

# Application of electronic information technology in modern logistics system

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**Abstract.** With the rapid development of the financial market, in order to further explore the application of electronic information technology in modern logistics system and the importance and necessity of electronic information technology for modern logistics enterprises, the characteristics of modern logistics were summarized through the method of empirical analysis in this paper, and the necessity and importance of electronic information technology for logistics system were put forward. And how to apply several modes of electronic information technology to logistics enterprises was also discussed. Finally, some innovative suggestions and views on the adjustment of social environment, resources and industrial structure and the implementation of effective and practical electronic information means were put forward.

**Key words.** Electronic information technology, modern logistics system, MRP.

## 1. Introduction

Since twenty-first Century, with the continuous development of electronic information technology, electronic information technology has played a very important role in many fields, and its influence has been constantly expanding. There is no doubt that this has affected the development of market economy and the improvement of people's living standard to some extent [1]. Electronic information technology has also been applied to the field of logistics systems. Electronic information technology has brought a lot of benefits and convenience to the logistics system, which has improved the work efficiency of the logistics system, solved the problem of many traditional problems in the logistics system, and reduced the error that can't be avoided in the logistics system, thus reducing the economic losses to the managers of the logistics system and providing a safe, practical and reliable guarantee.

In the current environment, it is the peak period of globalization, global development is an inevitable trend of the international, and the development is very fast [2]. It is this background that leads to the globalization of electronic information technology. In the western developed countries, electronic information technology

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is not only popularized in the logistics system, but also has more and more obvious advantages in the purchasing, selling and production links of enterprises. Therefore, the electronic information technology has a very potential in the new era of development background, which will bring better development space for the modern logistics system [3].

## 2. State of the art

In twenty-first Century, the level of development of science and technology can reflect the comprehensive competitive power of a country, which can also reflect the status of a country in the world. With the development of network, electronic information technology has also developed rapidly [4]. By analyzing the content and structure of the electronic information technology, some problems in the course of development can be found out. More specific and objective analysis can be carried out only after understanding the background of the re-development of electronic information technology.

In the course of the development of electronic information technology, the training of talents is lacking. Although in the present situation, more and more talented people emerge, talent who is more suitable for electronic information technology is very scarce, and the specific research is also very simple. Therefore, it is necessary to meet the needs of some complex talents [5]. In the development environment of the domestic electronic information market, there are all kinds of counterfeit and false environment, which is not conducive to the development of China's electronic information technology and the updating of modern logistics system [6]. Under the current development background, it is difficult to develop the electronic information technology without strict laws. Electronic information technology is in a period of rapid updating and development, and it is a new technology with long influence and potential, which can not only improve people's quality of life, but also can play a certain role in the modern logistics system [7]. The application of electronic information to broaden the knowledge of data can make the logistics system more comprehensive and complete.

## 3. Methodology

Electronic information technology can ensure the efficiency of the logistics system, and information, funds and other materials can be ordered distribution. The modern logistics system mainly includes the computer software technology, the network technology, the bar code technology, the radio frequency identification technology and so on [8]. The general understanding of electronic information technology mainly includes computer hardware technology and computer software technology. For the training of modern logistics enterprises, if there is lack of the protection of electronic information technology, there is no corresponding legal support, and then electronic information technology will be difficult to continue to develop, and the fair competition in the market will be broken up [9]. Electronic information tech-

nology has also been applied to the field of logistics systems. Electronic information technology has brought a lot of benefits and convenience to the logistics system, which has improved the work efficiency of the logistics system, solved the problem of many traditional problems in the logistics system and reduced the error that can't be avoided in the logistics system. Electronic information technology has been also widely used in modern logistics system, and the main technical means used in modern logistics system include the following two branches [10]. The block diagram of electronic information technology is depicted in Fig. 1.

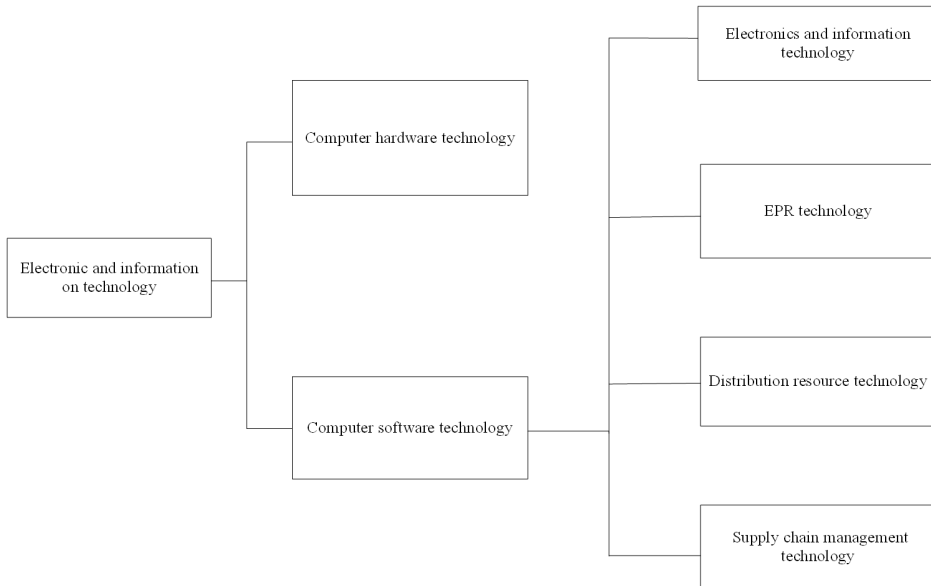


Fig. 1. Block diagram of electronic information technology

Computer hardware technology refers to a wide range of logistics systems in a basic technical means. It includes the traditional technology of computing hardware, such as operation technology and equipment technology, storage technology and data transmission technology and so on, which provides a certain guarantee through powerful and broad hardware facilities, and is widely used in modern logistics. Although computer hardware technology cannot determine the key to logistics management, it also affects the efficiency of its work. In computer software technology, a variety of software management and transportation management software and other technical means are needed [11]. The application of computer software technology mainly aims at providing technical support for the development of logistics activities in the logistics management system, and there are many branches of computer software technology classification.

The application of electronic information technology is very extensive, and different technologies play a far different role in the modern logistics system. Electronic information technology refers to a very important configuration technology in the

modern logistics system, which is mainly to plan and control the production and operation of enterprises. From the adjustment and control of the procurement of modern logistics enterprises, the product structure and procurement list can be understood, so as to achieve centralized logistics system effective management [12]. For the training of modern logistics enterprises, if there is lack of the protection of electronic information technology, there is no corresponding legal support, and then electronic information technology will be difficult to continue to develop, and the fair competition in the market will be broken up. Electronic information technology has been applied to the field of logistics systems. Electronic information technology has brought a lot of benefits and convenience to the logistics system, which has improved the work efficiency of the logistics system, solved the problem of many traditional problems in the logistics system and reduced the error that cannot be avoided in the logistics system. Enterprise resource planning technology, referred to as ERP technology, is a new technology implemented in the internal management of logistics enterprises, which uses modern electronic information technology to organize the concept, process and data analysis of logistics enterprise management, including manpower and material resources arrangement and so on. ERP technology is a new system which combines computer, electronic hardware and software. It not only greatly reduces the expenditure of logistics enterprises in management, but also improves the competitive ability of enterprises. The following table shows the comparison of several techniques.

Table 1. Comparison of several techniques

Variable	Value of ADF	Value of P	Inspection type
ln debt	-1.25	0.62	(c,0)
$D(\ln \text{ debt } (-1))$	-1.56	0.01	(c,0)
ln tax	-1.41	0.55	(c,0)
$D(\ln \text{ tax } (-1))$	-2.41	0.01	(c,0)
ln gov	-0.10	0.93	(c,0)
$D(\ln \text{ gov } (-1))$	0.53	0.02	(c,0)
ln gdp	-2.73	0.10	(c,0)
$D(\ln \text{ gov } (-1))$	1.90	0.10	(c,0)

Through comparison of several technologies, the application of modern logistics enterprises is not entirely suitable for modern logistics system, which still needs constant improvement to make greater influence on the logistics system. Through the investigation of various electronic information technologies, a new electronic information technology is found out, which is more perfect and more suitable for modern logistics enterprises, that is, supply chain management technology.

The emerging electronic information technology refers to the design planning and detailed control in logistics system, which can improve the competitiveness of logistics enterprises in the market economy, promote efficiency through the supply chain, and realize the purpose of increasing the efficiency of logistics enterprises.

In short, this technology is responsible for the management of sales orders in modern logistics enterprises. Through this foundation, the management ability between the enterprise and customer can increase continuously, and can make the customer leave a better impression to the enterprise [13]. The main targets are financial communication and customer interaction. At present, it has a strong competitive advantage, and it is one of the main new technologies of modern logistics system. And supply chain technology can ensure that each aspect can be carried out in an efficient and orderly way [14]. The above is the principle of supply chain technology, and with this principle, a small modern logistics system can greatly reduce labor costs, and save production costs, so that it is more suitable for most modern logistics enterprises [15]. The figure below shows how logistics enterprises manage warehousing goods through supply chain management techniques.



Fig. 2. How logistics enterprises manage warehousing goods through supply chain management techniques

## 4. Result analysis and discussion

### *4.1. Test of the influence of electronic information technology on logistics system*

Through the analysis, supply chain technology is more suitable for most modern logistics enterprises. Therefore, the empirical research on the enterprises which had already applied the supply chain technology was carried out. Taking supply chain technology as an example, the influence degree of electronic information technology on modern logistics was studied in this paper. The following table shows the global supply of supply chain technology in recent years, and the impact analysis of other data after using the supply chain of this electronic information technology.

In order to verify the feasibility and reliability of the above model, the relevant

data of logistics enterprises applying electronic information technology were statistically analyzed, and the empirical analysis was carried out. The details are shown in Table 2. The data was selected from years 1978–2014, so that there were in total 37 sets of data.

Table 2. Test on the impact of electronic information technology on logistics enterprises

Particular year	Electronics and information technology (Debt)	The increasing rate from electronics technology	Government expenditure (Gov)	GDP (Gdp)
1978	8058.1	2040.8	1303.6	9064.6
1979	8370.3	947.4	1107.7	7262.0
1980	8682.5	775.6	847.6	5998.5
1981	8994.7	700.0	713.6	5340.2
1982	9306.9	629.9	654.7	4896.0
1983	9619.1	571.7	637.4	4551.6
1984	9931.3	537.8	572.5	4067.7
1985	10243.5	519.3	480.0	3650.2
1986	10555.7	4255.3	5130.7	35524.3
1987	10867.9	3296.9	3933.9	27068.3
1988	11180.1	2990.2	3084.1	21895.5
1989	11492.3	2821.9	2576.1	18774.3
1990	11804.5	2727.4	2265.1	17090.3
1991	12116.7	2390.5	1901.7	15101.1
1992	12428.9	2140.4	1601.4	12102.2
1993	12741.1	2090.7	1446.0	10308.8
1994	13053.3	9262.8	12688.0	84883.7
1995	13365.5	8234.0	10930.4	79429.5
1996	13677.7	6909.8	9457.2	71572.3
1997	13989.9	6038.4	8152.8	61129.8
1998	14302.1	5126.9	6859.8	48459.6
1999	14614.3	10682.6	14767.0	88989.8
2000	17614.2	12581.5	16741.5	98562.2
2001	20614.0	15301.4	17908.4	108683.4
2002	23614.1	17636.5	19095.4	119765.0
2003	26614.5	20017.3	20297.7	135718.9
2004	29614.6	24165.7	22637.9	160289.7
2005	32614.2	28778.5	26371.8	184575.8
2006	35015.3	34804.4	30775.8	217246.6
2007	52074.7	45621.5	36645.4	268019.4
2008	53271.5	54223.8	42408.0	316751.7
2009	60237.7	59521.6	46432.1	345629.2
2010	67548.1	73210.8	53450.9	408903.0
2011	72044.5	89738.4	65047.2	484123.5
2012	77565.7	100614.3	73181.8	534123.0
2013	86746.9	110530.7	81245.9	588018.8
2014	95655.5	119175.3	86523.3	635910.0

As shown in the above Table 1, in the last five years, the electronic information technology had a great influence on the investment income and time cost of logistics enterprises. With the development of the market economy, the electronic information technology was positively related to the investment income of the logistics enterprises, and was negatively related to the time cost. After data collation, the data were checked by ADF. The result is shown below.

As can be seen from Fig. 3, after the first difference, all the roots were within the unit circle, which indicated that the time series was stable, and thus the stability of the model was determined. Finally, the pulse impact analysis was carried out, and the delivery error variable was used as the explanatory variable, and the remaining three variables were used as explanatory variables, so as to analyze the distribution error growth rate of the electronic information technology to the logistics enterprises and sample firms, and get the influence degree of the electronic information technology on the logistics enterprises. The result is shown in Fig. 4.

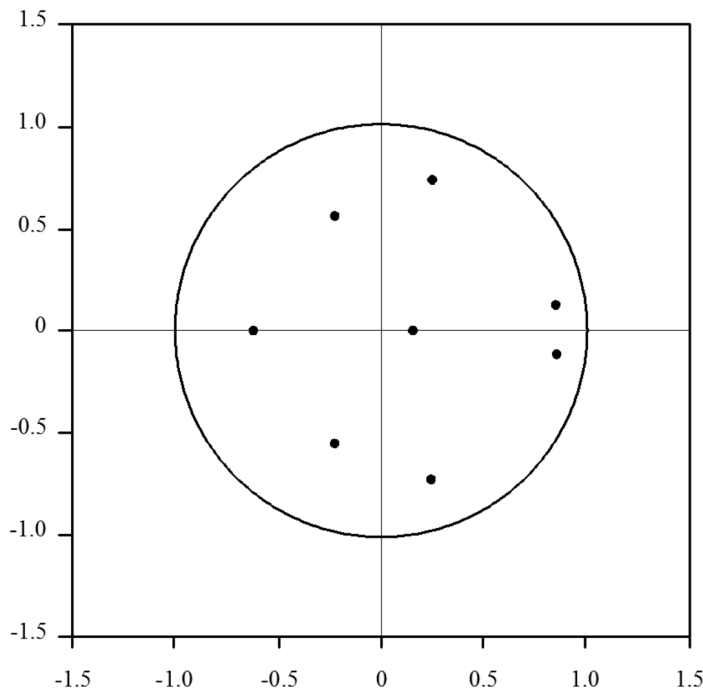


Fig. 3. Discrete rate of geographic information system

In China, there are many examples of the benefits of using electronic technology, such as Haier model - proprietary logistics system, and Haier logistics features can be summarized as the strength of the logistics company. In 1999, Haier began to implement business process reengineering with the "market chain" as a link, and took the order information flow as the center, so as to drive the logistics, business flow and capital flow operation, the logistics operation mode was increasingly at-

tracting people's attention. For Haier, the first is to achieve three "zero" goals: zero inventory, zero distance and zero working capital. The second is to win the core competitiveness in the market competition.

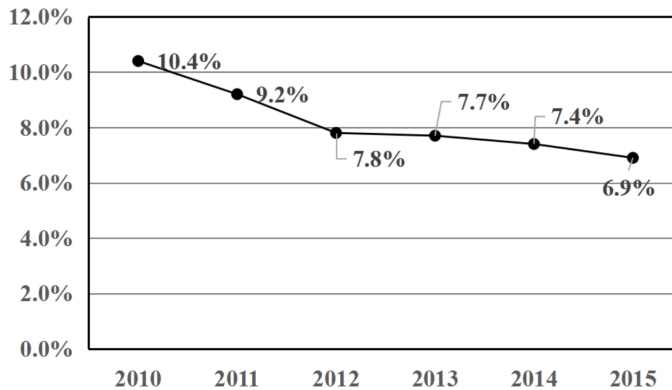


Fig. 4. Influence degree of electronic information technology on logistics enterprises

From the above detailed analysis, it is not difficult to draw a conclusion: with the development of time, the impact of new electronic technology on logistics enterprises has been playing a very important role, especially in the increase of investment income, the saving of enterprise time cost and the decrease of enterprise delivery error. However, in the application of specific electronic information technology, the actual situation of logistics enterprises should be analyzed, and we can't be anxious for success. For example, in the small scale of modern logistics system, the supply chain model of electronic information technology is more conducive to the development of logistics system. Electronic information technology is a necessary factor to improve the efficiency of modern logistics system, which can not only improve the comprehensive ability of the logistics system, but also can improve the competitiveness of logistics enterprises in the market economy, and bring more benefits for enterprises.

With the continuous progress and development of social economy, electronic information technology is bound to become a new technology means, and will also play an important role in modern logistics system. Electronic information technology has become one of the most popular technologies of the logistics industry. And its application is very extensive, including the cargo tracking, monitoring, system identification, and logistics management and warehousing and distribution links and so on. Especially in the modern logistics system, the container automatic identification function is the only one that can automate the tracking of cargo management in the current situation, which can identify all kinds of invoices, lists and labels of customers, reduce the utilization of labor, and greatly improve the efficiency of the management of enterprises. However, there are still many problems and some severe tests in the development of electronic information technology because of the immature development of electronic information technology, which should be solved in a planned way.



For the problems of the electronic information technology in the logistics enterprises, some suggestions can be through research: the social environment, resources and industrial structure should be adjusted, and the effective and practical electronic information means should be implemented. For example, the global positioning technology, RF technology and others can be used to improve the logistics system; the existing problems should be constantly summed up, so as to contribute to the development of electronic information technology and affect the efficiency of the modern logistics system.

## 5. Conclusion

In recent years, with the rapid development of the economic market, the electronic information technology has mushroomed. At present, the electronic information technology information has become an integral part of the modern logistics system, and the logistics system can't be separated from the operation of electronic information technology. Electronic information technology can ensure the efficiency of the logistics system, and information, funds and other materials can also be ordered distribution. The modern logistics system mainly includes the computer software technology, the network technology, the bar code technology, the radio frequency identification technology and so on. The characteristics of modern logistics were summed up through detailed data in this paper, and the necessity and importance of electronic information technology for logistics system were put forward. If the electronic information technology is integrated into the logistics system, and the logistics system and the electronic information technology are combined effectively, the modern logistics system can still have huge development space. In addition, how to further apply several modes of electronic information technology to logistics enterprises was also discussed. Through these patterns, the problems that should be paid attention to and the ways to solve them were expounded. Through the empirical research of the electronic information technology in the modern logistics system, it is concluded that the future development trend of the electronic information technology in the modern logistics system will certainly promote the global economy to be on the right track.

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