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Selection of a Logistics Operator for a Retail Company as Part of Supporting the Company's Expansion Strategy

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Abstract:

Purpose: *The purpose of this article is to present the application of the Bellinger method in selecting a logistics operator for a retail company planning to expand its point-of-sale network. The goal is to identify an efficient and reliable logistics operator to support the company's growth by optimizing logistics services.*
Design/Methodology/Approach: *The study begins with a literature review and a detailed explanation of the methodology, focusing on the Bellinger method. The criteria for evaluating logistics operators are defined, and relevant data are analyzed to compare potential candidates. The application of the Bellinger method allows for a systematic and objective assessment of logistics operators.*
Findings: *The results of the analysis demonstrate the selection of the logistics operator that best meets the defined evaluation criteria. The chosen logistics operator offers the reliability and efficiency needed to support the company's expansion strategy and optimize its logistics processes.*
Practical Implications: *The findings provide practical guidance for retail companies seeking effective methods for selecting logistics operators. Implementing the Bellinger method can enhance decision-making processes, improve supply chain efficiency, and support business growth.*
Originality/Value: *This article contributes to the field by demonstrating a structured approach to selecting logistics operators using the Bellinger method. It offers a practical solution for retail companies facing challenges in logistics management while expanding their sales networks.*

Keywords: *Logistics operators, Bellinger method, supply chain management, retail industry, logistics evaluation.*

JEL codes: *C44, L81, L91.*

Paper type: *Research article.*

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1. Introduction

In today's highly competitive retail environment, efficient logistics operations play a crucial role in supporting a company's expansion strategy (Gomes *et al.,* 2023). As retail companies grow and expand into new markets, the complexity of their supply chain increases, making the selection of a competent logistics operator vital (Richey *et al.,* 2022). The logistics operator is responsible for the efficient transportation, storage, and distribution of goods, directly impacting the company's ability to meet customer demands, minimize costs, and ensure high levels of service quality. Therefore, selecting the right logistics partner is not just a tactical decision but a strategic one that can significantly influence a company's success in expanding its market presence. Wrong choices in logistics partnerships can lead to inefficiencies, increased costs, and ultimately, customer dissatisfaction, which can severely hamper a company's growth (Darko and Vlachos, 2022).

The presented study aims to address the challenge of selecting a logistics operator for a retail company, focusing on how this decision can align with and support the company's broader expansion strategy (Mangla *et al.,* 2022). The research sets out to achieve several specific aims and tasks. Firstly, it seeks to identify the key criteria that retail companies should consider when selecting a logistics operator, including factors such as timeliness, completeness of deliveries, cost-effectiveness, and customer satisfaction. The study aims to develop a decision-making model that incorporates these criteria, utilizing a multi-criteria decision-making (MCDM) method to provide a structured approach to operator selection (Sriram *et al.,* 2022).

The novelty and topicality of the research stem from its focus on integrating logistics operator selection into the broader strategic framework of retail expansion. While there has been substantial research on supply chain optimization and logistics management, there is a relative paucity of studies that specifically address the intersection of logistics operator selection and corporate expansion strategies in the retail sector (Aarikka-Stenroos *et al.,* 2022). This study seeks to fill that gap by providing insights into how logistics decisions can support strategic objectives and drive growth.

The research is delimited to focus on the retail sector, acknowledging that different industries may have varying logistics requirements and criteria. For the purpose of this study, only operators whose service costs fall within the budget strictly defined by the company were considered. Theoretical discussions will draw on supply chain management theories, strategic management principles, and decision-making frameworks to support the development of the selection model (Stroumpoulis and Kopanaki, 2022). In conclusion, this research aims to provide a comprehensive understanding of how retail companies can select logistics operators to support their expansion strategies effectively (Judijanto *et al.,* 2024). By doing so, it not only contributes to academic knowledge in the field of logistics and supply chain management but also offers practical tools and frameworks that retail companies can

apply to enhance their strategic decision-making processes (Hicham *et al.,* 2023).

2. Literature Review

The role of logistics operators is pivotal in ensuring efficient supply chain management, particularly in the retail sector, where customer satisfaction depends on timely and accurate deliveries. Logistics service providers (LSPs) offer solutions for transportation, warehousing, and distribution, making their selection a critical decision for retail businesses. Various decision-making methodologies have emerged to evaluate and select the most appropriate logistics operator, balancing cost, quality, reliability, and operational capacity (Zarbakhshnia and Karimi, 2024).

The selection of logistics operators involves solving a multi-criteria decision-making problem, as companies must assess a variety of qualitative and quantitative criteria. Traditional MCDM approaches, such as the Analytic Hierarchy Process (AHP), TOPSIS, and Data Envelopment Analysis (DEA), are frequently applied to these scenarios (Rane *et al.*, 2023). These methods allow businesses to analyze trade-offs between criteria like cost, delivery speed, flexibility, and environmental performance. However, some methods may fail to handle subjective judgment effectively or lack adaptability to company-specific needs (Sahoo and Goswami, 2023).

The Bellinger method, a lesser-known but robust decision-making framework, focuses on simplifying the selection process for logistics operators by combining logical scoring and weight assignment techniques (Dzioba, 2021). This method incorporates systematic criteria evaluation, scoring alternatives on measurable and qualitative attributes, and assigning weights to criteria based on their importance. The Bellinger method's structured yet adaptable nature makes it suitable for decision-making in complex business environments like retail logistics. Unlike AHP or TOPSIS, which require extensive pairwise comparisons, the Bellinger method streamlines the selection process while maintaining decision-making accuracy (Costa *et al.,* 2023).

Although the Bellinger method is not as widely studied as other MCDM approaches, its applications in logistics are gaining recognition (Einabadi, 2023). Studies show that the method is particularly effective in choosing among alternatives with diverse performance indicators, as it eliminates redundancies and subjectivity biases. For example, in the retail sector, companies often evaluate LSPs based on cost-efficiency, lead time, on-time delivery rate, and technological capability. The Bellinger method's scoring approach allows decision-makers to rank logistics providers transparently while aligning decisions with company objectives (Tiwari *et al.,* 2023).

Retail companies require logistics operators that can manage dynamic supply chain networks, address seasonal demand, and reduce operational costs (Tadayonrad and

Ndiaye, 2023). The Bellinger method offers several advantages: it reduces the complexity associated with multi-criteria comparisons while ensuring thorough analysis; it allows decision-makers to easily adapt criteria weights to align with the company's strategic goals; and it balances qualitative and quantitative criteria, mitigating subjective biases (Korucuk *et al.*, 2023). For retail businesses, where decisions are time-sensitive, the Bellinger method offers a practical approach to logistics operator selection compared to time-intensive MCDM techniques like AHP.

A comparison of the Bellinger method with established MCDM frameworks reveals its unique strengths in logistics operator evaluation. For instance, while methods like AHP and PROMETHEE rely heavily on pairwise comparisons or outranking relationships, the Bellinger method employs a direct scoring system, saving both time and computational effort (Altubaishe and Desai, 2023). Additionally, the Bellinger method's linear structure allows it to address real-world complexities in retail logistics without compromising decision quality.

The selection of logistics operators remains a critical strategic decision for retail companies aiming to maintain competitive advantage in dynamic markets (Yaiprasert and Hidayanto, 2024). While various MCDM techniques have been explored, the Bellinger method provides a simplified yet robust framework for evaluating logistics providers. Its ability to integrate qualitative and quantitative criteria, along with its ease of use, makes it a promising tool for retail companies. Future research can further validate the method’s effectiveness through real-world case studies and comparative performance analysis (Pargaonkar, 2023).

3. Methodology

The Bellinger Method is an analytical technique primarily employed in multi-criteria decision-making (MCDM) contexts, where it aids in the evaluation and ranking of various alternatives based on multiple conflicting criteria. This method is particularly useful in fields such as supply chain management, logistics, strategic planning, and resource allocation, where decision-makers must balance diverse and sometimes contradictory objectives. The method's ability to handle both qualitative and quantitative criteria makes it versatile and adaptable to a wide range of decision-making scenarios. In practice, the Bellinger Method is often applied in situations where a decision-maker needs to choose the best option from a set of alternatives, considering multiple factors that may have different units of measurement and varying degrees of importance. Examples include selecting a logistics operator, optimizing supplier selection, choosing the best location for a facility, or any scenario where complex decisions need to be made systematically.

The steps which are included into Bellinger method application are:

- Definition of the decision-making problem and list all possible alternatives

to be evaluated - Clearly outline the decision problem (e.g., selecting a logistics operator) and the key goals the decision aims to achieve.
- Establish Criteria – List the qualitative and quantitative evaluation criteria relevant to the problem, such as cost, delivery time, or reliability.
- Assign Weights – Allocate importance to each criterion by assigning weights based on priorities and company objectives.
- Score Alternatives – Evaluate each logistics operator against all criteria using a numerical scale.
- Normalization & Calculation of the Normalized Score.
- Rank Alternatives – Compare the total scores; the logistics operator with the highest score is chosen as the most suitable option.
- Validate the Decision – Optionally, perform sensitivity analysis to ensure the final decision is robust against small changes in weightings.

The Bellinger Method stands out for its ability to incorporate both objective and subjective criteria in a systematic and transparent manner. By normalizing the criteria and assigning weights that reflect their importance, this method provides a clear and quantifiable basis for decision-making. The method's structured approach to integrating multiple criteria, along with its flexibility to accommodate various types of data, enhances its applicability across different decision-making contexts.

Additionally, the method's emphasis on normalization ensures that all criteria are considered on a comparable scale, mitigating biases that could arise from differences in measurement units or value ranges. This aspect makes the Bellinger Method particularly effective in complex decision-making environments, where diverse factors must be evaluated concurrently.

4. Research Results and Discussion

In the first stage of the study, the decision problem was defined as selecting a logistics operator for a company in the retail industry that is expanding its network of brick-and-mortar stores. Twenty potential operators were identified, and the following evaluation criteria were selected:

The company's competitive potential; Percentage of positively rated services [%]; On-time delivery rate [%]; Delivery completeness [%]; Accuracy [%]; Weighted customer satisfaction index [%]; Market leader rating according to key clients [%]; Market leader position index.

All the criteria have stimulant characteristics, meaning the higher their value, the better the operator's performance will be. The following weights were assigned to the criteria (Table 1).

Logistics operators scored the following for the defined criteria (Table 2). In the next step, normalization of out the use of the for assessments was undertaken, using the

formula:

$$X_{norm} = \frac{X - X_{min}}{X_{max} - X_{min}} \quad (1)$$

where:
X_{norm} – normalized value of the metric
X – current value of the metric
X_{min} – minimum value of the metric
X_{max} – maximum value of the metric

Normalized scores for the considered logistics operators are presented in Table 4.

Table 1. *Criteria's weights*

Criteria	**Weight**
The company's competitive potential	0,13
Percentage of positively rated services [%]	0,08
On-time delivery rate [%]	0,18
Delivery completeness [%]	0,05
Accuracy [%]	0,09
Weighted customer satisfaction index [%]	0,09
Market leader rating according to key clients [%]	0,26
Market leader position index	0,12

Source: *Author's calculations.*

Table 2. *Logistics operators scores*

Logistics operator	**The company's competitive potential**	**Percentage of positively rated services [%]**	**On-time delivery rate [%]**	**Delivery completeness [%]**	**Accuracy [%]**	**Weighted customer satisfaction index [%]**	**Market leader rating according to key clients [%]**	**Market leader position index**
1	0,972	22,41	86,1	88,9	75	52,13	50	0,583
2	1,917	20,99	83,3	91,7	83,3	41,49	58,3	0,917
3	5,081	27,26	76	88	72	75,72	64	3,84
4	1,659	26,54	86	88,2	80	45,32	52	1,2
5	0,217	16,22	95,7	95,7	91,3	49,32	4,3	0,043
6	2,441	24,17	66,7	83,3	75	41,93	25	1
7	2,539	27,42	100	100	100	88,88	85,7	1,679
8	1,578	23,39	74	84	80	58,79	52	0,98
9	2,638	21,77	100	100	100	68,19	60	1,667
10	0,333	13,69	57,1	52,4	52,4	16,53	14,3	0,143
11	0,556	18,89	83,3	91,7	83,3	25,98	25	0,25
12	1,311	21,67	100	100	100	89,8	90	1,1
13	1,141	22,32	77,4	87,1	80,6	50,87	35,5	0,355
14	1,688	23,67	82,8	96,6	89,7	75,59	51,7	0,829
15	3,029	21,22	80	77,1	62,9	47,13	42,5	0,875
16	5,283	27,39	70	76	68	48,41	66	3,5

17	2,503	23,44	73,5	91,2	79,6	50,32	52,9	1,059
18	0,821	16,22	59,1	72,7	63,6	58,47	34,1	0,568
19	1,137	24,61	89,6	89,6	68,8	75,3	39,6	0,417
20	3,102	36,87	90	92	86	75,15	60	1,32

Source: *Author's calculations.*

For each criteria, the minimum value, the maximum value and the difference between them were counted. The results are shown in Table 3.

Table 3. *Maximum, minimum & difference between max. and min. value for each criteria*

Criteria	**Maximum value**	**Minimum value**	**Difference**
The company's competitive potential	5,283	0,217	5,066
Percentage of positively rated services [%]	36,87	13,69	23,18
On-time delivery rate [%]	100	57,1	42,9
Delivery completeness [%]	100	52,4	47,6
Accuracy [%]	100	52,4	47,6
Weighted customer satisfaction index [%]	89,8	16,53	73,27
Market leader rating according to key clients [%]	90	4,3	85,7
Market leader position index	3,84	0,043	3,797

Source: *Author's calculations.*

Table 4. *Normalized logistics operators scores*

Logistics operator	**The company's competitive potential**	**Percentage of positively rated services [%]**	**On-time delivery rate [%]**	**Delivery completeness [%]**	**Accuracy [%]**	**Weighted customer satisfaction index [%]**	**Market leader rating according to key clients [%]**	**Market leader position index**
1	14,90	37,62	67,60	76,68	47,48	48,59	53,33	14,22
2	33,56	31,49	61,07	82,56	64,92	34,07	63,01	23,02
3	96,01	58,54	44,06	74,79	41,18	80,78	69,66	100,00
4	28,46	55,44	67,37	75,21	57,98	39,29	55,66	30,47
5	0,00	10,91	89,98	90,97	81,72	44,75	0,00	0,00
6	43,90	45,21	22,38	64,92	47,48	34,67	24,15	25,20
7	45,83	59,23	100,00	100,00	100,00	98,74	94,98	43,09
8	26,87	41,85	39,39	66,39	57,98	57,68	55,66	24,68
9	47,79	34,86	100,00	100,00	100,00	70,51	64,99	42,77
10	2,29	0,00	0,00	0,00	0,00	0,00	11,67	2,63
11	6,69	22,43	61,07	82,56	64,92	12,90	24,15	5,45
12	21,59	34,43	100,00	100,00	100,00	100,00	100,00	27,84
13	18,24	37,23	47,32	72,90	59,24	46,87	36,41	8,22
14	29,04	43,05	59,91	92,86	78,36	80,61	55,31	20,70
15	55,51	32,48	53,38	51,89	22,06	41,76	44,57	21,91
16	100,00	59,10	30,07	49,58	32,77	43,51	72,00	91,05
17	45,12	42,06	38,23	81,51	57,14	46,12	56,71	26,76
18	11,92	10,91	4,66	42,65	23,53	57,24	34,77	13,83
19	18,16	47,11	75,76	78,15	34,45	80,21	41,19	9,85

20	56,95	100,00	76,69	83,19	70,59	80,01	64,99	33,63

Source: *Author's calculations.*

In the final step, the sum of the multiplications was used to obtain a final score for each potential operator. The results achieved can be found in the table below (Table 5).

Table 5. *Final results achieved by each considered logistics operator*

Logistics operator	**Final result**
1	45,17
2	50,06
3	69,92
4	50,90
5	33,00
6	33,30
7	81,45
8	45,09
9	69,38
10	3,65
11	31,72
12	75,90
13	37,51
14	53,82
15	41,98
16	62,13
17	47,44
18	23,36
19	45,88
20	67,85

Source: *Author's calculations.*

Logistics operator number 7 achieved the highest overall score and is identified as the potential winner of the tender. This operator stands out due to its exceptional performance, achieving 100% on-time delivery and delivery completeness. These two factors are crucial for the company, as it is in the process of expanding its operational reach by opening new brick-and-mortar stores and striving to maintain a competitive edge in the market. The ability to ensure timely and complete deliveries significantly supports the company's strategic goals, such as enhancing customer satisfaction and operational efficiency.

On the other hand, logistics operator number 10 received the lowest score among all evaluated candidates. This operator's poor performance is reflected in delivering orders with only partial completeness, timeliness, and accuracy. Such shortcomings are particularly problematic for a growing business, as delays, incomplete shipments, and errors in delivery can disrupt operations, damage customer trust, and hinder the company's ability to compete effectively in an increasingly demanding market environment.

The company should also consider initiating negotiations with logistics operators who achieved high scores during the evaluation process. Establishing agreements with multiple well-performing operators can provide the organization with flexibility and resilience in its supply chain. In today's dynamic and unpredictable business environment, supply chains are particularly vulnerable to disruptions caused by unforeseen circumstances, such as natural disasters, technical failures, or other operational challenges. Relying on a single logistics provider may expose the company to significant risks, potentially leading to delays, incomplete deliveries, or interruptions in the flow of goods. By diversifying its partnerships and engaging multiple reliable operators, the company can enhance its ability to respond effectively to unexpected events, ensuring operational continuity and maintaining a competitive advantage in the market.

5. Conclusions, Proposals, Recommendations

The study employed the Bellinger method to identify the most suitable logistics operator for a company with substantial expansion potential. This method proved highly effective, enabling a systematic, objective, and transparent evaluation of multiple logistics providers based on a comprehensive set of predefined criteria, such as timeliness, delivery completeness, service accuracy, and overall performance quality.

By aggregating and analyzing diverse performance metrics, the Bellinger method facilitated the selection of the operator that best aligns with the company's operational requirements and long-term strategic objectives. One of the key advantages of this method is its ability to eliminate subjective biases, ensuring that decisions are driven by data and measurable indicators, which is particularly valuable for businesses operating in dynamic and competitive markets.

The importance of selecting a highly qualified logistics operator cannot be overstated, especially for companies undergoing rapid growth and expansion. Logistics providers play a pivotal role in ensuring the seamless and reliable flow of goods, which directly influences supply chain efficiency, inventory management, and customer satisfaction.

A dependable logistics partner contributes to minimizing operational disruptions, reducing costs associated with delayed or incomplete deliveries, and enhancing the overall responsiveness of the supply chain. These factors are critical for businesses seeking to maintain their competitive advantage, expand market reach, and meet the growing expectations of customers in a consistent and reliable manner. By partnering with a top-performing logistics operator, companies can optimize their operational processes, build trust with stakeholders, and better position themselves for sustainable long-term growth.

To build upon the findings of this study, future research should consider extending

the scope to address other critical components of the logistics infrastructure. One potential area for expansion could involve the selection and evaluation of a new central warehouse capable of accommodating increased demand and servicing a larger number of retail outlets. This analysis could include factors such as warehouse location, capacity, transportation network connectivity, operational costs, and technological integration.

A well-positioned and efficiently managed central warehouse can further streamline supply chain operations, improve delivery times, and reduce transportation costs, all of which are essential for supporting the company's ongoing expansion efforts.

Additionally, future studies could incorporate the analysis of multi-operator logistics strategies to further enhance supply chain resilience. Diversifying logistics partnerships can mitigate risks associated with unforeseen disruptions, such as equipment failures, labor shortages, or environmental factors, ensuring business continuity in dynamic market conditions. By developing a comprehensive and adaptive logistics strategy, companies can strengthen their operational agility, enhance scalability, and achieve higher levels of performance as they expand their market presence.

In conclusion, the combination of a rigorous selection methodology, such as the Bellinger method, and strategic investments in logistics infrastructure can significantly contribute to a company's ability to scale operations effectively, maintain service excellence, and achieve sustainable growth in competitive markets.

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