Maastricht University & Caroz B.V.

The Features of an Operative Control Tower

Whitepaper

Sabine Klesman & Emilio Cherici
13-1-2017

Introduction

Managing supply chains in today´s fast changing and hyper competitive world is not easy. As customers want better products delivered quickly at ever more competitive prices, organizations must remain flexible and responsive while seeking to enhance their positions through efficiency gains. These requirements are making supply chains increasingly complex, with companies expanding the scale and geographical reach of their supply streams to the global stage. Moreover, companies are increasingly relying on information sources, and thus the input of trading partners, for achieving their business goals. This makes the management of inter-firm relationships and information crucial to overall organizational performance.

As a response to such demand for a more complete view of operations throughout any given supply chain, LSPs have been starting to provide Control Tower services and solutions. These Control Towers have been deemed to be the ultimate supply chain visibility tools, presented as centrally integrated information hubs from which sections of a supply chain are monitored and controlled. As a result, they provide real-time insights into activities and events as well as creating several benefits within their current business activities.

However, despite the fast and continuous rise of these so-called Control Towers in practice, there is no clear agreement on what a Control Tower really is, or what its components and characteristics should be and the services it should deliver. In fact, every company perceives Control Towers differently, giving their own spin to the concept. Such a dispersed set of ideas and conceptualizations potentially hinders the very collaborative relationships they are supposed to foster. This limits the extent to which external service providers can fulfil the demand for supply chain visibility, and thus Control Towers, by potential clients on the market.

Therefore a clear answer on the main question regarding Control Towers remains unanswered

What is a Control Tower and what are the main key characteristics and benefits?

CTs in Theory

The starting point for clarifying and defining Control Towers is the search and review of academic literature on their potential components, functionalities and outcomes. Having identified different potential types of Control Towers, the necessary components are outlined, concluding with their business outcomes and related activities.

CT Types

The first aim in characterizing the functionality of a Control Tower is identifying its scope within the supply chain, that is, the range it covers within the supply chain(s). Being active in a particular scope relates to the aim of achieving operational efficiencies within that scope, achieved through purposeful commitment and coordination with another firm's functional areas and processes.

The following integration scopes are found within academic literature

- ❖ **Single Activity Control Tower**
- ❖ **Logistics Control Tower**
- ❖ **Supply Chain Control Tower**
- ❖ **Horizontal Chain Control Tower**
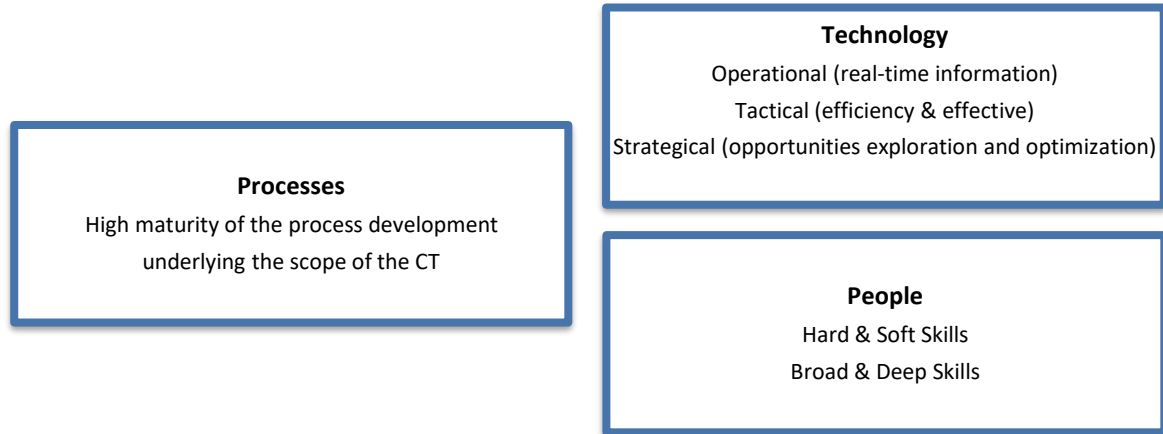- ❖ **Cross Chain Control Tower**

Decision Making

Another way in which it is possible to differentiate Control Towers is through their decision making capabilities, which theory suggests can be either at the operational, tactical or strategical levels.

With regards to the operational level, it is important to note that the focus is not on making decisions but rather on implementing the daily operational activities. Typical tactical decisions are for example the selection of the more suitable transport modality or the planning of the route, while purchasing activities or long-term network design are examples of more strategic decision making.
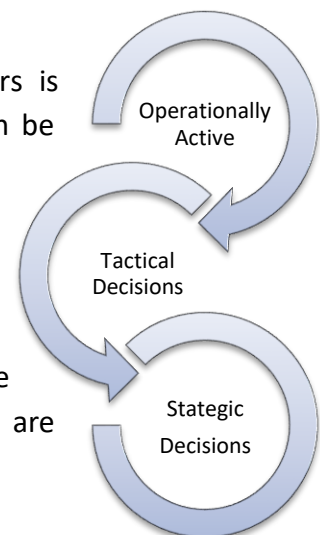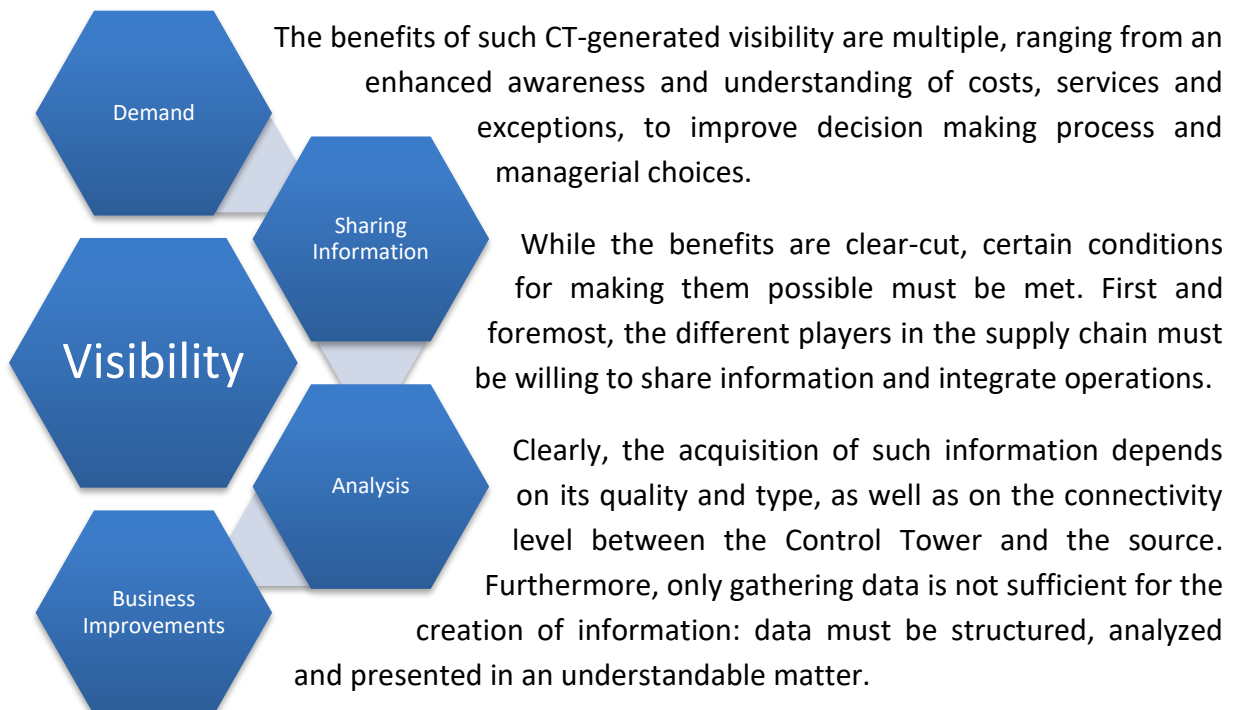
CT Components

In order to function properly, Control Towers must comprise a number of key resources, represented by the following three pillars. Note that it is necessary to ensure that all three components are present.

Technology
Operational (real-time information)
Tactical (efficiency & effective)
Strategical (opportunities exploration and optimization)

Processes
High maturity of the process development underlying the scope of the CT

People
Hard & Soft Skills
Broad & Deep Skills

Visibility & Information

The main outcome of a Control Tower is the generation of extensive visibility within the scope of activities it oversees, whereby they can be seen as highly advanced supply chain visibility tools.

Visibility

- Demand
- Sharing Information
- Analysis
- Business Improvements

The benefits of such CT-generated visibility are multiple, ranging from an enhanced awareness and understanding of costs, services and exceptions, to improve decision making process and managerial choices.

While the benefits are clear-cut, certain conditions for making them possible must be met. First and foremost, the different players in the supply chain must be willing to share information and integrate operations.

Clearly, the acquisition of such information depends on its quality and type, as well as on the connectivity level between the Control Tower and the source. Furthermore, only gathering data is not sufficient for the creation of information: data must be structured, analyzed and presented in an understandable matter.

CTs in Practice

After exploring the theoretical side of Control Towers and defining the key characteristics based upon literature, an even more comprehensive view on Control Towers can be shaped by critically observing the Control Towers in practice. Emerging from the practical findings is the ability to compare theory and practice and to pinpoint the similarities and dissimilarities between them, as to eventually create an overall objective review.

Types & Decision Making

The following two types of Control Towers are found in practice: external Logistics Control Towers and internal Supply Chain Control Towers. With regards to the former, companies outsource their Control Tower activities to a logistic service provider, but the scope of such external Control Tower is often limited to logistics only. These external Control Towers perform activities on behalf of a customer, are operationally involved, can make tactical decisions within the SLA-framework and support strategical decisions with relevant information and specific knowledge. Practice also shows that some big retailers and production companies set up their own internal Control Tower, whereby the scope extends towards their individual supply chain. The supply chain Control Towers are operational, tactical and strategically involved. To have a more detailed understanding with respect to the scope and their related activities, the boxes provide a list of the main activities performed by each Control Tower as identified in practice.

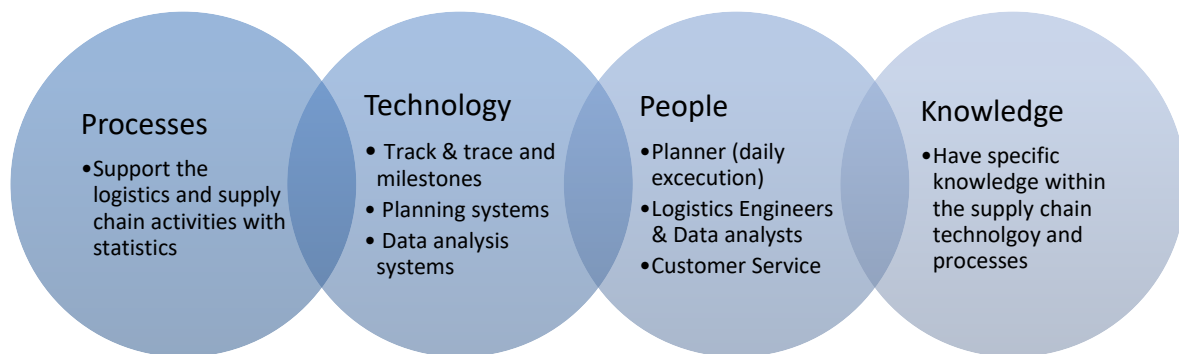| Main external Logistics CTs activities	Main internal Supply Chain CTs activities
- Transport Planning & Monitoring - Tender Management - Warehouse Management - Order Management - Network Design - Exception Handling - The Management and Control of all Related Information	- Procurement - Sourcing - S&OP - Order Management - Direction of Logistics Activities - The Management and Control of all Related Information

Components

Concerning the components of an operative Control Tower, the discovered components found in theory are indeed in line with practice. Furthermore, specific information was acknowledged about each of these components, which expands our knowledge about the underlying structure of Control Towers. However, an extra pillar has been acknowledged in practice, namely knowledge. This underlines the idea, that Control Tower have extensive knowledge within their scope and therefore are able to perform the activities at a higher level. In addition, all four components need to be in place and interlinked, whereby the Control Tower can be seen as a central integration hub where the four components come together. Furthermore, internal integration can be seen as a prerequisite for external integration, which is required due to the need of information from multiple sources.

Processes
- Support the logistics and supply chain activities with statistics

Technology
- Track & trace and milestones
- Planning systems
- Data analysis systems

People
- Planner (daily excecution)
- Logistics Engineers & Data analysts
- Customer Service

Knowledge
- Have specific knowledge within the supply chain technolgoy and processes

Information Consolidation & Visibility

The central hub enables and facilitates the information gathering, while all information comes and goes from a central point. The Control Tower needs transactional, status and master data for fulfilling their activities efficiently and effectively. Furthermore, the information needs to originate from sources like carriers, suppliers, customers and customers' customers. After obtaining and consolidating information, the information will be used for operational excellence and analyses as to create visibility.

KPIs
Reports
Ad-hoc information

Visibility can have different forms and can be used for different objectives. For example, indicating the possibilities to increase the current service level or being aware up-front of the main struggles, namely predictive analysis. The final visibility forms are translated in a constructive manner as in carrying out KPIs, reports and ad-hoc information. The external Control Tower communicates the forms via dashboards towards their clients, whereby 24/7 transactional and status information is available. The KPIs and reports are often updated on a monthly basis.

Added Value

Finally, the whole construct of a Control Tower needs to result in certain payoffs, which can be classified in two broad groups as in improving decision making and business performance

Improved decision making

We can state that KPIs, reports and ad-hoc information are supporting tools for making a decision.

The storage of all information enables the evaluation and accountability from previous decisions.

Improved business performance

Cost reductions

Service level improvement

A significant reduction in exceptions

Predictive analysis

Discussion

The last part of the research is the comparison between the theory and practice, whereby the aim is to discover the similarities and dissimilarities between the findings in order to find a significant answer on the main research question.

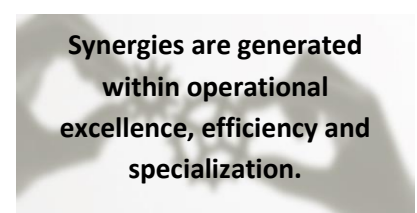**Similarities and Dissimilarities: Finding a way in Complexity**
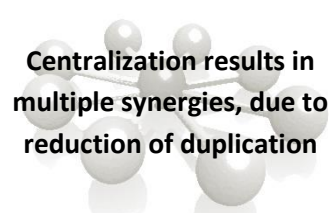
A pre-requisite for generating visibility is the consolidation of information. Both theory and practice highlight the relevance of acquiring information from different sources. Although this sounds plausible, in practice many companies are struggling. The reasons why this has not been achieved can have multiple causes. First of all, not having sufficient internal integration limits the ability in acquiring external information. Second, sharing of information among several parties can be difficult due to different interests. Third, a lack of technological interfaces between entities and their main information sources. Finally, there is a lack of knowledge regarding the information required to fulfill current tasks at high performance levels.

Furthermore, only Logistics and Supply Chain Control Towers types were found in practice, with no participating company qualifying for horizontal or cross-chain Control Tower. In fact, in order to accomplish Horizontal and Cross-Chain collaboration, the Control Tower should be able to coordinate multiple supply chains simultaneously, which results in an increase of complexity. Such complexity is further corroborated by the fact that managing an increased number of parties results in a need to satisfy different interests simultaneously, challenging the Control Tower´s ability to generate positive performance outcomes. Thus, the complications underlying the set up and functionality of operating at a horizontal or cross-chain level are still outweighing the potential benefits.

In addition, the practice clearly showed that Control Towers are operationally involved and can make tactical and strategical decisions. Yet, an external Control Tower is not competent in overtaking strategical decisions from their customers, and can only make tactical decisions according to the SLA. This results in a situation where an external Control Tower cannot take control over their customers' operations, but rather supports their decision making processes.

A Single Point of Contact

An important condition for being accepted as a Control Tower is the need of the following components: technology, processes, people and knowledge, all of which must be interlinked with each other. Likewise, the centralization of activities, knowledge, technologies, processes and people harmonizes current business as:

Optimal environment for consolidating information

Centralization results in multiple synergies, due to reduction of duplication

Synergies are generated within operational excellence, efficiency and specialization.

Match but Unawareness

As shown in practice, there is indeed a demand for visibility and also a supply of visibility, achieved by the Control Tower due to information consolidation, KPIs, reports and ah-hoc information delivering. However, even though there is an existing need for visibility, the demand side does not address this need through the acquisition of external Control Towers services or the establishment of an internal Control Tower. Because the need for visibility is not always realized and acted upon by companies, it may be stated that such need for visibility is a latent one. Therefore, demand and supply potentially meet but many potential Control Tower users are unaware of this, losing out on valuable opportunities to improve their operations.

The Control Tower Flow

To ensure that the Control Tower concept is concrete and aligned with the findings from both theory and practice, the following model has been created. This model shows the flow of a Control Tower, comprising its components and its outcomes.
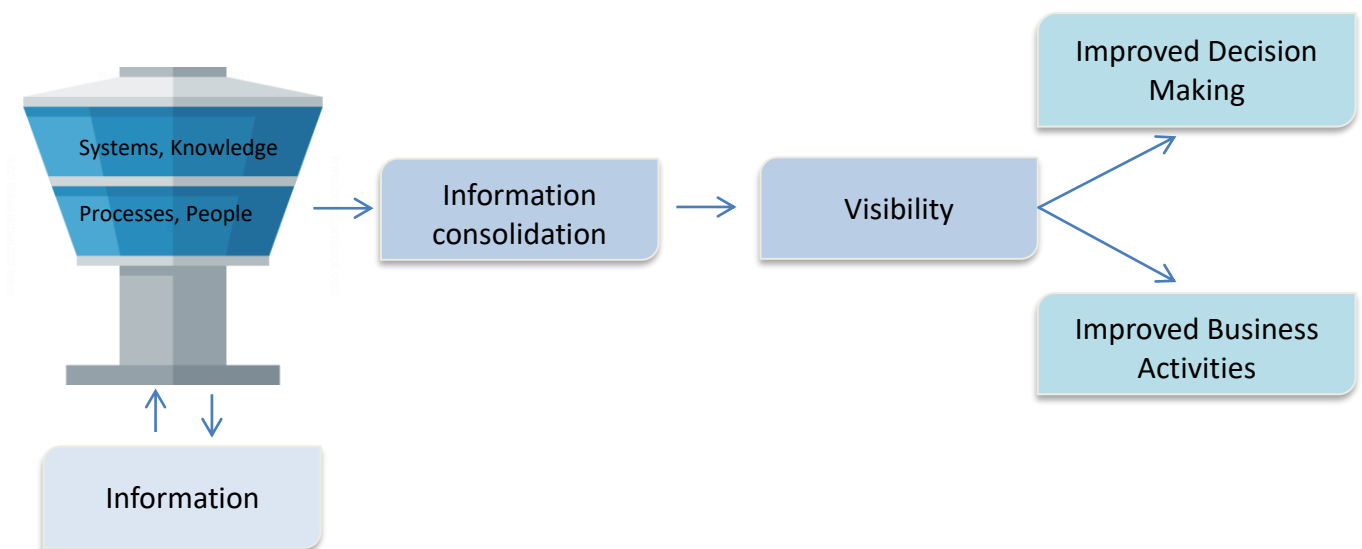
Call to Action

Overall, the added value and potential of Control Tower has been relatively unnoticed and underestimated by the current business environment. To create knowledge and awareness regarding the actual gains provided by Control Towers and their underlying requirements, a more unified description of a Control Tower must be agreed upon. This will ultimately enhance demand as well as align it with potential Control Tower solutions.