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The Impact of Financial Management Model of Logistics Enterprise Operating Capital on Logistics Quality

Ning Bai
Xinhua College of Ningxia University, Yinchuan, 750021, China

Abstract: When the impact analysis method of the traditional enterprise financial management mode towards the enterprise operating quality is applied to the logistics enterprise, the analysis accuracy is low. Therefore, the paper puts forward the impact of the financial management mode of the logistics enterprise operating capital on logistics quality. Based on the loading of the financial management model of logistics enterprise and the determination of the impact analysis algorithm of logistics quality, the impact analysis model of logistics quality is constructed, and the impact analysis of the financial management model of logistics enterprise operating capital on logistics quality is realized. The experimental data show that the accuracy of the impact analysis method of logistics quality is improved by 10.12% compared with the traditional impact analysis method. It is suitable for logistics enterprises to analyze their logistics quality.

Keywords: Logistics enterprise; Operating capital; Financial management mode; Logistics quality

1. Introduction

At this stage, domestic logistics enterprises have developed rapidly, the number and scale of which have achieved substantial development. These changes have posed new challenges to the financial management of logistics enterprise. Effective development of enterprise needs to formulate more perfect financial system, which reflects science and effectiveness in financial management and fund operation [1]. However, from the actual development, different financial management modes of logistics enterprise operating capital have different impacts on logistics quality. At the same time, through continuous optimization of financial management mode, effective financial managements of different logistics enterprises reduce business risks, improve industry profits. Constant adjustment of financial management mode requires different tests for logistics quality. When the impact analysis method of the traditional enterprise financial management mode towards the enterprise operating quality is applied to the logistics enterprise, the analysis accuracy is low. Therefore, the paper puts forward the impact of the financial management mode of the logistics enterprise operating capital on logistics quality.

2. Establishment of Logistics Quality Impact Analysis Model

2.1. Loading of financial management model of logistics enterprise

At present, the financial management mode widely used in logistics enterprises includes fixed and flexible budget method, incremental and zero-based budget method, periodic and rolling budget method. Fixed and flexible budget method. The so-called fixed budget method refers to the cost and profit of logistics financial budget in a budget period, which are determined based on the predetermined logistics business volume. Flexible budget is based on the analysis of cost and the determination of the amount of business that can be accomplished. This budget method can be applied to budgets in many situations [2]. Incremental budget refers to adjusting the budget of cost according to the basic cost level, referring to the implementation of cost reduction measures in conjunction with logistics business volume. According to the literal meaning, zero-base budget refers to the budgetary method of determining the amount of expenditure item by item on the basis of zero and according to the actual situation. The rolling budget can maintain continuity and integrity. Compared with the regular budget, it can predict the future development of enterprises more accurately, so as to constantly adjust and revise, and make the forecast data close to the actual effect. Different management modes have different management characteristics, which affect different financial decisions [3]. The flow chart of logistics quality impact is shown in Figure 1.

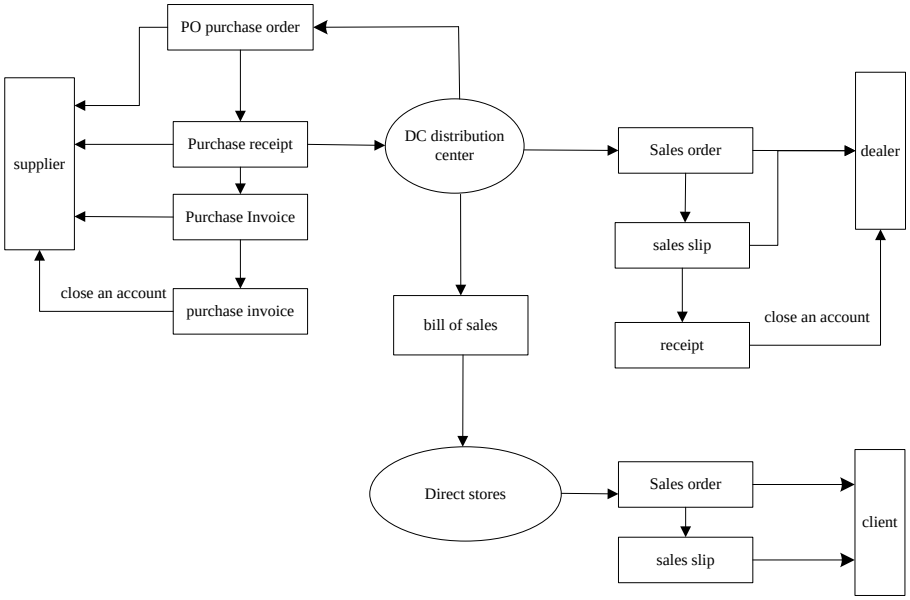

Figure 1. Flow chart of logistics quality impact

There are two kinds of decision-making methods in the financial decision-making of logistics enterprises: the first is qualitative decision-making, which refers to the method of decision-making after judging different attributes. This decision-making method is mainly based on logical thinking, coupled with experience-based judgment, and more inclined to individual subjective analysis. The second is quantitative financial decision-making, which is a method of decision-making after comprehensive evaluation of different attributes. The advantage of this decision-making method is that based on the mathematical model and additional decision-making conditions, the results are achieved, so there is a more real and reliable scientific basis. It is an important measure to ensure the financial supervision of logistics enterprises. Budget agrees with enterprises' own systems and situations, in line with the current development of the whole industry. The implementation of budget management is for a better financial supervision and control of logistics enterprises [4]. For example, in the financial management of petroleum logistics enterprises, real-time information and specific means are often used to influence the implementation of logistics projects, realize the purpose of regulation, achieve budget targets and improve economic benefits. According to different financial management modes of logistics enterprises, different parameter variables are set to load into the impact analysis model of logistics quality.

2.2. Determination of analysis algorithms for logistics quality impact

Logistics enterprises have a large number of logistics, scattered regions, and mostly small scale, which makes the amount of enterprise financing larger and scattered. In addition, the shorter circulation cycle results in increased sudden risk, which has caused great obstacles to the current development of logistics enterprises. At the same time, the utilization rate of enterprise internal capital is low. Under the circumstances of financing impact, logistics enterprises improving the utilization rate of their own capital has become the focus of current financial management measures. However, the utilization rate of domestic logistics enterprises' own capital is generally low. First, logistics enterprises have not made full use of liquidity, so as to improve the utilization rate of capital in terms of time difference of capital settlement and capital payment. Second, the conservative development model of logistics enterprises has not fully utilized the fixed assets of enterprises and flexibly adjusted the direction of development [5]. Therefore, Bayesian network calculation method is used to analyze the impact of logistics quality.

Bayesian network calculation method is a kind of probability network, based on Comments on Probability Problem Solving published in Biometrika by Bayesian. Mathematicians represented by Robbins constantly optimize the probability network, so that Bayesian network is established [6]. Bayesian network is a mathematical method suitable for behavioral probability statistics and data analysis and mining. Let a variable set be A={A1, A2,... An}. The data of variable set A satisfies a certain causality D and the local variables conform to the correlation probability distribution R, then a Bayesian network can be constructed, and its Bayesian network schematic diagram is shown in Figure 2.

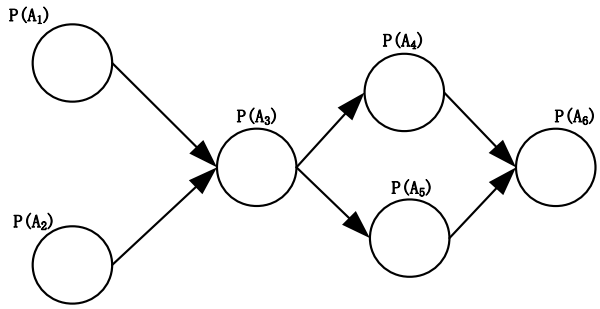

Figure 2. Bayesian network schematic diagram

Figure 2 shows that based on user behavior A1 and A2, according to causality D and correlation probability distribution R, the user's next step of operation A3 can be inferred. At the same time, according to operation A3, derivative calculation can be carried out to infer A4 and A5, and draw a conclusion A6. It is used to express the impact of financial management mode of operating capital on logistics quality. Its derivative calculation satisfies the following formula [7]:

$$h_f = s\frac{v^2}{2g} \tag{1}$$

In the formula, hf represents logistics data, v represents user behavior, and g represents logistics efficiency. The user's behavior is acquired according to the basic information of user login, which can be expressed by formula 2. s represents Bayesian value coefficient. The basic user quantization information formula is as follows:

$$Z = \lim_{0\to\infty} A_n \bigcap_{i=1}^{n} X_i lk f\,! \tag{2}$$

In the formula, A represents the data collection matrix, Xi represents the assets of logistics enterprises, f represents the liabilities of logistics enterprises, l represents the fixed assets of logistics enterprises, and k represents the willingness of users to choose the logistics enterprises. From formula 2, the Bayesian coefficients will directly affect the accuracy of user behavior prediction results A4 and A5. At the same time, the response time of accurate Bayesian coefficients will directly affect the speed of user behavior mining. The selection of Bayesian coefficients is related to causality D and probability distribution R, which satisfies the relationship in Table 1.

Table 1 Selection of bayesian value coefficient

Causality D	Probability Distribution R	Bayesian Value Coefficient S
[0.00,0.25]	[0.00,0.50]	[0.00,0.41]
[0.25,0.50]	[0.00,0.50]	[0.41,0.62]
[0.50,0.75]	[0.50,1.00]	[0.62,0.83]
[0.75,1.00]	[0.50,1.00]	[0.83,1.00]

In order to obtain Bayesian coefficient quickly, the range of causality D and correlation probability distribution R is determined firstly, then the range of Bayesian coefficient is determined according to Table 1, and afterwards, the specific Bayesian coefficient value is determined according to Robbins function, which greatly saves the time of obtaining Bayesian coefficient directly by Robbins calculation. Its Robbins function calculation program is as follows [8].

By determining causality D, correlation probability distribution R, and using Robbins function calculation program, the value of the value coefficients of Bayesian values can be quickly determined. By calculating the users' basic quantitative information, as well as importing Bayesian network by derivative calculation, the importation of Bayesian network is realized [9], besides, the determination of the analysis algorithm for logistics quality impact is achieved.

2.3. Achievement of logistics quality impact analysis

The effective rapid mining of logistics quality impact and the quality of data selection will directly affect the accuracy of rapid mining methods. Data selection process means obtaining data parameters satisfying data mining conditions through database. The main process includes data extraction, data filtering, and data loading [10]. Data extraction is to construct a HMPS form for user behavior database, which stipulates data-related requirements. The selection principles are: the selected user behavior data must be representative; the selected user behavior data must be accurate; the selected user behavior data must have complete records; the selected user behavior data must not be repeated when selecting user behavior data; the randomness and representativeness of the selection must be ensured; the selected user behavior data is inserted into the HMPS table.

In the formula k, k-1 represents the data mining time of k, k-1.x represents the data quantity, q represents the mining correlation parameters, Φ represents the mining data function, and P represents the fast mining data interval. By calculating user behavior data interval and mining data interval quickly, the fast mining algorithm of user behavior data is established. With the introduction of Bayesian network and the design of the overall framework of mining model, the data fast mining algorithm is established relying on user behavior, so as to realize the construction of user behavior fast mining model. Data screening is to extract data from HMPS tables, select some representative parameters for marking, and process the marking parameters by mathematical model. The data extraction process is the pretreatment of data screening process. If the data screening program is placed directly in the user behavior database, the screening speed will be slowed down and the recognition speed will be slow.

Through the data extraction process, mathematical screening and the two-tier data selection structure, the representativeness of data is ensured. Data loading refers to loading selected data into the mining model, mining the data and obtaining the final impact results. The simplified formula of the impact results can be expressed by formula (3).

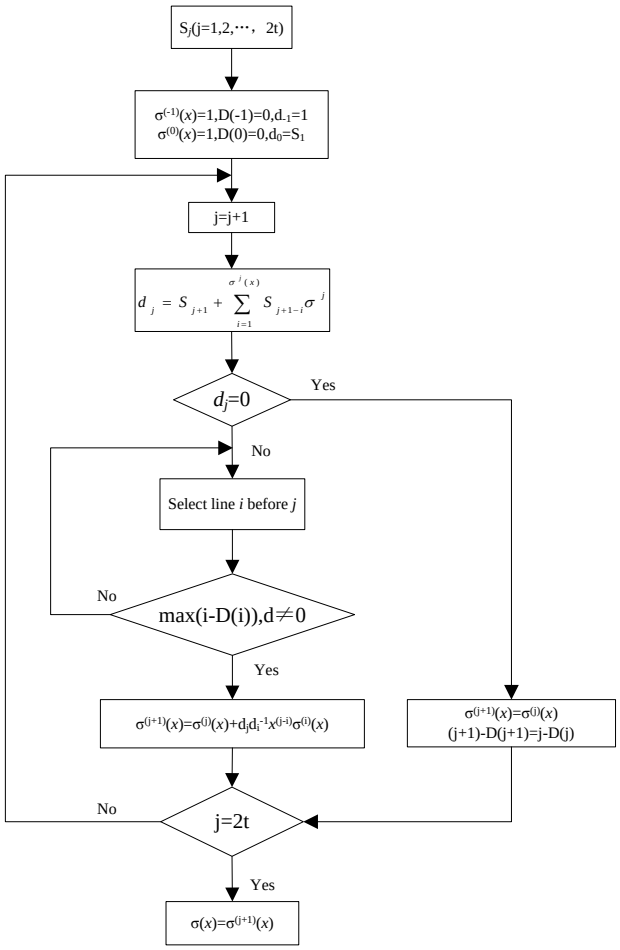

Figure 3. Robbins function calculation program

In this formula, Z represents the parameters extracted from HMPS table, and C represents the correlation coefficient. Based on the accuracy of data mining information in the range of A, the conclusion comes to:

When Z>0, the financial management mode of operating capital chosen by logistics enterprises has a positive impact on logistics quality. Its scope of influence is the result Z.

When Z=0, the financial management mode of operating capital chosen by logistics enterprises has little effect on logistics quality.

When Z<0, the financial management mode of operating capital chosen by logistics enterprises plays a reverse role in promoting logistics quality. Its scope of influence is the result Z.

3. Experiment Verification

In this paper, in order to verify the validity of the financial management mode of logistics enterprises operating capital proposed on logistics quality, simulation experiments are carried out. The traditional enterprise financial management model is used to analyze the impact of enterprise management quality as an experimental comparison object, and the accuracy of different impact analysis methods under different experimental variables is obtained.

3.1. Experiment Content

During the experiment, according to the known parameters, different financial management modes of enterprise operating funds are set up, which are divided into ten groups. By using the proposed impact analysis method and the traditional impact analysis method, the impact analysis is carried out, and the analysis accuracy is de-

termined by comparing with the known experimental results. Ten groups of data include three groups playing a reverse role in promoting logistics quality, four groups with positive promoting effect and three groups having little influence on logistics quality. The naming of the experimental groups is carried out in this order.

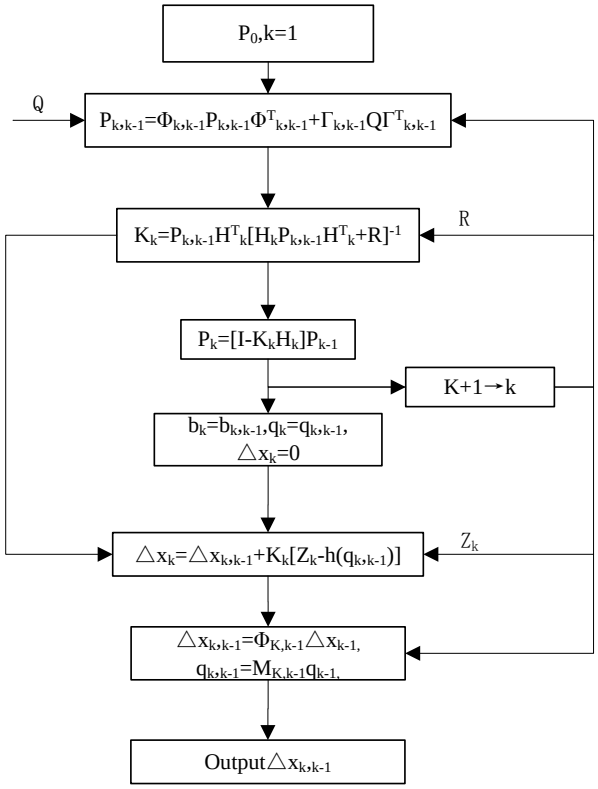

Figure 4. Path diagram of fast data mining interval calculation algorithms

$$G = \lim_{0 \to \infty} A_n \bigcap_{i=1}^{n} CX_i Z! \quad (3)$$

3.2. Experiment results and analysis

According to the design of the experiment, the analysis accuracy of ten groups is obtained. The precision comparison table of logistics quality impact analysis is given, as shown in Table 2.

Table 2. Precision comparison table for impact analysis of logistics quality

Group	Proposed quality impact analysis precision	Traditional quality impact analysis precision	Group	Proposed quality impact analysis precision	Traditional quality impact analysis precision
1	98.24	90.74	6	97.15	89.54
2	92.85	88.41	7	91.24	92.14
3	96.59	78.26	8	93.78	78.45
4	94.12	94.21	9	98.95	69.75
5	92.64	90.51	10	95.14	77.51

According to the above table, it can be concluded that in group 1-3, the quality of logistics is reversely promoted. The precision of the quality impact analysis proposed in this paper is relatively high. The data is stable and the standard range is small. The traditional quality impact analysis has high accuracy, high interference, low stability and large standard range. In 4-7 groups, the analysis results of the logistics quality impact analysis proposed in this paper are not much different from those of the traditional logistics quality impact analysis. It is concluded that the traditional logistics quality impact analysis has a positive impact on the logistics quality, and its analysis accuracy is relatively high. But the overall analysis has certain uncertainty. In group 8-10, the analysis precision of the traditional quality impact analysis method has relatively high instability.

Using the arithmetic average value, the paper finds out the average analysis accuracy of the impact of the pro-

posed financial management mode of logistics enterprises operating capital on logistics quality is 95.07%, and the average analysis accuracy of the traditional logistics quality impact research method is 84.95%. The result shows that the analysis accuracy of the proposed logistics quality impact analysis method is 10.12% higher than that of the traditional impact analysis method.

4. Conclusions

This paper puts forward the impact of financial management mode of logistics enterprises operating capital on logistics quality. Based on the construction of logistics quality impact analysis model, the impact of financial management mode of operating capital on logistics quality is realized. In order to ensure the accuracy of the analysis, the experiment is carried out to verify. The experimental data show that the proposed logistics quality impact analysis method is effective. It is hoped that this study can provide technical reference for the impact analysis of logistics enterprises on logistics quality.

5. Acknowledgments

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