



The contribution of technology to improve logistics flows, how the digitization could evoke new work methods?

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Abstract: Customers are becoming more exigent in terms of service, responsiveness and communication of information. Nowadays operational excellence is no longer an option, it is an obligation. The contribution of technology to improve the rate of order picking is now obvious. The "zero error" has become almost accessible thanks to technological development or the contributions of mechanization.

The digitization of the supply chain enables companies to address the new requirements of the customers, the challenges on the supply side as well as the remaining expectations in efficiency improvement.

Keywords: Digital supply chain, control tower, TMS, WMS.

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1. Introduction

First, we need to define the digitalization! Then we have to highlight its impacts.

The digitization evokes a new mode of work methods. In the field of the supply chain, the definition of this evolution of the working methods will be manifested by the use of IT and analytics solutions to exploit the data collected by the use of collaborative tools between the different stockholders.

All these developments will enable companies to work on three aspects:

- Communication : through the exploitation of the data collected in the different tools and the development of tools for internal and / or external actors, companies will be able to accelerate the transmission of information and thus to develop its efficiency. Costs and
- Inventory Levels : Accelerating communication and new tools will enable organizations to have solutions to manage their costs in real time, improve their ability to be flexible / responsive, to pool certain parts of processes between their different entities and to improve the efficiency of operations.
- The management of the activities : the improvement of the exploitation of the data will allow the setting up of tools making it possible to provide progress reports of the activity or to calculate forecasts in a more refined way ... The digitization will allow managers to have a better visibility of the workflow in real time.

2. Managing shipments flows through multiple tools

Usually when the Order is at the disposal of the final customer, it has traveled many systems. For each operation of the supply chain, precisely in terms of transport or distribution. A specific application is developed (ordering, order preparation, delivery, transport, handling, storage). However, how input and output flows are linked? Informally speaking, between WMS and TMS

2.1 The WMS

WMS, or warehouse management system, refers to a category of software packages intended to manage the operations of a warehouse. The primary purpose of the WMS is not to take orders but the optimization of their preparation.

The perimeter of a WMS is limited and does not cover the entire supply chain. In general, the tool stops at the warehouse.

Among the typical features of such a software package are:

- The reception;
- Warehousing (stocking with site optimization);
- The preparation;
- Stock management;

- The expedition;
- The inventory.

The WMS have been embellished with features that are more important in recent years such as:

- cross-docking;
- allotment;
- co-packing;
- rotating inventory,
- kitting;
- slotting;
- traceability

2.2 The TMS

TMS or Transport Management System is a tool to help in managing transportation flows. It mainly addresses the needs of traceability of deliveries and optimization of transport (schemas and allocation of suppliers). The whole makes it possible to improve the organization of the transport. These improvements translate into lower transportation budget costs.

TMS are primarily intended for carriers or service providers whose core business is to provide transport and logistics on behalf of their customers. TMS covers such carriers as the management of a fleet of trucks and drivers, the organization of loading schedules, deliveries, unloads and invoicing.

We remark the appearance of the concept "control tower" and its implication in managing and controlling logistics operations, as a way of improving the quality and performance of the supply chain.

2.3 Control tower ! What is the first idea you get ?

We could imagine it as a central checkpoint through which all the information on all freight movements (with a management of problems of all kinds), within a supply chain, must pass.

The goal of the control tower concept is to enable the various links in the supply chain (internal / external, international and other strategic links) to obtain "real-time" visibility on the movements to share the right information with the right people at the right time.

The Supply Chain Control Tower is a central hub that collects all available logistics data. Furthermore, all your supplier and client data are collected in the Control Tower, creating one single overview of all logistics activities in the chain. You are connected with all your chain partners 24/7. Securely sharing data creates a transparent, comprehensive and controllable supply chain.

The Supply Chain Control Tower is so much more than a TMS. The Control Tower is the digitally accessible supply chain. You can share real time data with all parties in the chain, enabling you to make decisions immediately.

3. Study case

The case below consists on optimizing time and reducing errors while managing export operations. As shown on the table below, for each operation the logistics coordinator have to devote from 15 to 60 min in mailing and phone communications.

Table 1 : Time spent on managing export before digitization

Carrier	destinations	Time spent on managing export
Carrier 1	Turkey	60 min
Carrier 2	South africa	40 min
Carrier 3	Czech republic	15 min
Carrier 4	Slovenia	15 min
Carrier 5	French Guiana	15 min
	Martinique	15 min
	Mayotte	15 min
	New Caledonia	15 min
	Pakistan	15 min
	Reunion	15 min
Carrier 6	French Guiana	15 min
	Guadeloupe	15 min

This action could be managed without his intervention by automating the process. Therefore, to improve the organization of transport operations, we invited the carrier on the table to manage export shipments through the control tower. For this, we have taken the initiative to create accounts for all of them to access the platform. It will allow them to manage and control transport operations on behalf of the client without wasting time on looking for information already available on the platform, to have the history of the shipments and benefit from archiving customs and transport documents.

After receiving their confirmation, a support of how to use the control tower was sent, along the first period, the logistics coordinator has to assist all carriers in using of the tool. Moreover, to make sure of the respect of the following pick up instruction, as before this action was done by mail:

- Truck must be adaptable to warehouse dock level (1m high from ground to bottom of the trunk & 2m10 wide) for regular orders, or (1m20 high from ground to bottom of the trunk, 2m10 wide & without hatchback) for equipment orders.

- Side loading is not allowed.
- Working Hour at Pick-up Address are: 9 Am to 12 Am & 2 Pm to 5 Pm.
- Once Collection done, carrier must share by email transport document (CMR; AWB; BL...).

After 1 month of sitting the new process, we get as results:

Table 2 : Time spent on managing export after digitization

Carriers	destinations	Time spent on managing export	Time spent on supervising
Carrier 1	Turkey	60min	15min
Carrier 2	South africa	40min	10min
Carrier 3	Czech republic	15min	5min
Carrier 4	Slovenia	15min	5min
Carrier 5	French Guiana	15min	5min
	Martinique	15min	5min
	Mayotte	15min	5min
	New Caledonia	15min	5min
	Pakistan	15min	5min
	Reunion	15min	5min
Carrier 6	French Guiana	15min	5min
	Guadeloupe	15min	5min
	Martinique	15min	5min

The goal is to let carrier fill the information of shipment without any intervention or supervision. To meet the definition of the control tower, as it is a collaborative platform.

4. Conclusion

If control towers are unavoidable in the air, they could become necessary tools to other industries, in the face of new challenges in extended Supply Chains framework. Therefore, it is not surprising to look for multiplying the experiments allowing:

- Improving customer service: The tools of analysis of hazards and simulation

reinforce the reliability of customer promises

- In terms of delay: If this promise cannot be kept, the visibility on the movements of goods facilitates communication to customers.
- Reduced inventory levels: The flexibility obtained in the response to hazards helps, reduce buffers stocks and to react more quickly in the reallocation of stocks to different channels.
- Reducing costs through better use of resources: Thanks to re-planning or more frequent re-orders, the Control Tower allows a better use of resources, whether production (assembly line) or logistics (temporary storage for manage overflows). In addition, extended visibility facilitates faster rebalancing in outsourcing and better management of external services.

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