



MEASURING TRANSPORT EFFECTIVENESS WITHIN A SUPPLY CHAIN APPROACH

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ABSTRACT

In an economic context strongly characterized by the amplification of transactions, translated by a very increased competition, transport becomes a vital factor of competitiveness since it represents an important component of the cost price of products as well as it allows processes integration between the different logistics actors. Adopting best practices in terms of transportation management by companies seems to be a strategic factor for competitiveness. The purpose of this study is to assess the maturity of transport practices using an SC auditing. This audit is illustrated by the application of the ASLOG standards in an Algerian SME operating in the food sector. The ASLOG model allows to highlight all the strengths and weaknesses of transport logistics in order to be able to set up and follow a progress plan that consolidates the strengths and improves the weaknesses.

KEYWORDS : Transportation Logistics; logistics Auditing; Maturity.

INTRODUCTION

In a context of globalization of trade and increasingly fierce competition, the growth in sales following a significant increase in consumption has had the major consequences of amplifying and making the flows among the various players in the economic system more complex. Consequently, these flows have become difficult to rationalize and require special attention, and have also led to the emergence of the concept of the Supply Chain which constitutes a powerful lever for competitiveness (Laghouag and Hadid, 2013).

Today, Supply Chain Management has become a multidisciplinary science affecting almost all business functions, including transport. The SCM contributes to improving the performance of companies through two main factors: First, according to (Lambert et al, 2005), it is the inter-functional and inter-functional integration of key business processes and information that adds value to consumers and stakeholders and this through the network of firms involved in SC. For the effectiveness of this integration, the transport function plays a key role. Then, according to (Stadler, 2005), the second role of the SC is the coordination of physical, information and financial flows in order to fulfill the demands of the end consumers with the objective of improving the competitiveness of the SC as a whole. In the same vein, the contributions of the SCM, through the integration and coordination of flows, are numerous. Beamon (1999) and Bowersox et al. (2013, P368) 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 control of total costs (costs of storage, distribution, etc.). Indeed, mastering the transport function turns out to be a condition which determines the competitiveness of companies when transport costs represent a non-negligible and decisive part in production costs.

The objective of this article is mainly to answer the following research question: How mature are transport logistics practices in Algerian SMEs? answering this question is illustrated through the evaluation of the maturity of the transport practices of an Algerian SME operating in the consumer food sector.

In addition, this evaluation of the performance of practices could be accomplished using standard models such as: AFNOR FD X50-605 Standards, the SCOR model, ASLOG, SC Master, SCALE and the OLIVER WEIGHT model. These

models allow to focus on all the strengths and weaknesses of transport logistics within a Supply Chain approach in order to set up and monitor progress plans consisting in 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 have presented, first, the importance of the transport function as a factor of competitiveness. Then, we will have an overview of the different benchmarks allowing the evaluation of transport logistics, with particular attention to the ASLOG benchmark which will be applied in our study. Then, we described the studied company, and the conditions and circumstances that characterized the progress of our auditing process and the interviews conducted with managers. The results of these interviews enable to identify the strengths and weaknesses of the transport function. These results were then the subject of an in-depth analysis in order to understand the causes of the dysfunctions observed. In the end, an action plan was developed to provide the company with solutions through which managers can optimize and improve transport practices towards excellence.

TRANSPORT LOGISTICS: A CRUCIAL FACTOR OF COMPETITIVENESS

Transport management is no longer an autonomous function as long 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 today the most vital link in the supply chain as this function bears the burden of movement in most modern supply chains (Handrickson, 2019). The importance of transport logistics is evident as it represents transport management as the segment of logistics and transport options necessary to move raw material products from the source (factory, producer, rail, port, terminal, etc.) to where you need it (final delivery of your raw product or final product) (Tealic, 2020)

Indeed, the advantages of the transport function are multiple (Carl Beaudoin, 2018): First, it ensures the training of the work teams, who are responsible for different missions, by monitoring their performance and analyzing their strengths and weaknesses, in order to improve their responsiveness and efficiency. Thus, this function allows to manage the relational side whether with customers, suppliers or transporters, whether they work alone or in a team. It also makes it possible to comply with safety and health and environmental constraints (CO2 emissions for example). Finally, it allows to

control and optimize the logistics by dint of the use of integrated software packages such as TMS, WMS.

BENCHMARKS TO ASSESS THE MATURITY OF TRANSPORT LOGISTICS

From what has been mentioned above, it becomes important for companies to develop and adopt best practices relating to SC in general, and transport management in particular, and to regularly ensure their relevance to the constantly changing work environment. This assessment of SC practices can be accomplished from an auditing 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 auditing consists of developing an action plan on (Faq Logistics, 2020): (1) The transport schemes, namely the identification of alternative transport schemes to the current scheme allowing the search for reduction of distances (kms) and consequently the reduction of the transport budget, as well as study of the opportunities through the reallocation of zones on platforms currently in use, the use of new platforms, the expansion of the scope of direct delivery, and the upstream massification of flows. (2) Optimization of the carrier panel, through: Inventory of currently used carriers and their rates, analysis and comparison of rates charged, integration of feedback from interviews with carriers, and framing of invoice analysis, detection and elimination of anomalies. (3) Optimization of the loadings of transport means based on an analysis of the performance of current loads, proposal of areas for improvement to optimize loads (empty rate and economic performance of shipments).

According to (Lauras, 2004, P56), the auditing is used to assess the execution and respect of commitments and good practices established previously (Quality standards). An auditing is based on a benchmark. According to (Eric Mamy, 1987, P19), in his article "Autopsy of logistic diagnosis" defines this process as a "critical examination" of the strengths and weaknesses of the logistics system necessarily leading to determining an action plan: these actions are themselves evaluated in terms of the cost of implementation and of quantitative and qualitative gains.

As mentioned above, transport auditing can be done using logistics standards such as: the ASLOG model, SC Master, SC Process Maturity, EVALOG, SCOR, SCPM 3, S (CM) 2, Best Practice Maturity, Oliver Weight, etc. For the present study, the ASLOG model has been used whose mission is to boost business networks, to enable businesses to promote and appropriate knowledge and techniques as well as to develop tools for evaluating logistics performance. The ASLOG standards are designed to assess the overall Supply Chain. This allows the company, regardless of its size, to be assessed against a benchmark that ranges from basic practices to operational excellence. The ASLOG model, which was designed according to a process structure, presents several process axes, namely, management, strategy and planning, sourcing, manufacturing, transportation, inventory management, marketing, reverse logistics, performance indicators, etc (Zouaghi, 2013, P99).

ASLOG has designed logistic standards based on the model developed by VOLVO in the 1990s. The ASLOG standards provides assistance to companies wishing to adopt a continuous improvement approach, with the main objective of achieve the level of excellence and implement good logistics practices. The first version of these standards goes back to 1997. It then had 53 questions strongly oriented towards the product life cycle, but it did not sufficiently take into account the issue of downstream flow or other issues. The concept of the Supply Chain was introduced into the model in 2002. In the

present study, the 5th version has been used, developed in 2008 and includes 124 questions.

CASE STUDY

The study has been conducted in a small and medium manufacturing that produces and commercializes food products. This company was created on 01/30/2007, with effective beginning at the start of 2008. Regarding the logistics department, it is true that the supply department follows all logistics processes, but efficient management of all logistics operations requires the establishment of an independent logistics department. According to the auditing conditions, many interviews have been conducted with the heads of functions (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.

The following paragraphs will be dedicated to the analysis of the various key areas of the transport auditing such as the choice of transporters, control of upstream flows, partnership with transporters as well as operational control.

A. SELECTION OF TRANSPORTERS

this part highlights how are transporters who ensure the movements of upstream and downstream flows are selected as shown in Table 1.

**TABLE – 1
ASSESSMENT OF SELECTION OF TRANSPORTERS
PROCESS**

Questions	Scores			
	0	1	2	3
• How are the transporters who ensure delivery to customers or intermediary service providers chosen (downstream flows)?			√	
• How are the transporters who ensure the supply chosen (upstream flows)?				√
Total	05 points			

Source: Provided by the researchers

In general, the company 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/ service provider or transporters), but everything seems to be clear and known by the two parties: the way, the costs, the time and places of unloading.

Regarding the transport ensuring the delivery of products, the company has a fleet of vehicles which includes 6 refrigerated trucks available to the commercial service and 6 other trucks granted to depositories covering the regions of East, West, North and part of southern Algeria. The trucks drivers are therefore employees of the company and ensure that delivery orders are carried out in the correct manner. Before each loading, the details related to the transport missions and the quantities loaded are checked. Truck drivers are generally audited beforehand to ensure their ability to perform the current and potential missions that will be assigned to them.

A. CONTROLLING UPSTREAM FLOWS

In this part, the manner of determining transport needs will be evaluated as shown in table 2.

Table – 2 Assessment Of Upstream Flows Control

Questions	Scores			
	0	1	2	3
• How are transport needs assessed?			√	
Total	02 points			

Source: Provided by the researchers

The transport needs are determined according to the level of sales as well as the delivery frequencies and the geographical dispersion of the customers. The manager and heads of functions, including procurement and sales, meet periodically to reassess transport needs to ensure their availability in light of changing market conditions.

C. PARTNERSHIP WITH TRANSPORTERS

Table 3 highlights how partnership are controlled.

Table – 3 Assessment Of Partnership With Transporters

Questions	Scores			
	0	1	2	3
• How much control is exercised over transport operations?			√	
Total	02 points			

Source: Provided by the researchers

The company's delivery programs take into account the working days and 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 of the company, this latest finds no difficulty in managing them. However, as mentioned above, the interferences of responsibilities with one another sometimes lead to the loss of control of transport operations and cause delays in delivery times.

D. OPERATIONAL CONTROL

In this part, the operational control will be evaluated as shown in table 4.

Table – 4 Assessment Of Operational Control

Questions	Scores			
	0	1	2	3
• What type of control is exercised over the quality of transport and delivery?		√		
Total	02 points			

Source: Provided by the researchers

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.

Finally, after evaluating all transport function activities, Table 5 summarizes the global performance as follow:

Table – 5 Global Assessment

Dimensions	Obtained Scores	Max Scores	%
<i>Choice of transporters</i>	05	06	83%
<i>Controlling upstream flows</i>	02	03	66%
<i>Partnership with transporters</i>	02	03	66%
<i>Operational control</i>	01	03	33%
Total	10	15	67%

Source: Provided by the researchers

As shown in Table 5 above, the global average of transport functions is 67% and even if this percentage is relatively good but this shows that there are still improvements to apply, especially on the operational control axe that got only 33%. Figure 1 presents a comparison between obtained scores and targeted standards as follow:

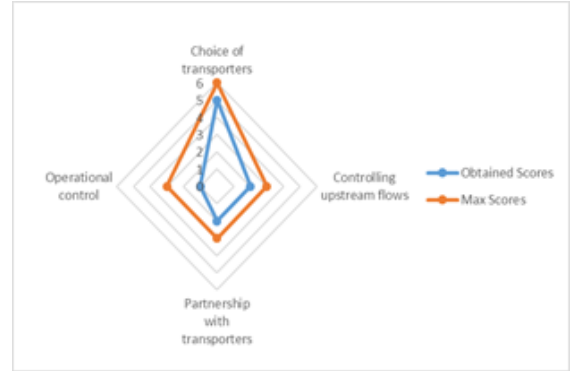


Figure 1: Obtained scores vs standards

Source: Provided by the researchers

Figure 2 below gives a clear judgement about the global evaluation. the selection of transporters seems to be well managed while operational control should be improved.

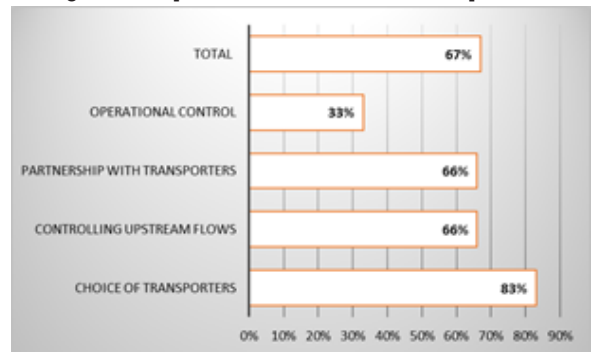


Figure 2: Global evaluation of transport management

Source: Provided by the researchers

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

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

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

CONCLUSIONS

In conclusion, the ultimate aim of this paper is to assess the maturity of the transport logistics if it is managed in a way that foster the supply chain performance of small and medium manufacturer of food products. This assessment was based on a benchmark designed by (ASLOG) after having been

readjusted to the context of company's activity by eliminating certain questions. This benchmark allowed us to identify the performance sources of the transport function that could help this SME to reduce costs and increase sales. In the end, recommendations were made to strengthen the weaknesses, reduce dysfunctions and improve logistics practices, namely, the selection of transporters, the control of upstream flows, partnership with carriers as well as operational control.

Like any research work, this paper has certain limitations, the first limitation could be methodological concerning the analysis of the interviews conducted with managers and the evaluation scores given to each axis of transport logistics. Indeed, the application of another standard such as the SC Master seems to be useful in order to compare the results with ASLOG and see which one is very close to reality. Finally, another maturity scale, which ranges from 1 to 7 points could be used in this auditing and seems more relevant.

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