The Role of Port Authority in New Blockchain Scenarios for Maritime Port Management: The Case of Denmark

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Abstract

The purpose of the paper is to determine and examine, to what extent blockchain scenarios for shipping industry have practical explication from maritime ports’ perspective and how these are sync with ports’ long-term development strategies, particularly in Denmark. The present study involved qualitative interviews with representatives of the biggest maritime ports of Denmark, varied by location, volumes, operations and cargo type. Data saturation is achieved through several round of in-depth semi-structures interviews. Results showed uncertainties in long-term investment strategy of the considered ports. While focused on land expansion and operation development, the port authorities lack inner-port coordination with related enterprises, which consequently affects overall efficiency. While the development strategy appears to be identical among the port authorities, it varies significantly within specific blockchain scenarios and port’s strategy regarding short-term port optimization. Besides, the role of port authority was debated. Authorities are willing to be more involved in supply chain operations as consultancy rather than just a controlling party, yet are burden by the state restrictions. Unlike generally-discussed blockchain compatibility studies, the current research contributes by revealing core business uncertainties within port area development and communication. Moreover, the case could serve as a representation of small- to middle-size ports in the EU.

Keywords: blockchain; port area development; port management; port clusters

1. Introduction

The purpose of the paper is to determine and examine, to what extent blockchain scenarios for shipping have practical explication from the perspective of port authority and port terminal operator and how these scenarios are sync with ports’ long-term development strategies, particularly in Denmark. In present study, the main identified scenarios of blockchain have been used as a basis to define how these might influence the port for better document coordination, digitalization, goods tracking and port area control. The focus is given to qualitative research method i.e. semi-structured interviews to define a closer perspective at the current state of the port operations in Denmark, meaning also development strategies both in short- and long-term perspectives.

2. Literature review

The section gives an overview of the port as a hub, one of the major cross points along the transportation way. In addition, the theory of clusters is presented, giving an overview of industrial clusters that coexist within the port site and contribute to complexity of inner-port communication. Thereafter, the contribution from blockchain projects is shortly presented in the section, since one of the scenarios found in the literature, specifically “Document Workflow Management” is later used in methodology for qualitative study and analysis.

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3. Method

Method implies rounds of semi-structure interviews with key stakeholders among Danish major containerized ports. Data saturation is achieved through two rounds of in-depth semi-structures interviews. A pool of the biggest maritime ports of Denmark has been selected, varied by location, size, operational volumes, cargo type and organizational structures. The sample consists of six ports: Aarhus, Copenhagen-Malmo, Esbjerg, Aalborg, Fredericia and Hirschals; and is sufficient to represent the situation of freight port operations that happen within the country (Figure 2). The study combines a series of semi-structured interviews conducted during autumn 2018 with newer empirical study from autumn 2019 from the same respondents.

4. Results

The results showed, that the long-term development strategy among the ports appears to be identical, yet varies significantly regarding specific blockchain scenarios and port’s strategy regarding short-term port optimization. The perspectives and practical use are scattered, especially in terms of embedment into existing port management software, uncertainty within the port community system and the role of customs; including concerns on state legislation that restricts port authorities from any operational involvement. Unlike the blockchain scenarios, accelerating communication among the port-based actors, better utilization of port resources and land use, higher involvement and cooperation with all parties along the supply chain appeared to be among the top priorities.

5. Discussion

The discussion section goes into detail with long-term development strategy of the interviewed ports and how these strategies align with the theory of clusters proposed by Peter de Langen (2020). Also, the section describes a possibility why certain blockchain projects attract a significant attention while not showing a complete solution and lacking real-time implementation experience.

6. Conclusion

The main aim of this paper was to determine, how feasible are the common blockchain scenarios from the perspective of port authority and terminal operator in Denmark.

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References