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The Application of a Port E-Commerce Community System:
The Western Harbor of Shenzhen Port
港口電子商務社區系統在深圳港西部港區的應用

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Abstract

After construction and development over the past twenty years, Shenzhen Port has transformed from a small fishing pier to a world class port. In 2010, the port handled 22.5 million TEUs (Twenty Equivalent Units) of containers, ranking second in China and fourth in the world in terms of throughput.

Established in March 2001, the electronic data interchange (EDI) platform (known as initial stage of Port Community System) in Western Container Port of Shenzhen began to serve the port community with the aim of improving cargo clearance environment. With the EDI Platform base, this study focuses on building and evaluating an open, public and integrated information platform—port community system (PCS) in Western Container Port of Shenzhen.

A case study strategy was employed because of a need to explore concepts in depth, and because of unclear evidence in the boundaries between phenomenon and context, taking into account the context and history of the application of PCS and the existing knowledge about the phenomenon. It is understood through research that case study research can be conducted to tackle a complex issue such as PCS deployment and can extend researcher's experience to what is already known through previous research on this issue. Case study can also detail contextual analysis of events and effectively demonstrate the interplay between the researcher and the respondents in port community.

Port of Shenzhen was selected as a principal case and five well-known seaports as reference cases for the study. Port of Shenzhen has become a successful model in the PCS field in mainland China, where first-hand materials and sufficient data can be collected. Importantly, having more than fifteen years' working experience in port community and holding senior positions, this researcher has been able to gain deep insights into the challenges facing port communities and possible solutions for them.

Five reference cases, namely, Port of Hong Kong, Port of Taiwan, Port of Rotterdam,

Port of Tianjin and Port of Qingdao, were chosen to support the study. These ports are well-known seaports in the world with high throughputs that have been successful in building PCS. They have different port environments compared with those in Shenzhen, each having its own PCS model. The case study approach provides abundant information and important lessons that can be taken as good references for this research and the PCS application in Shenzhen.

This study referred to building a third party electronic data interchange platform (PCS) in Western Harbor of the Shenzhen Port. To evaluate this case, the following methods were conducted. First, this research selected five well-known seaports as reference cases in order to understand international practices and to learn from successful seaport PCS applications. A comparative analysis of the five reference cases was preformed to reflect the characteristics of the individual case on the major functions and services. The similarities and dissimilarities across cases were identified to develop an interpretive understanding of the phenomenon and its focal aspects. Then, two surveys and one structured interview were performed in 2009 and 2011 using structured questionnaires for data collection for the purpose of objectively and comprehensively capturing the opinions of members of the port community. In addition, the comparison lists in practice revealed differences before and after Western Platform set up in terms of time, efficiency, cost, and business link, etc. Last, evaluation findings were summarized and used as guideline and key factors in re-designing PCS.

This research was completed a few years after PCS initiation and, therefore, is not only a review and evaluation of the past but also a vision and exploration for the future. Both objective assessments of PCS re-design and further requirements proposed by existing users cast light on future development of the system and point out a road map.

The results of the research showed that in course of constructing an EDI Platform (PCS), a step-by-step method had normally been utilized to demonstrate the use of PCS to solve one or more instances of the problem. The sub-systems developed had also been put into operation sequentially. In practice, when a new system was designed or its

performance was gauged, a formal or informal survey was conducted to collect the opinions of community members, including questionnaire, interview, telephone and email communications as well as meeting for the purpose of acquiring effective knowledge of how to use PCS to solve the problem.

This study found that the PCS, including its initial stage of EDI Platform has been commonly accepted and has played a key role in port industry since it was put into operation. However, due to the technology level and port condition at that time, there were constraints and room for improvement in the course of PCS application. A significant change has taken place since then. Nowadays, new technologies such as internet, broadband, and visual images are widely used in the container shipping industry and, consequently, new demands and challenges facing the port emerge along with substantial growth of container throughput. The old EDI Platform therefore needs to upgrade its structure, perfect its function, and extend its business scope to sharpen the edge of competitiveness in the industry.

In summary, this study represents one of the first systematic attempts to develop a comprehensive understanding of the terrain of PCS in Western Harbor. Specifically, the research provides perspectives on (a) how port communities evaluate and build PCS in Mainland China, (b) what is the roadmap for PCS to further develop to sharpen port competitiveness and (c) how case study methodology link with PCS application. This research is one of the very few studies that explores PCS in China, and represents one of the few early cases of case study being taken as a research methodology in the field of PCS application in the world. Drawing on case study results and observations of the real port situation, this research shows how port community members can go beyond isolated islands of information and operational cost savings, and strategically leverage PCS for their benefits. Specifically, with focus on work experience and analysis of practice, the research advances a normative model of network structure to provide guidance on how to leverage future development.