# Enhancing Supply Chain Flows Through Transport Logistics Management Auditing

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**Abstract:**

In an economic environment marked by transaction amplification and greater rivalry, transportation becomes a critical aspect of competitiveness since it accounts for a significant portion of product cost and enables for the integration of processes across various logistics actors. Companies' adoption of best practices in transportation management appears to be a strategic factor for competitiveness. The goal of this research is to use SC auditing to examine the performance of transportation management. The use of ASLOG standards in an SME functioning in the agri-food industry exemplifies this audit. The ASLOG model enables to identify transport logistics' strengths and shortcomings in order to create and implement a progress plan that consolidates strengths and improves deficiencies.

**Keywords:** Transportation Logistics; SC Auditing; Performance.

**JEL Classification Codes**: M42, L91, L25

**ملخص:**

في بيئة اقتصادية تتميز بتضخيم المعاملات وزيادة المنافسة ، يصبح النقل جانبًا حاسمًا للقدرة التنافسية نظرًا لأنه يمثل جزءًا كبيرًا من تكلفة المنتج ويسمح بتكامل العمليات عبر مختلف الجهات الفاعلة اللوجستية. يبدو أن تبني الشركات لأفضل الممارسات في إدارة النقل عامل استراتيجي للقدرة التنافسية. الهدف من هذا البحث هو استخدام تدقيق اللجنة العليا لفحص أداء إدارة النقل. يمثل استخدام معايير *ASLOG* في شركة صغيرة ومتوسطة تعمل في صناعة الأغذية الزراعية مثالاً على هذا التدقيق. يتيح نموذج

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*ASLOG* تحديد نقاط القوة والقصور في لوجستيات النقل من أجل إنشاء وتنفيذ خطة تقدم تعزز نقاط القوة وتحسن أوجه القصور.

**كلمات مفتاحية:** النقل والخدمات اللوجستية؛ المراجعة اللوجستية؛ الأداء.

تصنيفات **JEL** : M42, L91, L25

## 1. INTRODUCTION

The expansion in sales after a considerable increase in consumption has had the principal implications of an amplification and complexity of flows between the many stakeholders in the economic system in a climate of globalization of trade and increasingly severe competition. As a result, these flows have grown difficult to justify and demand specific attention, leading to the birth of the Supply Chain idea, which is a major competitiveness lever (Laghouag & Hadid, 2013).

Supply Chain Management has evolved into a multidisciplinary science that touches practically every aspect of business, including transportation. SCM aids in the improvement of corporate performance in two ways: First, according to (Lambert, García-Dastugue, S. J., & Croxton, K. L., 2005), it is the cross-functional and cross-functional integration of important business processes and information that adds value to customers and stakeholders via the supply chain network. The transport function is critical to the efficiency of this integration. The second job of Supply Chain, according to (Stadtler, 2005), is the coordination of physical, informational, and financial flows in order to meet the needs of end customers with the goal of enhancing Supply Chain's overall competitiveness. In the same vein, the contributions of the SCM, through the integration and coordination of flows, are multiple. (Beamon, 1999) and (Bowersox D.J, 2013) show that these contributions can be visible in financial terms such as the improvement of turnover, the optimization of investments as well as the improvement of efficiency through productivity and the control of total costs (costs of storage, distribution, etc.). Indeed, mastering the transport function is a condition that determines the competitiveness of companies when transport costs represent a non-negligible and decisive part of the cost

price.

The objective of this article is mainly to answer the following research question: to what extent the transport logistics management is efficient and effective to improve the global SC performance? Answering this question is illustrated through the evaluation of the maturity of the transport practices of an SME operating in the dairy products sector.

Furthermore, this evaluation of the performance of practices could be accomplished using standards such as: SCOR model, ASLOG model, SC Master, SCALE and OLIVER WEIGHT model. These make it possible to focus on all the strengths and weaknesses of transport logistics in a Supply Chain approach in order to be able to set up and monitor progress plans consisting of consolidating the strengths as well as to develop solutions for the weak points relating to the transport function.

This article is organized as follows: we first presented the importance of the transport function as a factor of competitiveness. Then, we will have an overview of the different repositories allowing the evaluation of transport logistics, with particular attention to the ASLOG repository which will be applied in our study. Then, the studied company has been described as well as the conditions and circumstances that characterized the conduct of our auditing and the interviews conducted with managers. The results of these interviews enabled us to identify the strengths and weaknesses of the transport function. These were then the subject of an in-depth analysis in order to understand the causes of the malfunctions observed. At the end, an action plan was developed to provide society with solutions through which managers can optimize and improve transport practices towards excellence.

## 2. 2. TRANSPORT LOGISTICS: AN EFFECTIVE FUNCTION TO LEVERAGE PERFORMANCE

Transport management is no longer a stand-alone function as it must align with the overall logistics strategy which, in turn, must be aligned with the company's competitiveness strategy (Achahchah, 2018). However, it is now the most vital link in the supply chain as this function bears the burden of movement in most modern supply chains (Jim, 2019). The importance of transportation logistics is evident as it represents transportation management as the segment of logistics and transportation options needed

to move raw material and products from the source (factory, producer, coal or ore mine railway, port, terminal, etc.) Where you need it (final delivery of your raw product or final product).

Indeed, the advantages of the transport function are multiple: Firstly, it ensures the training of the work teams, which are responsible for different missions, by controlling their performance and analyzing their strengths and weaknesses, in order to improve their responsiveness and their effectiveness. Thus, this function makes it possible to manage the relational side whether it is with the customers, the suppliers or with the transporters, whether he works alone or in a team. It also makes it possible to comply with safety, hygiene and environmental constraints (emission of CO2 for example). Finally, it makes it possible to control and optimize the logistics concerning the thanks to the use of integrated software packages such as the TMS, WMS.

From what has been mentioned above, it becomes important for companies to develop and adopt best practices relating to CS in general, and to transport management in particular, and to regularly ensure that their relevance to the constantly changing work environment. This assessment of SC practices can be accomplished from an audit based on logistics benchmarks such as: the ASLOG model, SC Master, SC Process Maturity, EVALOG, SCOR, SCPM 3, S(CM)2, Best Practice Maturity, Oliver Weight, etc.

The transport audit consists of developing an action plan on: (1) the transport schemes, namely the identification of alternative transport schemes to the current scheme allowing the search for a reduction in kms and consequently the reduction of the transport budget, as well as study of opportunities through the reassignment of areas on the platforms currently used, the use of new platforms, the expansion of the scope of direct delivery, and the upstream massification of flows. (2) optimization of the transporters panel, through inventory of the transporters currently used and their rates, analysis and comparison of the rates charged, integration of feedback from interviews with transporters, and framing of the analysis of invoices, detection, and elimination of anomalies. (3) optimization of the loading of means of transport based on an analysis of the performance of

current loads, proposal of ways to improve the loading (empty rate and economic performance of shipments).

According to (Mathieu, 2004), the audit is used to assess the execution and respect of commitments and good practices established upstream (Quality standards). An audit is based on a repository. According to (Mamy, 1987), in his article "Autopsy of the logistics diagnosis" defines this approach as a "critical examination" of the strengths and weaknesses of the logistics system necessarily leading to the determination of an action plan: these actions are themselves evaluated in cost of implementation and quantitative and qualitative gains. Transport audit can be done using logistics benchmarks such as: the ASLOG model, SC Master, SC Process Maturity, EVALOG, SCOR, SCPM 3, S(CM)2, Best Practice Maturity, Oliver Weight, etc. For our study, we opted for the ASLOG model, the mission of which is to energize business networks, to enable businesses to promote and appropriate knowledge and techniques as well as to develop tools for assessing the logistics performance. The ASLOG benchmark is designed to assess the global supply chain. This allows the company, whatever its size, to be evaluated against a reference grid that ranges from basic practices to operational excellence. The ASLOG model, which was designed following a process structure, presents several process axes in silos, including transport (Iskander, 2013).

Assessing the maturity of a company's transport practices is not at all easy and requires specific skills and considerable experience in the field, especially when it comes to positioning a company's practices in relation to best practices. The ASLOG model bases its evaluations on the level of performance or the level of mastery of practices, activities, or processes (Iskander, 2013). This frame of reference centers Supply Chain practices around three points, namely a method to be developed, a performance to be improved or a risk to be controlled. The rating of practices adopted by ASLOG uses a scale of 4 performance levels (0, 1, 2, 3) focused on the points mentioned above (Method, Performance, Risk). If, for example, a logistics management method exists, we give 1 point, if this method is mastered and optimized, we give 2 points, and if the strategic relevance of this method is regularly reviewed in a framework of permanent progress,

we give 3 points. , an example on this point concerns inventory management methods (FIFO, LIFO), or sales and production forecast methods, etc. For the second axis, which is the risk, if the risk or malfunctions are measured, 1 point is given, if the risk is contained in the intervals and levels determined beforehand, 2 points are awarded. And if the risk is controlled and preventive measures are put in place, 3 points are obtained. An example for risk is the maintenance of means of production, handling, etc. Regarding performance, if the performance of a logistics process is sufficient, even if it is not quantified (qualitative indicators), 1 point is given, if the performance is in occasional non-regular progress, 2 points are given, and if the performance is controlled within a framework of permanent progress in which the staff is largely involved, 3 points are awarded. An example of performance is for example transport management. If a given logistics process scores less than 3, it follows with a comment that highlights the company's practices relating to that process. Then, progress measures are developed to improve it (ASLOG, 2008).

Nevertheless, the ASLOG model has suffered several criticisms. (Iskander, 2013) shows that the fact that the ASLOG model, which was developed in 1997, is already in its 5th version shows the adaptation of this model to changes in the context in which companies operate, but reveals on the other hand, a certain instability of the established references and standards which can come either from the fact that the field is maturing, or from the fact that the protocols and methodologies for their development are not robust enough. Thus, this repository lacks a Supply Chain orientation and is rather oriented towards a functional vision. Indeed, (Netland & E. Alfnes., 2008)as well as (Srai & Gregory, M., 2008) show that these criticisms concern almost all the established reference systems, as shown by research in the field.

## 3. RESEARCH METHODOLOGY

The studied company manufacturing and distributing food products which was created on 30/01/2007, with an effective start-up in early 2008. With a workforce of more than 100 employees, the studied company has a transport fleet containing 12 refrigerated trucks (11 trucks of 1.5 tons, and

one truck of 2.5 tons). Regarding the workshops and production capacities, the company has 03 production workshops which operate continuously with 03 shifts of 08 hours. Regarding the logistics department, it is true that the supply department monitors all the logistics processes, but effective management of all logistics operations requires the establishment of a logistics department.

Regarding the audit conditions, this took place in the form of interviews with function managers (purchasing, production, stock management, sales, etc.) as well as the manager of the company. The questions were open but oriented according to the themes of the ASLOG standards.

In general, the employees in charge of transportation function have been identified. Sometimes questions about two different functions are asked to the same person since, as seen above, the responsibilities have interfered with each other and, therefore, the same person can do both. The audit took place in good conditions, the people audited really wanted to collaborate to pass the assessment and to have effective solutions to optimize processes and improve performance.

For managers who found difficulties to answer a question or express themselves on a such dysfunction, the researchers helped them to identify the problems and put the causal links with the dependent and/or independent variables. Thus, in case the explanation provided by a manager is not clear, the researchers moved with the manager concerned to the workplace to see the execution of operations in the field.

## 4. DATA COLLECTION AND RESULTS

The following table will be dedicated to the analysis of the various key axes of the transport audit such as the transporters selection, control of downstream flows, partnership with transporters as well as operational control.

## 4.1. Selecting Transporters

In this section, the audit highlights how are transporters are chosen.

**Table 1.** Transporters selection

| Questions | Scores | | | |
|---|---|---|---|---|
| | **0** | **1** | **2** | **3** |
| • How are the transporters who ensure the supply chosen? | | | √ | |
| • How are transporters delivering to customers or intermediary service providers chosen? | | | | √ |
| **Total** | **5 points** | | | |

**Source:** Provided by the researcher

The studied company generally knows most of the transporters who ensure the supply of the raw material and even if there are no contracts established between the two parties (The company / the supplier or the transportation copany), but they have agreement on the manner, costs, days and places of unloading.

Concerning the transport ensuring the delivery of products, the studied company has a fleet of vehicles which includes 6 refrigerated trucks at the disposal of the commercial service and 6 other trucks granted to the depositaries which cover the regions of the East, the West, the North and part of the south of the country. The staff of its trucks are therefore employees of the company and ensure that the delivery orders are applied in the right way.

Before each loading, the contact details relating to the transporters and the quantities loaded are checked. Truck drivers are generally audited beforehand to ensure their ability to perform the current and potential missions entrusted to them.

### 4.2. Control of downstream flow

In this section, the audit highlights the transportation needs are evaluated.

**Table 2.** Downstream flows control

| **Questions** | **Scores** | | | |
|---|---|---|---|---|
| | **0** | **1** | **2** | **3** |
| • How are transportation needs assessed? | | | √ | |
| **Total** | **2 points** | | | |

**Source:** Provided by the researcher

Transport needs are determined according to the level of sales as well as the delivery frequencies and the geographic dispersion of customers. The manager and those responsible for the functions, in particular that of supply and commercial service, meet periodically to reassess transportation needs in order to ensure their availability, taking into account market developments.

### 4.3. Partnership with Transporters

In this section, the audit highlights what control is exercised over transport operations.

**Table 3.** Partnership with Transporters

| **Questions** | **Scores** | | | |
|---|---|---|---|---|
| | **0** | **1** | **2** | **3** |
| • What control is exercised over transport operations? | | | √ | |
| **Total** | **2 points** | | | |

**Source:** Provided by the researcher

The studied company's delivery programs consider the days and working hours of customers, the transporter is informed of this program which allows him to deliver the products on time, moreover, it is the sales manager who manages the deliveries by giving orders to transporters.

As the transporters are employees in the studied company, the latter finds no difficulty in managing them. However, as mentioned above, the interference of responsibilities with each other sometimes leads to the loss of control of transport operations and causes delays in delivery times.

### 4.4. Operational control

In this section, the audit highlights how the control on transport activities is ensured.

**Table 4.** Operational control

| **Questions** | **Scores** | | | |
|---|---|---|---|---|
| | **0** | **1** | **2** | **3** |
| • What control is exercised over the quality of transport and delivery? | | √ | | |
| **Total** | **1 point** | | | |

**Source:** Provided by the researcher

The sales department is notified as soon as an anomaly is noted in the delivery in order to take corrective measures, and to avoid the repetition of the same errors in future shipments.

After evaluating all the dimensions, it is to say the company has a certain maturity regarding the transportation management, but the operational control presents a crucial problem. This topic needs particular attention from the company owner and managers.

Table 5 and Figure 1 summarize the evaluation of three transport logistics dimensions as follow:

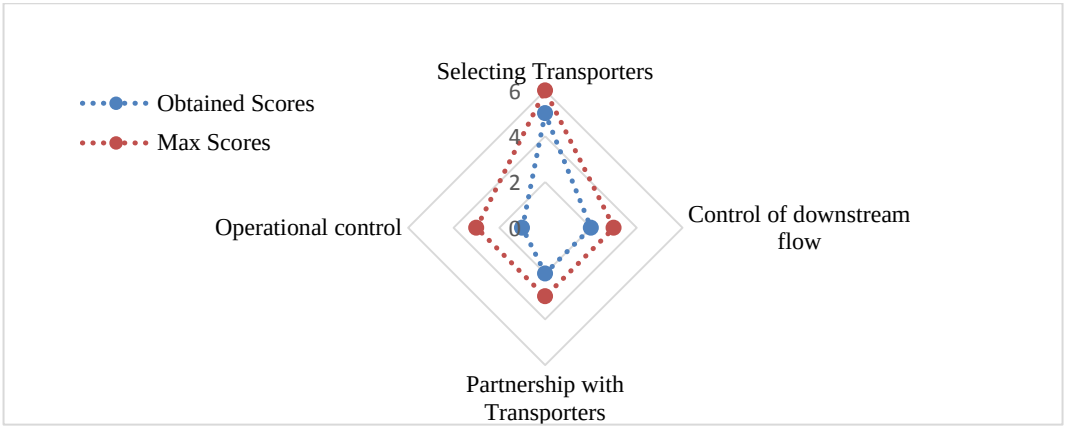
**Table 5.** Global evaluation

| **Dimensions** | **Obtained Scores** | **Max Scores** | **%** |
|---|---|---|---|
| **Selecting Transporters** | 05 | 06 | 83% |
| **Control of downstream flow** | 02 | 03 | 66% |
| **Partnership with Transporters** | 02 | 03 | 66% |
| **Operational control** | 01 | 03 | 33% |
| **Total** | **10** | **15** | **67%** |

**Source:** Provided by the researcher

Figure 1 presents a comparison between the required scores (Target) and the obtained scores.

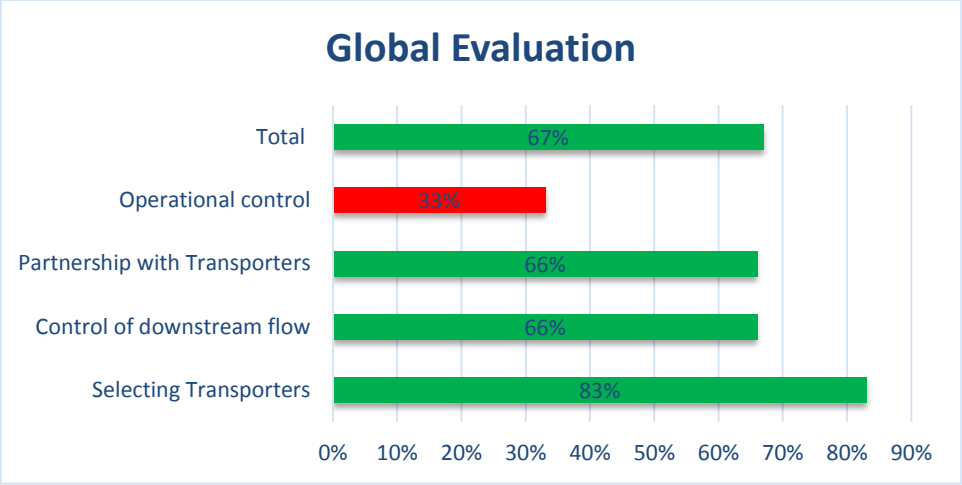
**Fig.1.** Transport Logistics Management Evaluation




**Source:** Provided by the researcher

Figure 2 shows the global evaluation for all transport logistics dimensions. Globally, compared to the best logistic practices, the company presents many strenghts, the only shortcoming could be with operational control with a maturity level of 33%.

**Fig.2.** Global Evaluation




**Source:** Provided by the researcher

## 5. DISCUSSIONS & RECOMENDATION

In order to ensure upstream flows, the studied company can leave the transport to the suppliers and negotiate the prices with them since it is relatively in a position of strength. It can even consolidate its relations with the best transporters and tries to retain them, especially because, in the actual economic context of the country, it is difficult to ensure the commitment of transporters due to a lack of contracts (informal market). It can also invest by buying a truck that provides it with upstream flows, but this truck can be used in other activities in the owner's portfolio (the owner has several activities).

The scheduling of delivery rounds by the sales department manager is not based on commercial data and statistics collected from customers. The manager manages the deliveries as he pleases. Transport needs can be optimized by putting in place a transport planning process that detects whether there is a shortage or a surplus in the means of transport and therefore allows the rational transport needs to be determined.

In order to control transport operations, the studied company must put in place all the necessary means that allow alternative solutions so that deliveries are always on time. Thus, the transporters ensuring the supply or the delivery must be involved and commit to finding and implementing alternative solutions to the problems they may face such as strikes, periods of mass holidays, etc.

## 6. CONCLUSION

In conclusion, this work consists in evaluating the transport logistics management performance in an SME which operates in the sector of dairy products. This assessment was based on a reference system designed by the French Association for Logistics (ASLOG) after having been readjusted to the context of activity of the studied company by eliminating certain questions. This benchmark allowed us to identify the performance sources of the transport function that could help this SME win by reducing costs and increasing sales. At the end, recommendations were made to strengthen the weak links, reduce malfunctions, and improve logistics practices. This article discusses problems relating to transporters selection, the control of downstream flows, partnership with transporters as well as operational control.

Like any research work, our work has certain limitations, the first limitation is of a methodological nature concerning the analysis of the interviews carried out with the managers and the evaluation points given to each axis of transport logistics. Indeed, the application of another reference such as the SC Master seems to be useful in order to compare the results with the ASLOG and see which one is very close to reality. Also, another maturity scale, which extends from 1 to 7, could be used in this audit and which seems more relevant in the evaluation than from 0 to 3. Finally, and the monitoring and implementation of the plan actions may be the subject of future research.

## 5. Bibliography List:

Achahchah, M. (2018). Lean Transportation Management: Using Logistics as a Strategic Differentiator. Productivity Press.

ASLOG. (2008). Logistics Performance Standards. France: ASLOG.

Beamon, B. M. (1999, 19(3–4)). Measuring supply chain performance. International Journal of Operations & Production Management, pp. 275–292.

Bowersox D.J, C. D. ( 2013). Supply Chain Logistics Management. Fourth Edition: Mc Graw-Hill International Edition.

Douglas M. Lambert, M. C. ( 1998). Supply Chain Management: Implementation Issues and Research Opportunities. the international Journal of Logistics Management, pp. 1-20.

Iskander, Z. (2013). Supply Chain maturity of companies: design of an evaluation model and implementation. PhD Thesis in Management: University of Grenoble.

Jim, H. (2019). Transportation Management: A Practical Handbook (Supply Chain Handbook Series) . Hardcover – Heartland Professional Services.

Laghouag, A., & Hadid, N. (2013). Strategic and operational evaluation of Supply Chain performance using the ASLOG Srandards. International Review of Economics, Business and Management, University of Algiers 3.

Lambert, D. M., García-Dastugue, S. J., & Croxton, K. L. (2005). An evaluation of process-oriented supply chain management frameworks. Journal of business Logistics, pp. 25–51.

Mamy, E. (1987). Logistic diagnosis autopsy. Mars Edition: Journal of « l'Acheteur ».

Mathieu, L. (2004). Diagnostic and performance evaluation methods for supply chain management: application to cooperation between parent company and international subsidiaries in a pharmaceutical and cosmetics group. PhD thesis, National Polytechnic Institute.

Netland, T. H., & E. Alfnes. (2008). A practical tool for supply chain improvement-experiences with the supply chain maturity assessment test (SCMAT) ». In Manufacturing Fundamentals: Necessity and

Sufficiency,. Proceedings of the 3rd World Conference on Production and Operations Management, POM Tokyo, 956–969.

Srai, J. S. (2005). Supply chain capability assessment of global operations. Hungary: Budapest.

Srai, J. S., & Gregory, M. (2008). A supply network configuration perspective on international supply chain development. International Journal of Operations & Production Management.

Stadtler, H. (2005). Supply chain management and advanced planning—-basics, overview and challenges. European journal of operational research, pp. 575–588.