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学位論文の内容の要約

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学位論文題目	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

【論文の内容の要約】

The food safety challenge of the reuse of waste cooking oil (WCO) issue has become a well-known Chinese social problem since 2010. The Chinese policymakers have published relevant regulations (food safety aspects and renewable energy strategies) by preventing this situation from worsening; however, this WCO issue still appears in China more than a decade later.

This doctoral dissertation is divided into six chapters, from the initial background introduction about what the WCO is, focusing on the specific Chinese WCO food safety situation, then on the most sustainable management strategy in China from economic, social, and economic points of perspective, and then to seek its advanced technologies to help address the WCO-based biodiesel production industry in China.

Chapter 1 mainly describes its comprehensive research background and research objectives. The previous literature review has summarized its primary development process in this research field and its specific current gaps. At the same time, the specific research framework is provided to clarify the main logical sequence of the doctoral dissertation.

Chapter 2 discusses the specific regulations/laws corresponding to China's food safety development and its specific solutions for the WCO-based biodiesel production in China. Presently, 98% of biodiesel production in China has been converted from WCO. The expansion of biodiesel production promoted by the government to reduce CO2 emissions requires the development of the supply chain, especially the improved procurement of raw materials. The bottleneck in WCO-based biodiesel production lies in the collection of WCO.

Chapter 3 is based on the content analysis and grounded theory analysis methods, relying on the 152 court judgments collected from the official website-China Judgment Online dataset. These

analyses have revealed the three dominant determinants of illegal reuse 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.

Chapter 4 has chosen the 16 biodiesel production industry enterprises as the research targets to explore the determinants of corporate social responsibility (CSR) and the firm's value enhancement. The results show no clear relationship between CSR and biodiesel production firms' value enhancement. The five paths composed of specific responsibilities that would enhance the firm's value enhancement are identified, but they are not statistically ensured.

Chapter 5 is intended to visualize and map the development and sustainable future challenges in global WCO-based biodiesel production through bibliometric analysis method using a total of 2,750 publications from the Web of Science (WOS) Core Collection databases over the period 2000-2020. Due to the research analysis result, China's WCO-based biodiesel production industry could prioritize promising research fields: life cycle assessment, lipase, ultrasound, and deoxygenation, followed by soft computing techniques and thermodynamic-based sustainability assessment.

Chapter 6 is devoted to the summary and conclusion of this doctoral dissertation. It includes the first five chapters and a description of their specific results. Besides, the relevant policy implications, limitations of this research, and future research topics are also mentioned in this chapter.

This research 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.