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Organizational Mode Innovation and Credit Supervision in Road Freight Transportation under Smart Mobile Devices Applications Services

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Abstract

The rapid development of China's road freight transport has driven many issues over the last few decades, and trends are to apply new technology to improve the efficiency of cargo movement. In the view of current problems in the supervision and operational mode in China, this paper analysis the function and characteristics of road freight mobile apps that appeared in markets and describes how they may change the road freight industry in the future. Taking the Luge logistic, Cainiao logistic and Loji logistic as representative, a loose network organization is emerging and the intensive mode provides a direction for the transformation and innovation of China's freight transport industry by integrating small and medium-sized business operators to improve the social logistics. The research indicate flat structural design based on smart mobile terminals can balance the supply and demand, in particular to enhance return-picking rate to improve individual benefit, and reduce overall social resources and environmental cost. Record of footprint of goods based on apps and big data analysis provides good database and technical support for the third-party credit evaluation of freight transport operations, and the government may apply the credit evaluation platform composed of trade credit and social credit to regulate the road freight transport industry directly in the future. The survey indicates that most stakeholders support the promotion of freight mobile apps, and the traditional operation may be replaced by the application of freight mobile apps in the future.

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Keywords: Road freight transport; Smart mobile device; Supervision mode; Freight mobile apps; Organizational process; cost analysis

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1. Introduction

The whole social logistics cost in China is always high. The Department of Transportation Secretary latest data (China Federation of Logistics and Purchasing and Association) show that China's annual cost of road transport is about 4 trillion RMB, while the number of logistics companies is more than 700 million and the number of drivers reaches 30 million. Because of information asymmetry and layers of subcontractors, cost of logistics is long-term high to such a huge market. Data released by China Federation of Logistics and Purchasing show that China's logistics cost is responsible for 18% of total GDP in recent years. This ratio is about 9.5 points higher than the United States, Japan and Germany, and also 6.5 points higher than the global average.

Effective way to reduce logistics cost is to integrate freight transport resources and improve the information level of logistics industry. The original informationization for freight industry reflects in small blackboards placed in logistics parks and truck parking. Agencies will write shipping information and contacts on the blackboard, and then the drivers will be on the circumference to select some routes interested to contact the consignor. With the popularity of Internet, people try to move the blackboard to the network, and after the emergence of smart mobile, terminals apps begin to be designed. Nearly two years, road freight mobile apps (application services) inspire the freight industry at the same time as the price war between "didi" and "kuaidi" software in China's taxi-calling market. Especially in Yangtze River delta and Pearl River Delta regions of China, over 200 freight mobile apps have come into the market last year. Statistics show that the freight mobile app of "lo ji zhao huo" (http://www.loji.com/baidu_index.html) has covered 30 major cities, the number of users reached 1120,000, the number of installed drivers exceeded 1250,000 and the number of daily demand information is over 120,000. Meanwhile, freight mobile apps will influence on operational mode of the existing freight industry and the government regulation. The government should pay much attention on them and make policies to regulate the operation of freight mobile apps by centralizing the management. The new mode may provide an effective way for the failure of government supervision to freight industry.

There are problems in the regulatory and operational mode in China. Road freight is a highly market-oriented industry, and the government regards it as a complete market behavior for a long time. There is lack of investment in public services and guidance in policy development. The limited government behavior leads to the emergence of non-standard business. With the freighter is small and scattered, the competition of price and pursuit of saving fare lead to a vicious cycle, operating without licenses, and overloading problems. The lack of government regulation makes freight market always in a state of disorder.

Many scholars have introduced regulatory developments and innovation for road freight transport industry in Mexican (Dutz and Ibarra, 2000), Brazilian (Penteado Pinto Martins et al., 2012), Egypt (Abdel-Fattah, 1997), and OECD Member countries (Boylaud, 2000), and how information and communication technology applies to logistics (Daduna, 2011; Dawson, 1985; Gonzalez-Feliu et al., 2014; Holguín-Veras et al., 2014; José Holguín-Veras, 2015; Mikulski, 2010; Sun, 2015; Zhang, 2015). The research (Jiang et al., 2014) uses vehicle-networking technology and some communication technology to develop a freight vehicle supervision assistant system. System can achieve dynamic measuring weight, illegal vehicle information acquisition and to reduce overload the accident happened at the same time. Zarei (Zarei et al., 2013) studies the disadvantages of road freight information systems (RFIS) and addresses its shortcomings through designing a new information system. Weng (Weng and Geng, 2015) takes account the disperse condition of the road freight market resources, emphasizes the analysis of the operation mode and means of integration of the road freight platform for the platform construction of road freight market in China. Wu (Wu et al., 2012) build Game models between transportation enterprise and government regulator which considered both complete information and incomplete information to solve the highway overload problem. Yu (Yu et al., 2010) emphasized that accurate management should be promoted by means of science and improving current supervision system of hazardous freight transport to transform the management method of road hazardous freight transport from "passive treatment" mode to "active prevention" mode.

With stressing deregulation does not mean giving up control, Xu (Xu, 2011) presents the evolution history of government regulation of road freight and discusses the US government's matrix management system under a free competitive market environment. By analyzing the supervision system of road freight in China including administrative supervision, enterprise supervision and public opinions, Heng (Heng, 2014) clarifies that the weak of technology leads to regulatory weakness. Jiang's (Jiang, 2011) studies show that failure of regulatory is the root

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