
1. Introduction

For centuries, ports have helped to facilitate international trade; and historically port development has exhibited a very strong correlation with the volume of international trade. For example, the factors that constrain port development, such as the competition for limited land resources available at container ports, have tended to alleviate during a financial crisis, such as in the years following 2008.

Port development is non-linear by nature. Some researchers observe that 'discontinuous and cumulative processes' appear in port development; other researchers stress that in order to understand the process of port development, it is necessary to differentiate between 'growth' and structural transformation. The relevant questions are: What are the factors (geographical or economic) that characterize the location separating a port and its hinterland? And can the creation of a subsidiary location in the hinterland be a solution to delay the inevitable decline of the economic life of a port?

2. Changing definition of a port's hinterland

Traditionally, the hinterland of a port was geographically decided. It was because cargo owners had only a few choices to move their cargoes to the ports. Therefore, physical distance was a major criteria to define the scope of its hinterland. Today, with the diversity of different inland transport modes, researchers tend to adopt an economic rather than the traditional geographical criteria to define a port's potential hinterland. The definition of hinterland of Port A has to look at its competitors, Port B or Port C. Hence, Port A's hinterland would include all the area that can be reached at a cheaper cost or in a shorter time than that of its competitor ports (Port B or Port C). When one looks at hinterland in such a perspective, one will focus on the overlapping nature of hinterlands of a set of different ports, rather than a single port in a specific location.

By adopting the economic perspective, the strategy of port development is no longer the adding of a new infrastructure or extending a port to cover more land space. Now, the economic perspective of port development would include all activities that help to compete the critical points in the overlapping hinterland. With the advent of inland terminals, inland ports and dry ports, hinterlands are now extended even further inland, adding to the complexity of the analysis of port economics and logistics activities.

To capture the close interaction between a port and its hinterland, some researchers have introduced the concept of port regionalization, which predict the future path of port development – its logistical integration with a group of similar ports in a region that share an overlapping hinterland. The concept explains the emergence of the 'offshore hub ports' and 'load centres' that were built outside the traditional port cities. To effectively decide what kind of activities be remained in the port area and what activities should be located in its hinterland, a port development planner should realize that a large direct hinterland market is no longer a necessary condition for concentrating large traffic volumes, he must acknowledge the development alternatives of setting up logistics zones and inland distribution centres at the critical traffic junctions in the hinterland.

By adopting a changing mindset from a geographer to an economist, it helps a port development planner to shift his focus from satisfying the requirements of basic port facilities to logistics facilities. To fulfill the need of building up a logistics geared port, a port development planner should set a priority of activities to be carried out in the port and to invest accordingly, general haulage or high value-added services. A traditional port tended to have built infrastructure of general haulage in the port area, therefore, an additional unit of more haulage investment will create a low marginal value; and if such haulage investment can be relocated to the hinterland area, it will create a higher marginal value. This line of tradeoff should also be applied to the analysis of the degree of specialization, such as type of products, shipment sizes etc.

3. Value of building a Port Subsidiary in the Hinterland

Starting from late 1990s, researchers observed the decreasing importance of seaports in the transport chain, and more has been written on terminals rather than seaports. The question is whether, when a port decides to set up an inland terminal, it is a backward step in port development or an active strategy to assert a port's influence to an inland location? Some have observed that port authorities in the past have been afraid of losing influence to inland terminals, but as time goes on, more of them are recognizing the many benefits to such move. This section discusses whether the creation of a subsidiary location (setting up a dry port) in the hinterland be a solution to delay the inevitable decline of the economic life of a port.

The original dry port concept was developed in the context of landlocked countries. An alternative use of a dry port can be served as a means to maintain an old seaport that is no longer viable. Today, it is well-settled that the control of the hinterland constitutes a decisive factor for promoting the competitiveness of a port, particularly when a seaport is located in a region with a high level of competition; e.g. the Hamburg - Le Havre Port range or the East coast of Spain.

Academics and port economists have recently written about the important role of building an intermodal hinterland network as a means to improve the competitive position of ports. However, port authorities tend to behave conservatively in taking up such a new role. The Barcelona Port Authority was one of the few that took an active role in developing its port-hinterland connections. This paper uses the Barcelona case to illustrate the benefits of adopting a port-hinterland development strategy.

3.1. The hinterland strategy of the Barcelona Port Authority (APB)

The Port of Barcelona has a 2000-year history, and it has great contemporary commercial importance. It is Catalonia's largest port and ranked the ninth largest container port in Europe, with a trade volume of about 2.57 million TEU's before the 2008 financial crisis. Although the Port of Barcelona was recognized as one of the most important ports in the Mediterranean, seeing the potential risks of dissolving boundaries of its port hinterlands and competitive ports' activities engaged over its hinterland. Instead of adopting a wait and see approach, APB started to implement a proactive development strategy to manage and expand the port's hinterland. The goal of such strategy is to capture the benefits provided by the intermodal rail transport, using rail transport mode to feed the distant inland terminals that serve agglomerations. Researchers observed that the active involvement of APB in managing its location splitting of port-hinterland strategy has successfully attracted a substantial growth in container volumes from distant hinterlands and improving the accessibility of the port.

3.1.1. APB's Old Strategy

Despite the beneficial location of Barcelona to serve distant regions in Spain and parts of France, APB was traditionally focused on serving the immediate hinterland (Catalonia) by using road transport. Consequently, APB's old strategy tended to focus on the development of the local port area and play a minor role in the development of port hinterlands. The old strategy persisted until Spain commenced the port devolution process, which led the APB to rethink its future development strategy. Finally, it favored a more logistics-driven development approach, and APB started to extend its development objectives to the interest of the port into that of the hinterland.

3.1.2. APB's New Strategy

It took courage for APB to take an active approach in developing its hinterland connections. In fact, there were many academics who relied on the old strategy, for example, opining that captive hinterlands are diminishing and port competitiveness has become largely dependent on changes in the logistics environment, which are out of the control of port authorities. Researchers from the old camp argue that port authorities should stick with their orientation from the seaside, and be limited to the traditional role as a landlord, and they lacked the experience and it would be costly to acquire the experience and know-how to take up the new role of becoming a port-hinterland network managers.

APB's new strategy finds its support from academics Notteboom and Rodrigue, who made a detailed description of the new role that port authorities can play in the hinterland development:

"Port authorities can create a platform in which various stakeholders are brought together to identify and address issues affecting logistics performance. A role, which goes beyond the

role of landlord, would be the development of strategic relationships with other transport nodes. Just like the private sector, port authorities can strengthen their position in the market through the tightening of the relationships with inland centres, for example, through investments in inland terminals or distribution facilities in inland port areas. A port networking strategy focused on inland terminals might enable port authorities to tackle the problem of diseconomies of scale in the port in the form of congestion, lack of space etc. The corridors towards the inland terminal network, in fact, create the necessary margin for further growth in seaborne container traffic. These inland terminals acquire an important satellite function with respect to the seaports, as they help to relieve the seaport areas of potential congestion'.

3.1.2.1. Mission statements

APB made gradual shift rather than one bold step in taking up its new role. It started with its mission statements. In 2003, the mission of APB was *"to contribute to the competitiveness of the port's customers by providing efficient services that respond to their needs for maritime transport, land distribution and logistics services."*

Six years later, APB changed its mission to *"to lead the development of the Port of Barcelona, generate and manage infrastructures and guarantee reliable services to contribute to the competitiveness of its customers and create value for society."*

The 2009 mission statement is much broader and includes the changing role of APB from a reactive position (contribute to the competitiveness) into a proactive position (to lead the development).

3.1.2.2. Activities

APB implemented its activities in a well organized manner. Before APB started the heavy investment in developing the intermodal connections, it started with the promotional activities and customer services.

The heavy investments were planned only if the beginning steps were being successfully implemented. The flow of activities is in the following orders:

1. Promotional activities
2. Investments in logistics facilities (i.e. container depot, rail terminal and logistics zone)
3. Investments in developing rail shuttles.

The aim of all these activities and investments in the hinterland has only one single focus: attracting additional traffic to Barcelona.

Although the promotional activities constitute the least amount of investment in financial terms, APB saw it as a high priority. If the promotional activities did not carry out well, the entire plan lacked a firm foundation. APB invested in people that could promote Barcelona in the hinterland and acquire knowledge about the difficulties, help resolving difficulties and providing information regarding customs procedures, logistics service providers, use of port information systems and other logistics related aspects. The representatives conducted studies to review potential new geographic markets. At the end of 2010, a study was being performed on Pamplona.

4. Conclusions

Any seaports can be viewed as a two-sided platform, with shipping lines on one side and hinterland transport companies on the other side. Therefore, any investment on one of these two sides can make the platform stronger. Then, one relevant strategic question to be asked is: Which side of the platform should be a receiver of the investment? For APB, the answer is to invest in the land side. By making the port better accessible from the hinterland, the return on investment can be realized by the existing port area through attracting additional shipping lines and volumes.

APB's success is a good lesson for other port authorities. Private business entities operating in the port tend to have a very short planning horizon, they are subject to a higher return on investment requirement, which is often demanded to be realized within a relative short period of time. Due to the shorter planning horizon, private business entities are reluctant to venture into activities which require a large capital investment without a high and direct positive return. One researcher points out that new infrastructure that serves to make new areas better accessible will take quite a long time to realize a

strong increase of market share.

As a public entity that affords to operate in a longer planning horizon, port authorities are in better positions to play an important role to develop intermodal infrastructure. The Port of Barcelona case shows that a port authority can successfully play a leading role, starting as a landlord port authority, in building a network to connect the hinterland with the seaport, and in doing so, successfully create additional value for port users.

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