



THE TRANSSHIPMENT OF CONTAINERS IN PANAMA: A PROCESS PERSPECTIVE

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A recent article discussed the advantages of Panama as a world-class logistics center, initially driven by the Canal, then by the Colon Free Zone, and now consolidated by port investments and the emerging of logistics zones¹. The article referred to the group of ports in the Canal cluster, as single port (with terminals in both the Pacific and Atlantic oceans) whose competitiveness depends on the efficient and safe handling of cargo, mainly transshipment of containers within and between terminals. To achieve this seamless and efficient handling of cargo, good logistics infrastructure is essential, but it is not enough; this also requires the integration and collaboration of all stakeholders. This "synchronization" is particularly critical in the business (or process) of transshipment between terminals, given the need to tightly coordinate all related multimodal activities within a limited time window.

This article aims to clarify the container transshipment business from a process perspective, and proposes a series of actions to improve its performance. We focus on the transshipment of containers because Panama has the lead position in Latin America as evidenced by several port activity and connectivity indicators. For example, América Economía, in their report on the Best Ports of Latin America in 2014, places Balboa and Colon in the first and second positions, respectively. The same publication, as well as the ECLAC statistics, indicates that these ports have the highest throughput of containers in Latin America. Panama's main source of competitive advantage in the maritime sector, besides the Canal, is based on port infrastructure, which is ranked seventh in the world by the World Economic Forum² and connectivity which is sustained by the transshipment business.

This leadership position must be defended. Several countries in the region see the Canal expansion and the potential increase in international trade as major business opportunity and are investing to improve their logistics capabilities. Because container transshipment approaches a commodity service, where cost is the key criterion to select a supplier, the generic competitive strategy indicated is **operational excellence**. This strategy focuses on process efficiency to reduce costs and maintain competitive levels of quality and service reliability.

Process Perspective of the Transshipment of Containers

¹ Jorge E. Barnett Lawton, *Why Panama?*, *Transport*, Jan-Mar, 2015, p. 26-31.

² World Economic Forum, *The Global Competitiveness Report 2014-2015*, p.33.

For purposes of our analysis, the containers transshipment process starts when the container mother ship arrives to Panamanian waters on one side of the Canal, and ends when the feeder vessel leaves Panamanian waters at the other end of the Canal. Exhibit 1 summarizes the activities involved in this process, showing the players involved. It should be noted that the process involves stakeholders from the private sector and the government sector. Hence the competitiveness of the process lies with both sectors, but mostly depends on the productivity of the private firms, where the competitiveness of a country lies.

Exhibit 1. Summary of land transshipment activities from origin terminal to destination terminal		
No.	Activity	Responsible
1	Plan and control of operations	All
2	Berthing maneuvering*	ACP/Other
3	Unloading of containers	Terminal O
4	Storage and handling	Terminal O
5	Train/truck loading	Terminal O
6	Authorization to exit the terminal	Government
7	Land transportation	Truck/Train
8	Authorization to enter the terminal	Government
9	Unloading of containers	Terminal D
10	Storage and handling	Terminal D
11	Loading to the ship	Terminal D
12	Ship exit maneuvering*	ACP/Other
* In the Atlantic side, maneuvering is done by a concession		
Source: <i>Georgia Tech Panama Logistics Innovation and Research Center</i>		

Within the context of the competitive strategy of the transshipment business, the value proposition offered to its customers, the shipping companies, could be summarized in terms of three competitive dimensions: **reliability** of delivering the container at the feeder vessel by the agreed date; **throughput time** (speed) as measured by time between arrival in Panama and its departure; and total (direct and indirect) **cost** of the process (service). It is important to recognize that the throughput time and reliability are closely related: the more variation in time, the less reliable is the process. This relationship is very important for shipping companies who want to have a reliability indicator expressed as a high percentage of compliance with a maximum transshipment time; for example, meeting 99% of the transfers in X days or less. Obviously, X should be as small as possible to make this service competitive; hence the importance of speed of the service and reliability as competitive variables; and to have the information to monitor these metrics.

The efficient delivery of the value proposition depends on the configuration of the process activities and their interfaces. In this direction, each activity should add value (high reliability, small throughput time, low cost); if this is not so, those activities that add no value would add unnecessary costs to the customer's eyes, making the process less competitive.

The process configuration arises from both design and operating decisions at the level of each activity. Design decisions focus on capacity and include decisions about the size, location of fixed assets and equipment, and the process technology used. Operational decisions include scheduling of tasks within individual activities, allocation of resources to execute these tasks,

control of the process, and coordination (synchronization) between activities to ensure a fast and cost-efficient flow that satisfies the reliability requirements demanded by customers.

Beyond capacity decisions, planning and control of operations is essential to ensure effective coordination of the process and productive use of resources during execution. For this, it is essential to have information that through decision support systems can ensure the productive use of resources employed in the implementation of activities. In a supply chain as in the transshipment process, information is critical, given the need to coordinate activities that are performed by different independent business and government entities. but which are dependent in terms of their impacts on each other and the overall performance of the process. This adds high complexity to the system and increases the significance of shared information.

Routes to Improve the Transshipment Performance

At the grand strategy level, Panama should focus on process improvements and creating the bases for innovations as priorities to boost competitiveness.³ The emphasis on process improvement initiatives include process reengineering, lean applications, adaptation of best practices and "leapfrogging" in the adopting new technologies. These initiatives are the hallmarks of operational excellence and perfectly apply to the transshipment business.

At the Georgia Tech Panama Center, we have been concentrating efforts on mapping logistics processes and identifying opportunities for improvement in several areas, being the transshipment of containers, particularly by truck, one of them. In this regard, our emphasis has been on the following activities:

- Gathering information for planning and control of activities.
- Streamlining authorizations at entrances and exits at ports gates.
- Tracking and monitoring of the movement of containers by truck.

As previously mentioned, the issue of having information to plan and execute operations efficiently is vital. The collection and dissemination of information that allows the different players to improve their individual activities and contributes to the synchronization of the process is essential to achieve a competitive transshipment. To this end, the Center is working to define and locate sources of data, and convert it into information required by the different actors; but this is not an easy task due to the general reluctance to share data and information. Sharing of data and information is driven by trust and transparency, and the recognition of the urgent need to share it to improve the performance and competitiveness of the transshipment business.

³ According to the World Economic Forum, Panama is at an intermediate level of development, in transition toward a developed country. At this level of development, the main driver of competitiveness is efficiency in processes and quality of products and services: *The Global Competitiveness Report 2014-2015*, pages 10 and 11.

Both the topics of streamlining the authorizations at entrances and exits from ports, and the traceability and monitoring of the containers moved by trucks, are the subjects of a white paper prepared by the Center and presented to Customs for consideration.⁴ The technological options proposed assume the implementation of basic and obvious improvements such as the digitization of information contained in Decree 6 and that of the authorizations from AUPSA and Quarantine through a single logistics window.

With regard to the streamlining of authorizations at entrances and exits from ports, improvement opportunities are in the automation of procedures and the transit time at the gates. In these activities, best practices are based on optical character recognition (OCR) and automatic license plate reading (LPR). The OCR technology is based on high-resolution cameras supplemented with LED lights mounted on the booths at gates to capture the container number and condition. The LPR technology is used to identify the head plate among other information. These technologies are complemented by automated checkpoint that automatically confirm the identity of the driver and the container number, provide the location of the container on the patio and communicate with an operator in the event of difficulties entering or exiting the port. These systems are integrated with the terminal operating system (TOS).

Another opportunity to improve the process is to implement radio frequency identification (RFID) technology and to use a global positioning system (GPS) to monitor the movement of containers between terminals. The RFID card is basically a memory that can collect information on the identification of an object, in this case, information about the truck, container, shipping seal, cargo manifest, and the times of departure and arrival, all of this connected to a computer. During the transportation of the container, GPS technology would be used to monitor the location and route taken by a truck, providing traceability and control to this activity.

Conclusions

In the logistics sector, one of the strategic axes of Panama, the transshipment of containers is the main business, after the flow of ships through the Canal. Panama maintains a clear leadership position in Latin America, especially for its port infrastructure and connectivity, which must be maintained. However, good infrastructure is a necessary but not a sufficient condition for competitiveness. This is because the installation of infrastructure is relatively easy to be copied, depending only on the investments decisions taken by other countries in the region.

This is why beyond infrastructure, operational excellence is required to allow competitive prices and help to differentiate Panama from other competitors in terms of reliability and speed of

⁴ Georgia Tech Panama Logistics Innovation and Research Center, *Technological Alternatives to Improve the Transshipment of Containers by Truck*, December, 2014.

services. Ensuring the competitiveness of the containers transshipment business is a task for everyone and should receive the attention it deserves.