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Investigation and Analysis of Demand for Intelligent Logistics System With Light Intelligent Packages

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Abstract
With the rapid development of e-commerce logistics, the development of logistics in modern society is facing fierce competition. The expansion of scale and the overflow of waste packaging also increase the burden of the development of logistics enterprises. Based on 512 sample data collected from Mianyang, Yibin and other cities, this paper establishes regression equation by setting independent and dependent variables, and uses linear regression methods such as correlation coefficient, parameter estimation, SPSS regression analysis to analyze. Through the investigation and analysis of demand of light intelligent package in intelligent logistics system, this paper studies the logistics process. In terms of informationization, paperless, optimization of benefit and value of logistics enterprises, and packaging flooding caused by the development of e-commerce logistics, four suggestions are put forward to help the future development of logistics industry.

Key words: Electricity supplier; Logistics; Light intelligent package; Intelligent logistics system; Paperless

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1. THE INTRODUCTION

1.1 Project Background
With the rapid development of e-commerce logistics, the development of logistics in modern society is facing fierce competition. The expansion of scale and the overflow of discarded packaging also increase the burden on the development of logistics enterprises. At the same time, with the deepening development of "Internet +", Internet of things, cloud computing and other emerging information technologies, a new economic model led by the sharing economy has emerged, and the emergence of the sharing economy (Bao and Zhang, 2018, pp.140-144) provides a new opportunity for the development of logistics. The new technology and concept of intelligent logistics system and sharing economy is believed to be able to help logistics enterprises get inspiration in this important development period and turning point.

1.2 Research Status

1.2.1 Domestic Research Status
• China's intelligent logistics is entering a new era. Fu Yu (2018, pp.90-92) made an in-depth study on the current development of China's intelligent logistics by studying the use of intelligent logistics to achieve the maximum cost reduction and enhance efficiency

• The market of intelligent logistics system keeps expanding; Ye Peng, Ma Jun, Wang Wei, et al. (2013, pp.3475-3479) designed an intelligent logistics management system by using ARM11 embedded development platform, three extended modules of rf, WIFI and display, and RFID technology to further meet the development needs of the logistics industry.

• High integration of intelligent logistics; Ginger, Jacky, Qing-Hua Wang (Jiang, 2008, pp.9-14) from further play a role of regulation and policy guide, sharing cooperation model of innovation, improve the optimization of logistics standard system, make full

use of idle resources in the logistics, intensify efforts to develop the key technology and equipment, and explore the new personnel training mechanism in six aspects, such as industrial 4.0 about wisdom logistics development countermeasures are put forward.

• The intelligent logistics system constructed by Bao Lin and Zhang Guiwei (2018, pp.140-144) is an organic whole composed of three parts, namely, technical basis, guarantee system and platform function. Their research results show that the intelligent logistics system is feasible and efficient, and can fully meet the development needs of enterprises. Based on the environmental problems in Liaoning province, Wang Tingrui (2010, pp.120-122) studied the innovative development mode of circular economy driven by the development of smart logistics technology.

• Intelligent logistics and warehousing enter the development fast lane; Luo Jian (2013, pp.48-50) [6] has designed and developed an intelligent logistics platform with two modules, namely, logistics warehousing module and vehicle-based transport module. It is mainly aimed at a series of content requirements, such as real-time information collection, transmission and processing in the whole process of warehouse environment and logistics and transportation. The vehicle-mounted transport module designed by Luo Jian makes use of the integrated intelligent logistics technology and combines the global positioning system, cloud computing and 3G network technologies to help the running vehicles upload data to the logistics monitoring center in real time.

• To improve the recycling rate of express packaging on campus, which can effectively save resources; Wang Ziyi, Zhang Xuebin, Jiang Dali and Fang Haiyang (2008,pp.20-24) optimized and transformed the process and model of express packaging recycling in universities, and their conclusions and Suggestions adapted to the development trend of smart logistics. At the same time, the emergence of green packaging (Yin & Sun, 2006) needs to meet the realization degree of intelligent logistics technology.

1.2.2 Overseas Research Status

• Green logistics is closely related to the development of supply chain; Nassani; Usama Awan; Muhammad Moinuddin Qazi Abro; Khalid Zaman (2008) identified the determinants of green enterprise growth and integrated supply chain management controlling environmental and socio-economic factors in brics countries by using 20 years of time series data from 1995 to 2015. It confirms that the combination of national economic growth and corporate environmental policies and supply chain management is a necessary factor to achieve sustainable returns.

• In the highly competitive market, foreign enterprises pay more and more attention to the sustainability of green technology; Supachai Pathumnakul (2008, p.191) investigated the important reasons affecting the adoption of green practices by enterprises, and ranked the contribution of several green activities to environmental protection and cost reduction, providing solutions for logistics enterprises to carry out green reform.

• The use of information systems in the field of logistics has increased steadily in promoting the agile distribution process of enterprises; Manal Khayyat; Anjali Awasthi studied the problems of logistics collaborative development planning and designed a decision support system which incorporates RFID technology to improve inventory accuracy (Khayyat & Awasthi, 2016).

Can be seen from the many literatures at home and abroad are in various fields of scholars in the intelligent logistics, green logistics, express delivery and packaging is a combination of many aspects such as enterprise development mode has carried on the thorough research and discussion, but can find few will intelligent logistics system together and express the packing pattern, this paper hopes to be given a lighter intelligent package with intelligent logistics system with the combination of logistics system, through the analysis of the feasibility of the logistics system is further evidence that it can create new enterprises and social benefits.

1.3 Research Significance

1.3.1 Enterprise

• The application of light intelligent package can help more logistics enterprises realize informationization reform, improve the operation efficiency and user experience of logistics enterprises, so as to further strengthen the competitiveness of logistics enterprises;

• The application of light intelligent package can optimize the benefit and value of logistics enterprises and create more profit sources;

• While logistics enterprises are highly informationalized to help them transform, they also improve their service level and enrich their service categories to meet the diversified needs of consumers;

• Participate in the whole process of light intelligent package to help logistics enterprises fully integrate software and hardware; the whole process of information system and light intelligent package information collection realizes the improvement of enterprise efficiency and the saving of manpower and material resources.

• The full participation of light intelligent package, the construction of Shared information platform helps small and medium-sized logistics enterprises to provide more information sources, and reduce enterprise expenditure, cross-enterprise cooperation for the integration of information resources to provide the possibility.

1.3.2 Social Aspects

• The application of light intelligent package can effectively solve the problem of excessive packaging, reducing the use of paper and plastic packaging;

• The application of light intelligent package meets the needs of more enterprises and diversified needs of consumers;

• The combination of light intelligent package and intelligent logistics system fully caters to the development trend of "Internet + logistics" and provides more enterprises with the possibility of technological change;

• The full participation of light intelligent package helps more enterprises realize cross-field cooperation, information sharing and resource integration, which saves social resources and creates more social value.

1.4 Research Contents

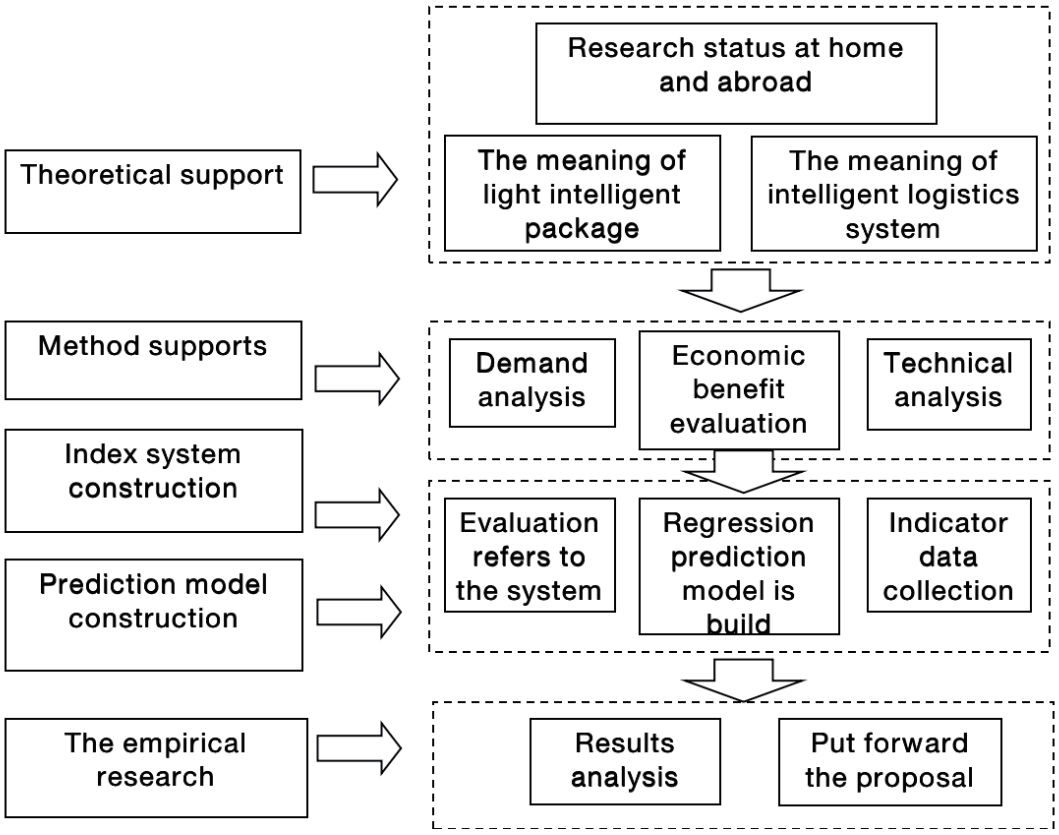

Figure 1
Technology road map

First of all, in Mianyang, Yibin and other places collected 512 express site survey collected first-hand data; Integrate multi-party survey data and select analysis methods; According to the predicted target, the independent variables and dependent variables were determined, and the regression equation was established. The error of regression prediction model is calculated by folding test. The predicted values were analyzed synthetically, the final predicted values were determined, and the preliminary analysis results were obtained. Check the above steps, add, modify; The net present value of the project investment, investment payback period, investment profit rate, net present value rate, profit index, internal rate of return, project sensitivity analysis and other aspects of the calculation, and draw analysis conclusions; Check the above steps, add, modify; Analyze the conclusion and get the final result. It is further proved that the combination of light intelligent package and intelligent logistics system is worthy of reference and implementation in the aspects of informatization and paperless logistics process, optimization of logistics enterprises' benefit and value, and the flooding of packaging caused by the development of e-commerce logistics.

2. LIGHT INTELLIGENT PACKAGE AND INTELLIGENT LOGISTICS SYSTEM

2.1 Concept and Characteristics of Light Intelligent Package

Light aggregate Broadcom Intelligent package is southwest university of science and technology entrepreneurial team national college students' innovative entrepreneurial training fund project results, using the self-developed ILT (Intelligent logistics technology) chip to realize the last kilometer of information sharing, ILT chip implanted to packing internal can implement environmental detection, timely stop loss, and updating

the information in the whole logistics process and provide warning information, timely, Intelligent, paperless, etc. The combination of ILT chips and durable packaging materials can greatly increase the number of reusable packages and reduce the occurrence of excessive packaging.

• Features of light intelligent package

• The main material -- glass fiber cloth, green and biodegradable, with high reuse rate and flexural and tensile resistance;

• Timeliness: the ILT chip implanted in the packaging can realize real-time data transmission, real-time update information and provide alerts to reduce the loss in transportation;

• Intelligentization: The effective combination of express package and intelligent logistics system can fully improve logistics efficiency and meet the development needs of enterprises;

• Paperless: the application of light intelligent packaging can greatly reduce the use of paper materials, create social benefits and improve the utilization rate of resources;

• Function of light intelligent package

• Packaging detection function: Detect the damage inside and outside the product packaging, and conduct real-time image information feedback;

• Tracking function: Product tracking and real-time information feedback;

• Temperature and odor detection function: Detect whether cold chain products are rotten, and provide real-time information feedback;

• Safety detection function: It can detect whether inflammables and explosion-prone objects in special goods are hidden dangers in the process of transportation, loading and unloading, production, use, storage and storage, and provide real-time information feedback.

(iii) Operation of Light Intelligent Package

Through packaging, inlaid ILT transponder function of the chip can be packaging containing information of goods even if transmitted to the base station, the read/write device receives the information, then sent to the cloud server, cloud server receives information began to calculation, determine the identity of the packaging information, and the storage chip the size of the electromagnetic energy. Through the end - to - end information link, and then achieve real - time tracking of objects.

2.2 Concept and Characteristics of Intelligent Logistics System

• Concept of Intelligent Logistics System

Intelligent Logistics is the use of information processing technology and network communication technology platform, and through advanced Internet of things technology such as global positioning system, barcode technology and radio frequency technology, etc., can be widely applied in the field of logistics activities and circulation nodes. Intelligent logistics system can reduce the cost in the process of goods transportation, and achieve efficient automation, optimize logistics management, enhance service capacity, and further reduce the loss of social and natural resources.

• Characteristics of intelligent logistics system

Intelligent logistics technology is mainly through the integration of intelligent technology, so that the logistics system "personification". Outstanding features are thinking, learning, reasoning, judgment, perception and the ability to independently solve some problems in logistics, in short, the ability to imitate human intelligence. To summarize the development characteristics of intelligent logistics, it is intelligent, combined with multi-level and integration, both social and flexible.

3. LIGHT INTELLIGENT PACKAGE COMBINED WITH INTELLIGENT LOGISTICS SYSTEM

3.1 Characteristics of Light Intelligent Package Combined With Intelligent Logistics System

The combination of light intelligent parcel and intelligent logistics system ensures the timely update of information with the help of mature RFID technology. After the optimization of design, express logistics parcel can further improve the reuse rate and enhance the informatization degree of logistics and transportation network. Light intelligent package combined with intelligent logistics system has the characteristics of intelligence, cleanliness, energy saving and strong confidentiality, etc., realizing the optimal configuration of all links of logistics and meeting the needs of supply-side structural reform.

3.2 Technical Support of Light Intelligent Package Combined With Intelligent Logistics System

• RFID technology. Through a lot of academic materials and a wide range of RFID products can be used to know that the current stage of RFID technology is very mature, its advantages are very prominent. RFID can identify a specific target and read and write information using only radio signals without establishing mechanical or optical contact. The logistics system design will be RFID technology embedded in the design, can be more effective to achieve timely information update function.

• Data mining technology, the specific methods used are analysis, estimation, prediction, clustering, association rules or correlation grouping, and for Text, Web, graphic images, video, audio and other files of complex data type mining. Data mining technology is mainly used in cold chain logistics of logistics industry.

3.3 APPLICATION SCENARIOS OF LIGHT INTELLIGENT PACKAGE COMBINED WITH INTELLIGENT LOGISTICS SYSTEM

Users select and use the logistics system. The service providers of the system mainly provide information services and package software update services. Logistics enterprises can join the service providers or serve as another independent service provider of logistics distribution.

Information service providers put a large number of light intelligent packages into the hands of various logistics companies, product suppliers and individuals, which are distributed to various regions through express logistics. The circulation line has three important nodes: the first is the starting point. The specific delivery time of the goods and the specific parameter state of the products at the time of delivery, for example, the temperature and humidity feedback of fresh products is the degree of freshness. The second is the logistics to reach the distribution site, specific location specific analysis, for example, to send all over sichuan need to first pass chengdu or nanchong and other places, to reach the site of the specific situation of the product, including the above and the integrity of the internal and external packaging. The third node is the sign and receive, and the final feedback of the above parameters of the received products is reached. CONCLUSION

To sum up, in the wisdom logistics basic mature technology, now in the face of increasingly severe logistics industry competition, the expansion of the scale and the spread of packaging waste also increased the burden of the development of logistics enterprises, and in the research of intelligent logistics technology at home and abroad mainly focus on theory, many scholars did not combined with social and economic development level, logistics market supply and demand environment, in terms of cost and benefit value for the packing of the consumers and businesses choose to do a survey. Through the application research of light intelligent package combined with intelligent logistics system, this paper can help logistics enterprises fully combine software and hardware within the enterprise. The whole process of information system and light intelligent package information collection realizes the improvement of enterprise efficiency and the saving of manpower and material resources. In terms of social benefits, it can effectively solve the problem of excessive packaging and reduce the use of paper and plastic packaging.

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