Framework for organizational structure re-design by assessing logistics’ business processes in harbor container terminals

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Abstract

Container terminal main duty is to organize and optimize the ships flowrate with time efficiency. In addition, these terminals act as feeding point to different transport modalities such as rail, road, naval and air. The fast growth of container volumes handled at the terminals has the consequence of congestion and by extension will affect the supply chain of several companies. To improve the intermodal transport, we must improve the performance of terminal operations, especially the harbor container terminal (HCT). In order to be efficient, the HCTs logistics sector has to reach a certain business process maturity. One strong recommendation to reduce non-compliance with the top management strategy is through auditing and assessment of processes. The organizations are required to implement appropriate governance and compliance with applicable laws and best practices. Consequently, the aim of this article is to understand the functioning and the issues related to the HCTs management. To achieve that, this article proposes a study of HCT processes. It presents a diagnostic solution of non-compliances generated by HCTs processes. Then shows an original and practical approach based on the structural analysis. This approach helps the HCT logistics organizational structure assessment. This research fits into organizational audit issues solving. The auditing will affect the operational aspects of the analytical methods implementation. This organizational reengineering will be based on its existing information system. An integrated software solution is developed for the diagnosis and assessment of the HCTs’ organizational structure.

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Keywords: Supply chain management; Organization re-design; business process; harbor container terminal; Process container organization

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1. Introduction

The harbor supply chain is a very sensitive link within a global supply chain. In the maritime field, it is essential to respect the delivery deadlines and to reduce various operations of handling and transferring containers costs, with respect to harbor productivity.

Improving the performance of a harbor is a very important issue, particularly because of the significant costs associated with its management. A maritime container terminal is a complex system where the handling and transportation of containers play a crucial role. Its performance depends on the relevance of the decisions at the strategic level. Managers face numerous challenges of decision-making on mainly four areas, namely: maritime operations area, internal transfer, storage area, land interface. The decision-making faces a certain level of complexity due to several parameters: decision variables, constraints, conflicting objectives, uncertainties and to unreliable information.

The role of terminals is to facilitate the transshipment with other local transportation modes. In these terminals, three business processes (BP) categories can be identify:

- The port activities that include mooring, loading and unloading of containership;
- The receiving and shipping activities from or outbound to other modes of transportation (trucks, trains);
- The handling and storing containers activities in the terminal yard.

The first category includes the activities related to ships loading and unloading. These activities are performed in the maritime operations area. The second category contains all the storage operations and handling of containers in the yard. These activities are performed in the terminal storage area. The last category of BPs is concerning the containers transfer to the land transport modes. These last operations are taking place in the land area. The Figure 1 shows the layout of a specialized harbor terminal in container handling. This terminal uses various resources (bridge crane, straddle carrier, etc.).

To maintain and strengthen their positioning, organizations at the HCT are engaged in a continuous process of quality improvement. In this context, they regularly carry a critical review or redesign their processes for more effectiveness and efficiency. Such projects often support organizational overhaul, and a new information system implementation. To carry out and achieve the desired objectives, organizations must be able: to analyze their current modes of operation, to compare best practices and engage all stakeholders and, to rethink and restructure the process mode. The redesign is to conduct changes of work distribution, to allocate tasks to relevant resources and if necessary change the performers’ roles. The organizational structure usually is designed to follow the strategy of the company. The strength of a company depends on its organizational structure and its staff performance. The paper proposes to identify current business processes’ dysfunctions and to define areas for improvement with concrete and measurable impact. It proposes a method for the organizational structure assessment based on structural analysis. A case study is presented to assess organizational structure via many-to-many relationship-process Boulmakoul and Besri (2014). The
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