018). Moreover, Roy et al. illustrate that firm capabilities are instrumental in achieving a competitive foothold during disruptive technological transformations, leading to a more adaptable approach to change management (Roy et al., 2018).

In this evolving context, it is essential for organizations to recognize logistics not merely as a functional necessity but as a strategic asset that enhances their ability to meet the evolving demands of the market. The relationship between improved logistical performance and consumer satisfaction emphasizes the importance of selecting suitable delivery frameworks that cater to modern expectations. Furthermore, according to Hermawan, the effective implementation of Industry 4.0 principles enhances the operational capabilities of firms and positively contributes to their competitive positioning within the global market (Hermawan, 2021). Therefore, prioritizing logistic efficiency and strategic decision-making in delivery processes emerges as a crucial focus for businesses navigating the complexities of the Fourth Industrial Revolution.

The company is specialized in manufacturing wide variety of precast concrete product, such as electrical pole, pile, and mini pile. This company operates using the make-to-order system. Therefore, the availability of cement as the main material is very crucial in the production. The punctuality of arrival of the material is very important for maintaining the production process so the production target can be achieved punctually. In the company, scheduling of raw material delivery is accustomed to purchasing division.

However, in 2024, manufacturing companies faced a serious challenge. That was late delivery of cement from the main supplier, PT Semen Padang. The problem was caused by both internal and external problem. The internal problem was coming from the delivery service, such as, the lack of preparation of delivery units, and the limited amount of available truck. Unreadiness of delivery units can cause delay on delivery service. That leads to the delay of arrival of raw material to the production location.

A growing body of research underscores the strong interconnections between logistics performance, delivery timeliness, and overall operational efficiency. In modern supply chains, even marginal improvements in delivery performance can yield significant gains in system efficiency and customer satisfaction. The demonstration of reducing delivery delays and minimizing product damage directly alleviate out-of-stock occurrences in grocery retailing, thereby supporting a more seamless and responsive supply chain (Reiner et al., 2013). When deliveries are delayed, the ripple effect disrupts the flow of raw materials and components, leading to production bottlenecks, increased operational costs, higher rates of lost sales, and diminished service levels. The provision of real-time visibility into distribution processes further strengthens logistical reliability. Emphasize transparent communication of shipment status also helps reduce customer uncertainty and mitigate reputational damage during disruptions (Hu et al., 2021). In this study, they classify delivery delays as service failures that erode customer trust and negatively influence perceptions of service quality. In particular, the unreadiness or inefficiency of delivery units, such as delayed dispatch or inadequate vehicle scheduling compromises the timely arrival of critical materials, directly impacting production schedules and downstream fulfillment. Although delivery failures may occur infrequently, their impact is often perceived as severe. (ÖZAYDIN & GÜÇLÜOĞULLARI, 2015) note that customers assign high subjective severity to delivery disruptions, especially when these result in financial or operational losses. This highlights the importance of proactive service recovery strategies by logistics providers to restore confidence and maintain long-term relationships. Supporting this view, (Peng & Lu, 2017) find that on-time delivery rates exert a significant positive influence on customer transaction volumes and are closely tied to perceptions of pricing fairness and service reliability within supply chain networks. These findings collectively underscore the strategic imperative for organizations to prioritize delivery performance as a core component of operational excellence.

The external factor came from the uncontrollable difficulties, mostly environment, such as natural disaster, closed road, and poor road condition. These factors disturbed the delivery process and slowing the arrival of the raw material to manufacturing companies. This delay caused several impacts on production process, such as, delaying on work schedule, decreasing of labor productivities, even financial loss because the demand could not be fulfilled at the required time. In several cases, company had to buy cement from alternative supplier with higher price. This increased the operational cost, and could damage the company image and reducing customers faith on manufacturing companies.

Table 1 Recapitulation of the Total amount of Trucks per year

Number	Expedition	Number of trucks per year	Number of late trucks per expedition
1	Arunika	131	3
2	Nirmala	125	2
3	Samudra	122	3
4	Bahari	141	3
5	Cakra	118	7
6	Kurnia	107	3
7	Putra Pratama	169	4
8	Abadi	139	3
9	Lancar Jaya	197	2
10	Rania	86	2
11	Aqeela	69	1
Total		1404	33

Based on the data presented above, there are 24 expedition company that work. With the total trucks reaching 1,404 units, there were 33 unit that was late on delivery. Expedition with most trucks is Lancar Jaya with 197 trucks and totaling 2 late deliveries. Chakra, however, has the most amount of late deliveries with 7 trucks from 118 operated trucks. Aqeela, and Rania which each has 69 trucks and 86 trucks, totaling each 1 and 2 late deliveries. This data shows that the least amount of late delivery should be evaluated so manufacturing companies can have their supplies ready for production.

Based on daily need of 180 tons, manufacturing companies utilize 6 trucks from 2 or 3 expedition from 11 expedition that are showed above. Expedition is used because PT Semen Padang doesn't provide delivery service for direct supply. This strategy is chosen to guarantee the availability of expedition in order to deliver the supplies. Normally, delivery will take 2 days maximum. However, there are still late on deliveries that forced the company to take executive calls by ordering supplies from alternative supplier, Semen Merah Putih. This leads to the increasing of shipping cost from Rp.39.900.000 per truck, to Rp.60.000.000 per truck.

In 2024, manufacturing companies only achieved 54.135 products from the company's target of 74.880 products. This means the company only achieved 72.29% from their production target, with 20.745 gap. This failure is caused mostly by the delay of cement supply.

The delay itself is caused by the poor mechanism on choosing the expedition. the company has never relied on using crucial criteria such as, delivery cost, delivery duration, truck capacity, and delay potential. those criteria were crucial for the company to avoid delay and increasing efficiency on One of the manufacturing companies in Riau's production process. To achieve the criteria, this research will be using hybrid methods, Interpretative Structural Modelling (ISM) and Simple Multi-Attribute Rating Technique (SMART). ISM is used for identifying and mapping the relation between expedition choosing factor. This method can simplify complex system into structure that is easier to understand thus helping the company to determine strategic act [2].

The application of ISM extends beyond identifying enablers and barriers; it also enables a structured understanding of their impact on performance outcomes. For instance, (Dube & Gawande, 2016) employed ISM to analyze critical barriers to GSCM implementation, highlighting how these obstacles hinder operational efficiency and sustainability, and underscoring the importance of strategic interventions to mitigate them. It should be noted, however, that while (KHAN, 2025) discusses transportation logistics and cost optimization, the cited work does not directly substantiate the application of ISM in supply chain processes; therefore, this reference has been excluded to maintain academic rigor. Furthermore, ISM has been successfully integrated with quantitative and mathematical approaches in various SCM contexts. (Kumar et al., 2015), for example, demonstrated its effectiveness in modeling the supplier selection process, enabling organizations to better understand the complex dynamics influencing supplier relationships and performance outcomes. This underscores the adaptability and robustness of ISM as a decision-support tool across diverse domains within supply chain management.

SMART, instead, is used to evaluate and underlining the expeditions based on criteria before. The advantages of this method are the simplicity, reducing the decision-making duration, and gives the company the ease of performing calculations without requiring complex mathematical methods [3],[4].

The SMART method operates on the premise that each option can be quantified against a set of criteria that vary depending on the specific decision context. These criteria should be measurable and prioritized based on the decision-maker's needs. For instance, when selecting an employee for a specific role, relevant sub-criteria might include skills, experience, and cultural fit, each weighted according to the organization's strategic priorities (Nitami et al., 2024); (Setiawan et al., 2020).

The SMART method is used to evaluate and structure decisions based on pre-established criteria through a rating system. By employing the SMART method, decision-makers can visualize the implications of their choices quantitatively, thereby leading to more informed outcomes (Hamed & Mohebi, 2024). For example, in assessing potential energy suppliers for an organization, sub-criteria such as cost, reliability, and sustainability could be compared using the SMART method, ensuring that the selected supplier aligns with the organization's long-term objectives (Anshori et al., 2022).

This technique has shown utility across various fields, including human resource management, urban planning, and technology selection (Pratama & Hardianto, 2024); (Marendra et al., 2019). For instance, Pratama and Hardianto demonstrated the application of the SMART method in evaluating employee performance, illustrating how structured rating can streamline the decision-making process and provide clearer insights into candidate suitability (Pratama & Hardianto, 2024). Additionally, in the context of smart cities, assessments utilizing the SMART method can help delineate priorities regarding infrastructure deployment and resource management strategies (Batty et al., 2012). In summary, SMART method is considered more practical because of the simplicity and efficiency compared to other method like ANP [5], [6].

2. METHODOLOGY

There are few steps that are taken to conduct this research, that are:

a. Preliminary Study

The preliminary study was conducted at One of the manufacturing companies in Kampar Regency, Riau, to understand the conditions and problems in selecting cement transportation expeditions. The purpose was to identify the company's decision-making process and review the literature related to the ISM and SMART methods as the approaches used in this research.

b. Problem Formulation

The main problem in this research is that expedition selection at One of the manufacturing companies in Riau is still carried out based on experience or estimation without a structured method, thus posing a risk of inefficiency. This study aims to determine the most appropriate expedition through the analysis of key criteria using the ISM and SMART methods.

c. Objective setting

The objective of this study is to identify important criteria in the selection of cement transportation expeditions and to determine the best expedition capable of supporting the smooth supply of raw materials in accordance with manufacturing companies production schedule.

d. Method implementation

The implementation of the ISM and SMART methods in this research aims to assist manufacturing companies in selecting cement transportation expeditions in a more objective and structured manner. ISM is used to identify and map the relationships among the criteria influencing expedition selection, while SMART is used to provide assessment and ranking based on the weight and utility value of each criterion. Through these methods, expedition selection is no longer solely dependent on intuition but is based on systematic analysis, making the results more effective, efficient, and supportive of the smoothness of the concrete production process.

3. RESULT AND DISCUSSION

This part will mainly discuss about the analysis of the choosing of shipping expedition for cement material using ISM and SMART methods.

3.1. Criteria on Choosing Expedition

Criteria on expedition choosing in manufacturing companies is according to relevant journal article. Article that was published by Ardiansyah and Wulandari is chosen because of the relevance with company’s technical needs. Five main criteria that are used in this research are price, unit availability, shipping area, punctuality, and damage claim. This approach makes the selection process more precise and objective.

Table 2. Criteria on Choosing Expedition

No	Criteria	Sub-Criteria	Sub-Criteria Code
1.	Price	Rent Money	A1
		Loading Cost	A2
2.	Unit Availabilty	Total Unit	B1
		Unit Condition	B2
3.	Shipping Area	Coverage Area	C1
		Road Access	C2
4.	Punctuality	Estimated Time on Shipping	D1
		Shipping Route Efficiency	D2
5.	Damage Claim	Insurance claim process	E1
		Compensation Policy	E2

3.2. Preparation of the Self Structural Interaction Matrix (SSIM)

The Preparation of the SSIM is done by formulating the contextual relation between sub criteria inside matching matrix using four symbols. That is, V, A, X and O. SSI Matrix could be seen on the table below.

Table 3. Preparation of the Self Structural Interaction Matrix (SSIM)

Self Structural Interaction Matrix (SSIM)													
No	Criteria	Sub-Criteria		E2	E1	D2	D1	C2	C1	B2	B1	A2	A1
1.	Price	Rent Money	A1	V	V	V	V	A	V	V	A	V	
		Loading Cost	A2	V	O	O	X	O	O	O	O		
2.	Unit Availability	Total Unit	B1	V	O	A	V	O	O	V			
		Unit Condition	B2	V	X	A	V	A	V				
3.	Shipping Area	Coverage Area	C1	O	O	O	V	O					
		Road Access	C2	V	A	V	V						
4.	Punctuality	Estimated Time on Shipping	D1	V	V	A							
		Shipping Route Efficiency	D2	V	V								

Self Structural Interaction Matrix (SSIM)													
No	Criteria	Sub-Criteria		E2	E1	D2	D1	C2	C1	B2	B1	A2	A1
5.	Damage Claim	Insurance claim process	E1	A									
		Replacement Compensation Policy	E2										

On the preparation of SSIM, relation between two sub-criteria is calculated according to contextual relations and is symbolized by four symbols. That is, V (I affects j), A (j affects i), X (j and I affect each other), and O (no relations). These symbols are used to map the effect among the sub-criteria before they are included in ISM hierarchy model [7].

3.3. Preparation of Reachability Matrix

The preparation of Reachability Matrix is done according to SSIM result. This process includes the shifting from alphabetical symbols (V, A, X, O) into numeric value (0 and 1). These symbols have mathematical meaning: V means i affects j (eij=1, eji=0), A means i is affected by j (eij=0, eji=1), X shows reciprocal interaction (eji=1, eij=1), and O shows no relations (eij=0, eji=0). This relation becomes the base on interconnectivity among subcriteria in the ISM model.

Tabel 4 Preparation of Reachability Matrix

Reachability Matrix														
No	Criteria	Sub-Criteria		E2	E1	D2	D1	C2	C1	B2	B1	A2	A1	Driven
1.	Price	Rent Money	A1	1	1	1	1	0	1	1	0	1	1	8
		Loading Cost	A2	1	0	0	1	0	0	0	0	1	0	3
2.	Unit Availabilty	Total Unit	B1	1	0	0	1	0	0	1	1	0	1	5
		Unit Condition	B2	1	1	0	1	0	1	1	0	0	0	5
3.	Shipping Area	Coverage Area	C1	0	0	0	1	0	1	0	0	0	0	2
		Road Access	C2	1	0	1	1	1	0	1	0	0	1	6
4.	Punctuality	Estimated shipping duration	D1	1	1	0	1	0	0	0	0	1	0	4
		Shipping Route Efficiency	D2	1	1	1	1	0	0	1	1	0	0	6
5.	Damage Claim	Insurance claim process	E1	0	1	0	0	1	0	1	0	0	0	3
		Replacement Compensation Policy	E2	1	1	0	0	0	0	0	0	0	0	2
Dependence				8	6	3	8	2	3	6	2	3	3	

3.4. Preparation of Conical Matrix

This process is done by categorizing criteria that has the same level. The ranking process is done by driver power value, from the highest to the lowest, where the highest value gets highest rank and the lowest value gets the lowest rank. Below is the conical matrix table:

Table 5 Preparation of Conical Matrix

No	Criteria	Sub-Criteria	Total Driven Power	Rank
1.	Price	Rent Cost	8	1
2.	Shipping Area	Road Access	6	2
3.	Punctuality	Route efficiency	6	2
4.	Unit Availability	Total Unit	5	3
		Unit Condition	5	3
5.	Punctuality	Estimated shipping duration	4	4
6.	Price	Loading cost	3	5
7.	Damage Claim	Compensation policy	3	5
8.	Shipping Area	Coverage Area	2	6
9.	Damage Claim	Insurance Claim Process	2	6

3.5. Forming the Matrix of Cross Impact Multiplications Applied to Classification (MICMAC).

Matrix Of Cross Impact Multiplication Applied to Calculation is a matrix that will be used to analyze driver power and dependence power. The MICMAC analysis result will be used as input in SMART method. Variables in MICMAC analysis will be classified into 4 sectors. Sum of data recapitulation will be averaged to determine the coordinate value on MICMAC.

1. Sector 1 : Autonomous Factor
2. Sector 2 : Dependent Factor
3. Sector 3 : Linkage Factor
4. Sector 4 : Independent Factor

Sum of data recapitulation will be averaged to determine the coordinate value on MICMAC. The recapitulation will be shown in table 6 below.

Table 6. MICMAC Recapitulation Result

Categories	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	Average
Driven Power	8	3	5	5	2	6	4	6	3	2	4,4
Dependence	3	3	2	6	3	2	8	3	6	7	4,3

Every sub-criteria is valued by calculating recapitulated driven power and dependence score as shown in table 6. Based on recapitulation, driven power average value is 4,4 and dependence is 4,3. This value will be used as dividing axis on MICMAC quadrant to map every sub-criteria's position. MICMAC graphics will be shown below.

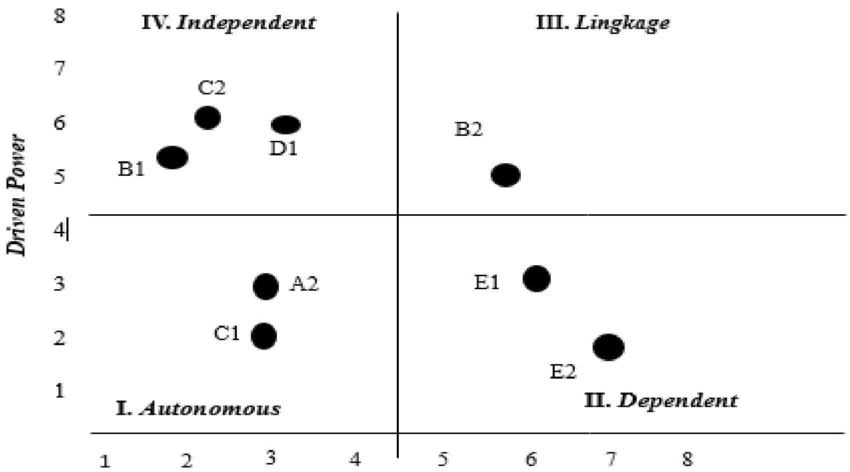

Image 1 Matrix of Cross Impact Multiplication

Image 1 shows the map of sub-criteria in MICMAC quadrant based on driven power and dependence. The average value for driven power is 4,4, and 4,3 for dependence. The result is divided in 4 sectors.

1. Sector I (Autonomous): A2 and C1, impact and dependence are low, not strategically important
2. Sector II (Dependent): E1 and E2, heavily affected by other sub-criteria, but do not significantly affecting other.
3. Sector III (Linkage): B2, strong reciprocal interaction, heavily important and sensitive to changes.
4. Sector IV (Independent): A1, B1, C2, and D1, heavily affecting the system, but not significantly affected.

from the 4 existing sectors, independent sector is chosen to be the input for SMART method. Sector IV is chosen because of the sub-criteria in it has high driven power but without taking much effect from other sub-criteria.

3.6. Forming the Interpretative Structural Modelling (ISM)

This process will be based on sub-criteria that has highest driven power or the lowest rank. In contrast, the highest level is filled with sub-criteria with lowest driven power or highest rank. ISM model can be seen below:

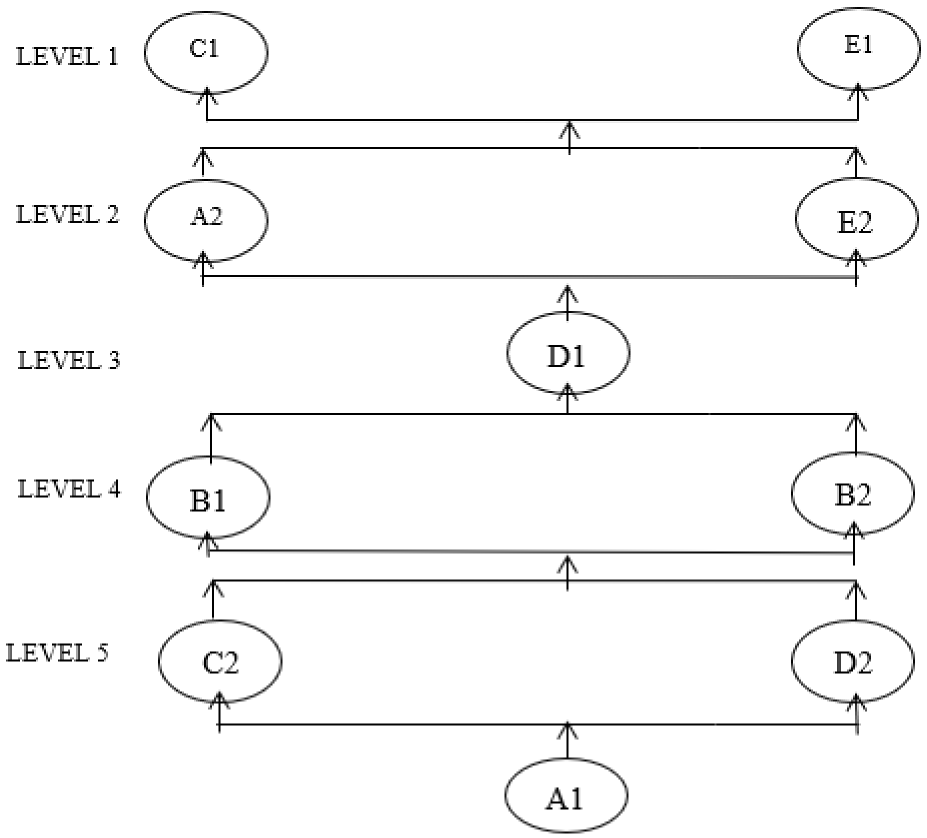

Image 2 Interpretive Structural Modelling (ISM) Model

3.7. Weighting the selected Criteria with SMART methods

The selected criteria are those located in the independent sector. The next step is to assign weights to the selected criteria according to the sub-criteria using the Multi Attribute Rating Technique (SMART) method. At this stage, the weights are assigned using a rating scale between 1 and 100, with careful consideration of the main priority for each criterion.

Table 7 Determining Criteria on Expedition Choosing

No	Criteria	Weight
1.	Price	100
2.	Unit Availability	85
3.	Punctuality	90
4.	Shipping Area	80
Total		**355**

3.8. Normalization of Criteria's Weight

Normalization of the weight of each criterion is carried out by comparing the weight value of each criterion to the total overall weight of the criteria. The calculation steps are as follows:

Table 8 Normalization of Criteria's Weight

No	Criteria	Weight
1.	Price	100/355 = 0,282
2.	Unit Availability	85/355 = 0,239
3.	Punctuality	90/355 = 0,253
4.	Shipping Area	80/355 = 0,225

3.9. Calculation of Expedition Score

Assigning values to each alternative based on the established criteria, either in the form of quantitative data (numbers) or qualitative data (such as very good, good, fairly good, and poor). The range of values used is 1–60 for the Poor category, 61–70 for Fair, 71–89 for Good, and 90–100 for Very Good [7].

Table 9 Assigning Value on each criterion

No	Expedition	Price	Unit Availability	Punctuality	Shipping Area
1.	Arunika	90	85	85	85
2.	Nirmala	90	85	90	90
3.	Samudra	85	85	85	86
4.	Bahari	90	85	85	85
5.	Cakra	85	80	50	85
6.	Kurnia	85	80	85	85
7.	Putra Pratama	95	90	60	85
8.	Abadi	90	85	85	85
9.	Lancar Jaya	100	90	90	95
10.	Rania	80	80	90	88
11.	Aqeela	80	70	95	95
Max		**100**	**90**	**95**	**95**
Min		**80**	**70**	**50**	**85**

3.10. Determining Utility Value

Utility Value is calculated by converting value from each criterion to standardized form, which is adjusted to each criterion characteristic.

a. If cost (lesser the better)

$$u_i\,(a_i) \;= 100\;\frac{\text{Cmax-Cmin}}{\text{Cmax-Cmin}}\;\%$$

b. If benefit (bigger the better)

$$u_i\,(a_i) = 100\;\frac{\text{Cout - Cmin}}{\text{Cmax-Cmin}}\;\%$$

explanation:

$u(a_i)$ = utility value of the i-th criterion
Cmax = maximum criterion value
Cmin = minimum criterion value
Cout I = i-th criterion value

Tabel 10 Utility Value

No	Alternative	Price%	Unit Availability%	Punctuality%	Shipping Area%
1.	Arunika	100	75	77,78	0
2.	Nirmala	100	75	88,89	50
3.	Samudra	100	75	77,78	10
4.	Bahari	100	75	77,78	0
5.	Cakra	100	50	0	0
6.	Kurnia	100	50	77,78	0
7.	Putra Pratama	100	100	22,22	0
8.	Abadi	100	75	77,78	0

No	Alternative	Price%	Unit Availability%	Punctuality%	Shipping Area%
9.	Lancar Jaya	100	100	88,89	100
10.	Rania	100	50	88,89	30
11.	Aqeela	100	0	100	100
Kategori		**Cost**	**Benefit**	**Benefit**	**Benefit**

3.11. Final Score

Calculation the final score of each criterion by multiplying the normalized weight value of the criterion with its utility value.

$$u(a_i) = W_j u_i(a_i)$$

Keterangan:

$u(a_i)$ = I-th criterion utility value

W_j = the normalized weight value of the j-th criterion

$u_i(a_i)$ = the utility value of the j-th criterion for i-th alternative.

Tabel 11 Final Score

No	Alternative	Price%	Unit Availability%	Punctuality%	Shipping Area%
1.	Arunika	28,2	17,925	19,68	0
2.	Nirmala	28,2	17,925	22,49	11,3
3.	Samudra	28,2	17,925	19,68	2,25
4.	Bahari	28,2	17,925	19,68	0
5.	Cakra	28,2	11,95	0	0
6.	Kurnia	28,2	11,95	19,68	0
7.	Putra Pratama	28,2	23,9	5,622	0
8.	Abadi	28,2	17,925	19,68	0
9.	Lancar Jaya	28,2	23,9	22,49	22,5
10.	Rania	28,2	11,95	22,49	6,75
11.	Aqeela	28,2	0	25,3	22,5

3.12. Rankings

At this stage, the final values of each alternative will be ranked from the highest to the lowest, so that the best alternative can be determined based on these final values. These results serve as an evaluation material for manufacturing companies to improve the expedition selection system, which is useful for minimizing operational costs and supporting smooth production.

Table 12 Ranking

No	Alternative	Final Score	Rank
1.	Lancar Jaya	97,09	1
2.	Nirmala	79,86	2
3.	Aqeela	76	3
4.	Rania	69,39	4
5.	Samudra	68,05	5
6.	Bahari	65,8	6
7.	Abadi	65,8	6
8.	Arunika	65,8	6
9.	Kurnia	59,83	7
10.	Putra Pratama	57,72	8
11.	Cakra	40,15	9

4. CONCLUSION

Based on the research that has been conducted, it can be concluded that the selection of cement transportation expeditions at manufacturing companies is as follows:

1. Through the ISM method, four main influential factors were identified, namely price, unit availability, timeliness, and delivery area, which are expected to

improve the efficiency of expedition selection and support smooth production.

2. Based on the main criteria that have been established, namely price, unit availability, timeliness, and delivery area, the expedition selection was carried out using the SMART method. The analysis results show that Lancar Jaya became the best expedition with the highest score of 97.09. In second place was Nirmala with a score of 79.86, followed by Aqeela in third place with a score of 76.00. Rania ranked fourth with a score of 69.39, followed by Samudra with 68.05. Three expeditions—Bahari, Abadi, and Arunika—shared sixth place with the same score of 65.8. Kurnia ranked seventh with 59.83, while Putra Pratama occupied the eighth position with 57.72. Cakra became the expedition with the lowest score of 40.15, ranking ninth. These results can serve as a basis for manufacturing companies in determining expedition selection priorities more objectively and efficiently.

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