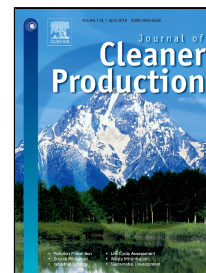


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Digital empowerment in a WEEE collection business ecosystem: A comparative study of two typical cases in China

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Abstract: Affected by the dramatic growth in waste electrical and electronic equipment (WEEE) and the gradual withdrawal of informal collectors, the traditional collection system appears to be undergoing an unprecedented decline in China. However, more than fifty internet-based collection entities have been founded in the past two years in China, reflecting the increased fusion of digital technology and traditional industries. Since these enterprises fully utilize digital technology, dynamic and profitable business ecosystems have been established to boost development. In this paper, two typical internet-based collection enterprises are chosen to represent the C2B (customer to business) and B2B (business to business) online collection models in China, allowing a comparative case study to be performed. The objective of this research is to analyze the structures, digital empowerment activities, and types of WEEE collection business ecosystems. One key result of our study is our map of the structure of WEEE collection business ecosystems, including the identification of key actors, such as suppliers, customers, online platforms, intermediaries and complementors, as well as the definition of links, such as information, material and money flow. The focal platform facilitates other actors by providing structural, psychological and resource empowerment. However, these business ecosystems differ in various ways, including with respect to the role of actors, the direction of information, material and money flow, the intensity of digital empowerment and platform position. Therefore, two types of business ecosystems are generalized: embedded business ecosystems and central business ecosystems. This study not only contributes to the existing business ecosystem literature by introducing digital empowerment but also expands the application areas of digital empowerment by investigating internet-based collection entities in China. Our results are theoretically important and have implications for the practical development of internet-based collection enterprises.

Keywords: WEEE online collection; Digital empowerment; Business ecosystem; Case study; China

1. Introduction

With 8.53 million tons (Mt) of waste electrical and electronic equipment (WEEE) in 2014, China has overtaken the U.S. to become the world's leading producer of WEEE (Zeng et al., 2016). Owing to stricter environmental protection policies, the increasing pressure of population aging (Lutz et al., 2008), the rising education levels and the declining trend of WEEE prices, informal WEEE collectors are progressively withdrawing (MOFCOM, 2016), and WEEE collection in China has undergone an unprecedented decline. This issue has been seriously addressed by the Chinese government by strengthening the responsibilities of producers and

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