Analysis of China's Smart City Upgrade and Smart Logistics Development under the COVID-19 Epidemic

Xueliang Wang¹, Xiaobing Le² and Qiuyun Lu*¹

¹Wuzhou University Wuzhou Guangxi, 543002, China
²Wuzhou University Wuzhou Guangxi, 543002, China
*Corresponding author’s e-mail: 490858214@qq.com

Abstract. Affected by the COVID-19 epidemic, smart city and logistics in China have been developed significantly. This study is based on the accelerated development of smart cities and smart logistics after the outbreak of COVID-19 in China, and combined with literature, it puts forward the update of smart cities and the trend of gradually centralized, intelligent and intensive development of China's logistics industry.

1. Introduction

Under a enormous impact on production industry in China by the COVID-19 epidemic, a trend of intelligence and online development is going to be accelerated updating China’s smart city. The logistics industry has played a crucial role in supplying essential materials to the social society in the epidemic breakout, especially by using contactless logistics distribution system to effectively control of the spread of the epidemic. It is inevitably accelerated the development of smart logistics and smart city with the new characteristics under the prevention of the epidemic in China.

2. Related Literature

2.1. Smart city

The term "smart city" came into being in the early 21st century, but it is not a new concept, which has been permeated in the theoretical practice of "individual wisdom rational wisdom group wisdom" in various periods. The concept of smart city was accepted by Chinese due to the term of Smart Planet was promoted by IBM considerably at the the beginning, who are trying to build a new model of "smart" social management.[1] In 2009, IBM put forward the development vision of "smart city", hope to contribute to the prosperity and sustainable development of the world, and give the definition of "smart city" as creating a better life for human beings by all key information of a city was sensed, analyzed and integrated base on information and communication technology, after that the all aspect of social demands, such as people's livelihood, environmental protection, public security, services, industrial and commercial activities could be responded intelligently. Obviously the purpose of smart city is to use emerging information technology to realize the transformation and upgrading core operation system of the city base on its concept. [2]Smart city is a new mode of urban development based on the network combination of internet, telecommunication, radio and television, with its characteristics of efficient and convenient smart services by high integration of smart technology,
high-level development of smart industry. Intelligence is another new breakthrough in the world's scientific and technological revolution after industrialization, electrification and informatization.[3]

2.2. Smart logistics

Smart logistics was first proposed by Dieter Uckelmann in 2008. In December 2009, China put forward the concept of smart logistics jointly by the information center of China Association of logistics technology, the editorial department of logistics technology and application and China internet of things (IOT), and pointed out that smart logistics not only conforms to the development trend of IOT, but also is the development direction of logistics in the future, which is the first time for China to put forward the concept of smart logistics. Since then, more and more scholars began to pay attention to smart logistics. Jiang Dali and others referred in 2018 that the initial concept of smart logistics comes from "the earth of wisdom". Base on the view, they put forward that smart logistics is a high-level logistics formed in the new logistics stage, which is different from the logistics forms existing in the electronic logistics stage and the smart logistics stage. Relates to electronic and intelligent information, it links the operation process of logistics combined with big data, blockchain and other technologies to optimize and upgrade the logistics industry. Based on the literature review, we claim that smart logistics can be simply understood as the application of advanced technologies such as IOT, big data, cloud computing and artificial intelligence in the logistics system, which makes the whole logistics system operate as the general intelligence under the command of human brain, collect and process information in real time, make the optimal decision and realize the optimal layout, and the components in the logistics system can be realized that it has high quality, high efficiency and low cost. In the fact, smart logistics relies on the real-time and sufficiency of information to simulate human to make optimal decisions, so as to create more value for customers and provide better service experience for customers. Under the traditional logistics mode, making decisions bases on experience was more accepted owning to its insufficient information. The realization of smart logistics to a certain extent is the subversion and innovation of traditional logistics mode that will has a huge impact on its mode, operation, industrial structure, and production ecology. Information technology of smart logistics mainly includes technology of logistics information perception, spreading, processing, analysis and prediction.[4]

3. COVID-19 epidemic promotes the construction and upgrading of smart cities in China

In recent years, China focus on development of smart government, smart society and digital economy, and investment in and upgrading of urban information infrastructure has been increased, moreover the level of information service and the quality of citizens’ information technology have been significantly improved. The accumulation of China's smart city construction over the years has played a key role in breaking the epidemic information blockade, promoting the formation of national decision-making, improving and urging local style and also provided strong support for resource allocation, medical aid and life support in the extraordinary epidemic period, further promoting the construction and upgrading of China's smart city. For example:

In the aspect of intelligent transportation, the new generation of artificial intelligence map reflects the real-time national migration dynamics. The artificial intelligence map gives full play to the advantages of AI and data, fully opens Baidu Map migration big data platform, and provides comprehensive and three-dimensional big data services for the public, media, government and scientific research to timely understand the situation of epidemic prevention and control, master the blocking of travel routes around. In addition, driverless technology has carried out monitoring and screening in more scenarios, and internet enterprises have deployed driverless disinfection robots and driverless distribution vehicles in the isolation areas of patients diagnosed by various hospitals. The intelligent transportation system not only provides strong support for the allocation and rapid supply of disaster relief materials, but also saves great human resources.

In terms of smart life, fresh food e-commerce has accelerated to replace traditional retail. Online shopping has become more acceptable by its "contactless distribution". Internet sports platforms have
free live broadcast of events, fitness live broadcast. The film and television industry has taken measures that online movie broadcasting to support itself, and spawned new internet film and television, such as live broadcast, short video platform short play and so on. Free clinic and other services are accepted by more and more families. It is obviously that intelligent life is more and more preferred by the society and keep developing smart city shall be more confidently by the government.

4. The development trend of urban smart logistics in China under the situation of COVID-19 and urban upgrading

The concentration of logistics will be further improved after the COVID-19 epidemic. Using Internet platform to integrate resources to improve the ability of upstream and downstream business collaboration and resource sharing, and reducing costs will become a trend of logistics developing. Smart logistics plays a particularly important role in the upgrading of modern smart cities. However solving the problems of goods distribution and storage is undoubtedly more effective useful supply chain. In the face of the urgent demand of the market, more relevant logistics enterprises will increase their investment in intelligence. The competition for city end distribution under the new retail and other services will be more intense in the next few years especially after the impact of the epidemic, and the trend will be appeared in the city smart Logistics as follow:

4.1. Sustainable market is going to create greater profit by cost reduction.

For the past five years, express delivery and instant delivery have maintained market growth of 20%~50%, and it is going to develop at a super high speed. Further more the combination of smart logistics of AI+IOT and 5G will bring more "reducing cost and increasing efficiency" for growing demand from customer, over than 97% market share undeveloped and reducing the cost of "last kilometer".

4.2. Future spatial layout and transportation system of a city is putting forward more and more high intelligent requirements for urban logistics.

Citizens require more green and safe open spaces in their residential, commercial and office areas, at the same time face-to-face social communication spaces, and convenient and serviceable street are also preferred. However smart logistics will be more scientific and intelligent and optimized as a whole to effectively used the resources of sky, ground and underground for the intelligent integration and allocation of urban transport and storage.

4.3. The technology to support smart logistics will be effectively transplanted to smart city applications.

Most technologies, products and their standards are requiring to improved and update, such as digital supported Smart City 1.0, e-government supported Smart City 2.0 and global data sharing supported Smart City 3.0, or AI+IOT supported Smart City 4.0. Smart logistics greatly needs supporting in its developing from intelligent technology and products which such as e-government, e-commerce, data sharing and AI+IOT and others will be usefully applied to smart city as well.

4.4. Smart logistics will more effectively pool and intensively utilize resources such as talents, capital, platforms and networks.

Big data, cloud computing, mobile internet, internet of things, 5G and edge computing which supported by data, knowledge and technology, will make the integration of smart logistics with urban ecology and industrial chain ecology more effective and support the sustainable development of smart city.[5]

5. Conclusion

Logistics has been a great obstacle to the development of commercial economy for a long time. The efficient operation of logistics is beneficial to the improvement of productivity and efficiency of the
whole society. The construction of China's smart city will be accelerated and upgraded after the impact of the COVID-19 epidemic. Smart logistics pushes strong links and integration of the industrial chain based on customers’ demand, which profoundly affect a mode reform of production and circulation, and smart logistics is gradually improved, efficient and faster. Meanwhile, with the rapid iteration of all kinds of intelligent technology, logistics industry is going to realize intelligence, and promote the transformation and upgrading soon.

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