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学位（博士）論文要旨

(Doctoral thesis abstract)

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論 文 題 目 (Title)	Empirical Studies on Current Situations and Challenges of Use of Waste Cooking Oil and Its Sustainable Reuse Strategy in China;（和文）中国における地溝油の利用の現状と課題およびその持続可能な再利用戦略に関する実証研究

Abstract (400 words)

Since 2010, the illegal use of waste cooking oil (WCO) has become a well-known social food safety issue in China. Although the Chinese government has stipulated relevant regulations to improve the situation, the issue of WCO has prevailed over a decade.

The objective of this doctoral dissertation is to empirically evaluate the current situations and challenges of the use of WCO and explore its sustainable reuse strategy in association with research and development directions in China. The study is composed mainly of the three specific analyses: 1) identification of the determinants of illegal reuse of WCO, 2) inquiry into the relationship between firm's value and corporate social responsibility (CSR) performance for the WCO-based biodiesel production industry in China, and 3) investigation of research directions regarding WCO-based biodiesel production technologies. The analytical approach and main findings for each analysis are summarized as follows.

First, the content analysis and the grounded theory analysis methods, relying on the dataset comprised of 152 court judgments that were collected from the official website: China Judgment Online, have revealed the three dominant determinants of illegal use of WCO; i.e., legal loopholes, food hygiene inspectors and consumer self-awareness. The results suggest that redefining WCO, enhancing food safety education, and providing food safety training for stakeholders at hot pot restaurants are considered effective measures to reduce illegal activities.

Second, because WCO-based biodiesel production, which currently occupies 98% of national biodiesel production, is considered the most sustainable strategy in China from not only economic but also social and environmental points of view, the firm's value associated with corporate social

responsibility (CSR) has been analyzed using the firm-level data for 16 biodiesel production enterprises in 2019 and 2020. The qualitative comparative analysis revealed no clear relationship between firm value and CSR performance evaluated by eight responsibilities, some of which possibly contribute to enhancing the firm's value.

Third, to visualize and map the development and sustainability challenges in global biodiesel production converted from WCO, an advanced bibliometric analysis was conducted using a total of 2,750 papers from the Web of Science Core Collection databases for the period from 2000 to 2020. The results show that promising research fields are life cycle assessment, lipase, ultrasound, and deoxygenation, followed by soft computing techniques and thermodynamic-based sustainability assessment.

This doctoral dissertation has contributed to a better understanding of the WCO issue in China based on empirical evidence, which is insufficient in the existing literature. Further, it could provide important policy implications regarding the effective and sustainable reuse of WCO in China.