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Research Article

Financial Risk Management of Listed Companies Based on Mobile Edge Computing

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As more and more listed companies have more and more operating experience, they are all paying more attention to the importance of financial risks, and they all hope to detect financial risks in a timely manner and intervene in the company's operation process. However, the existing business risk management cannot fully identify the more and more hidden risks in modern times. Based on this, the purpose of this article is to assess the financial risk of publicly traded corporations and summarizes a suitable risk evaluation model. For the identification of financial risks, this study presents a mobile edge computing-based financial risk evaluation approach for publicly traded corporations. The evaluation indicators are stratified into three levels, and mobile edge computing is used to optimize the weights. The download calculation for mobile edge computing is also optimized and analyzed. Experiments show that the indicators selected in this paper are very suitable for the study of financial risk management of listed companies. The three-year comprehensive index scores of Company X are 0.60, 0.42, and 0.42, respectively. It can be seen that the index is more suitable for the actual risk. It can be considered that the financial risk evaluation model of listed companies in this paper has better performance.

1. Introduction

Risk management is produced along with human production and business activities, but enterprise risk has not been paid attention to. It was not until the scandals of financial fraud and mismanagement of listed companies abroad that the SEC really paid attention to this matter and formulated the Sarbanes-Oxley Act. With the promulgation of the Act, the United States began to restrict the operation and management activities of various types of listed companies. With the economic globalization, the cooperation between enterprises continues to deepen, and the economic environment continues to improve. Many well-known enterprises have realized the importance of risk management and began to actively implement their own risk management construction work. In the 1980s, relevant Chinese scholars also began to conduct research on risk management. Although there is still a lack of awareness of risk management for the vast majority of enterprises, some results have been achieved, and the trial in a few enterprises is relatively satisfactory. However, what really attracted the attention of the SASAC was the series of huge losses incurred by companies such as China Aviation Oil, Zhongchu Cotton, and Zhongsheng Grain and Oil. From 2003 to 2005, China Aviation Oil, China Reserve Cotton, and Zhongsheng Grain and Oil lost US$554 million, RMB600 million, and HK$187 million, respectively, due to various misjudgments. With the continuous outbreak of various types of loss-making events, the SASAC also realized that it is very important to establish an internal control system for enterprises and to manage and control risks. In June 2006, the State Council issued the "Guidelines for Comprehensive Risk Management of Central Enterprises," which stipulated that the construction of a risk management system would be comprehensively implemented in central enterprises and state-owned enterprises first, and the reform results would be linked to the annual performance appraisal of the person in charge. With the continuous deepening of the reform process, the construction of the ERM system of various state-owned and central enterprises has been strengthened. In 2008, the State Council issued the "Basic Norms for Enterprise Internal Control," which put forward requirements for the internal control system of each enterprise, preventing the occurrence of risk events from the inside, and enhancing the enterprise's risk management awareness.

From the perspective of the development of major enterprises, among the various risks faced by enterprises, the importance of financial risk is higher, and the role of financial risk management of enterprises is becoming more and more prominent. At present, many managers of pig breeding enterprises do not pay attention to the identification and prevention of financial risks, and believe that measures should be taken after financial risks occur. However, many examples show that taking measures after the occurrence of financial risks is like making amends, it is too late, and even the consequences of financial risks will affect all aspects of the production and operation of the enterprise at an uncontrollable speed. This will also directly cause companies to enter a recession or even to the brink of bankruptcy. Therefore, in order to enable listed companies to develop healthily and steadily, it is necessary to establish a sound financial risk management system and improve the financial risk management awareness of enterprise managers and employees.

For financial risk management, this paper has the following two innovations: (1) the target of this article is listed companies. For financial risks, it is not only related to the development of the company itself but also to the local economy, employment, and other livelihood issues. However, listed companies are generally strong companies in the industry and have a great impact on the local area. Therefore, it is more necessary to identify and evaluate financial risks for listed companies than for ordinary companies. (2) For financial risk identification, this paper uses the mobile edge algorithm, which can make the model have better performance and can be analyzed for more companies.

2. Related Work

The economic field has always been a hot spot for scholars to study, so fiscal and financial risks are no exception. Belás et al. studied the dependence between the entrepreneur's ability to effectively manage corporate credit risk and the knowledge of corporate capital [1]. Finger et al. found that in developed (developing) countries, EP adoption is associated with an increase (decrease) in funding activity and an increase in the share of interest income [2]. Ilie focuses on risk management to maximize returns during large-scale crises [3]. Shyshkina did research on sustainable green development of industrial enterprises [4]. Kotaskova et al. examined entrepreneurs' attitudes toward financial risk management issues for SMEs in V4 countries. Financial risks have a major impact on the operation of SMEs and their sustainability in the market. Entrepreneurial attitudes were quantified against defined goals, and differences in these perceived strengths were compared [5]. Intharawijitr et al. believed that MEC can provide shorter communication delay. They proposed optimization models and selection strategies. Quantitative evaluation using simulations shows that selecting servers based on the lowest total latency leads to the best performance, and allowing excessive latency barriers will further improve the results [6]. It can also be seen from the relevant research that the research on fiscal and financial risks revolves around risk identification and control, and the mathematical analysis of its causes is relatively lacking.

From a micro perspective, financial risk is also known as traditional financial risk. Affected by various unpredictable factors, the financial situation of enterprises is uncertain, so that enterprises may suffer economic losses. This view defines financial risk from the operation of monetary funds; that is, financial risk originates from the economic activities of enterprises. From a macro perspective, financial risk is not only uncertain in terms of losses but also in terms of returns. This result is due to the existence of too many unpredictable factors in the outside world, resulting in companies not being able to make very accurate predictions about risks. The contemporary economic environment presents a diversified development trend, and the risks of enterprises in business activities are difficult to predict, so it is impossible to completely avoid financial risks, but it is feasible to control and prevent financial risks, which also requires enterprise management to have a long-term vision and prepare for a rainy day [7].

According to the exchange process of various business activities of the enterprise, with capital movement as the main line, financial risks can be divided into: (1) *Financing risk*. Financing risk refers to the risk arising from changes in the financing environment and decision-making mistakes in the process of financing, in terms of financing timing, financing methods, and financing scale. Corporate financing channels can be mainly divided into two categories: one is owner investment, and the other is borrowed funds. Therefore, the financing risk of an enterprise can be further divided into income change risk and debt repayment risk. (2) *Investing dangers*. The danger that an investment may not provide the desired results, harming the company's profitability and solvency, is referred to as investment risk. It is divided into two sections: one component is derived from long-term investment, and the other is derived from short-term investment, which refers to the risk that the rate of return on investment fails to reach the expected target due to changes in the time value of money, capital cost, cash flow, and other factors when an enterprise makes long-term investment decisions; the another part comes from short-term investment, which refers to the risks arising from the unreasonable structure of various current assets, inappropriate policy formulation, price changes, and other factors. (3) *Operational risk*. An important influencing factor of operational risk is the uncertainty of enterprise capital recovery. An enterprise must have sufficient funds to ensure the normal operation of its production and operation activities. However, from the moment the finished product is put into storage for sale, the funds enter the state of finished product funds and must be realized through sales and other methods. In this process, the enterprise's operational risk can be analyzed through indicators such as current asset turnover ratio, inventory turnover ratio, and cash turnover ratio.

It can be seen from the corporate governance structure of X company that the board of supervisors and the audit committee set up under the board of directors, and the independent directors are mainly responsible for the financial risk management and control of X company, and the company does not set up a special risk management committee. The lack of risk management and control departments can only be achieved by project approval from various departments [8, 9]. Company X has determined the responsibilities and authorities of all levels and departments, and also formulated the working rules and rules of procedure for the general meeting of shareholders, the board of directors, the board of supervisors, and various committees directly managed by the board of directors. The corporate governance structure of X company is shown in Figure 1.

Through the introduction of the financial risk identification method and the multiparty comparative analysis, it is believed that the financial ratio analysis method is more suitable for the identification of the financial risk of X enterprise [10, 11]. First, the financial ratio analysis method can visually and clearly present the financial status of X company by comparing and analyzing various financial data; second, the financial ratio analysis method can comprehensively assess the financial risks of X company and extract effective information. It can more effectively identify the financial risk of X company through the analysis and comparison of various indicators; finally, the financial ratio analysis method cannot only effectively analyze the past financial situation of the enterprise, but also predict the future, which can provide information for report users to make better decisions.

3. Financial Risk Identification Based on Mobile Edge Computing (MEC)

MEC is one of the important technologies for realizing the vision of future networks, and it is important in meeting the intensive computing requirements and sensitive latency requirements of device terminals. For different equipment terminals and application scenarios, the mobile edge computing system can be flexibly designed into different architecture schemes. This section introduces the main technologies in mobile edge computing in combination with scenario architecture and computing offloading.

3.1. The Basic Concept and Structure of MEC. Because the MEC is closer to the user, the user can offload computationally intensive tasks to the MEC using the powerful storage and computing power of the MEC server. The energy consumption of mobile devices is reduced, and through the video caching capability of MEC, video requests from users can get faster responses. The MEC server can obtain the real-time network status and user location through the base station connected to it, and some location-based third-party applications can be easily implemented in the MEC system, which greatly improves the user experience.

Edge computing servers are usually connected to base stations, wireless access points (APs), roadside units (RSUs), and other facilities with communication capabilities to serve as edge computing nodes to provide computing services to devices within their coverage. In addition, devices with strong computing capabilities, such as moving vehicles and drones serving as air base stations, can also serve as computing nodes to provide services to surrounding users [12, 13]. This section takes different categories of computing nodes as examples to introduce several edge computing system architectures as follows as shown in Figure 2.

The MEC system structure is shown in Figure 3.

In the edge computing system, various application services are deployed on the device terminal. The device perceives environmental information through sensors, generates computing tasks, and executes them locally or offloads them to a remote MEC server for execution. The calculated results are then used for control decisions or data analysis to meet the business needs of the deployed application services.

For different application types, tasks have different requirements for computation, delay, and timeliness. For example, applications such as in-vehicle road safety early warning have higher requirements on task delay; emerging VR/AR and other applications have higher requirements for calculation and delay; and applications such as control decision-making and real-time monitoring focus on the timeliness of tasks.

Figures 4(a)–4(c) represent the serial task model, the parallel task model, and the general task model, respectively. In the MEC system, for the task calculation process, the focus needs to consider the problem of computing resource allocation, which usually refers to the allocation of processor computing frequency. For device terminals with poor battery life, due to the limitation of battery capacity, energy consumption is an important factor controlling the computing frequency of the device. For devices with strong battery life, it is necessary to comprehensively consider factors such as cost, service quality, and user experience to control the CPU computing frequency of the device. For the MEC server, it is necessary to consider different requirements from multiple device tasks, such as delay, cost, timeliness, and reliability, to determine the server's computing resource allocation strategy [14, 15].

Compared with traditional cloud computing, data interaction in MEC system is usually transmitted through wireless channels. The inherent channel fading characteristics of wireless channels and the limited time-frequency resource characteristics are the main issues to be considered for task offloading in multi-user MEC networks. For the MEC system of time division multiple access (TDMA), it is necessary to decide the task offloading order according to the user's channel state, task state, and resource state. For an orthogonal frequency division multiple access (OFDMA) MEC system, channel access and task offloading decisions need to be made.

3.2. Computing Offload. Task offloading is the basis for efficient task processing in edge computing systems. Task offloading in the MEC system mainly includes offloading from devices to edge servers and offloading from devices to devices. The communication technologies required for the task offloading process include cellular-based mobile communication technology and D2D-based communication

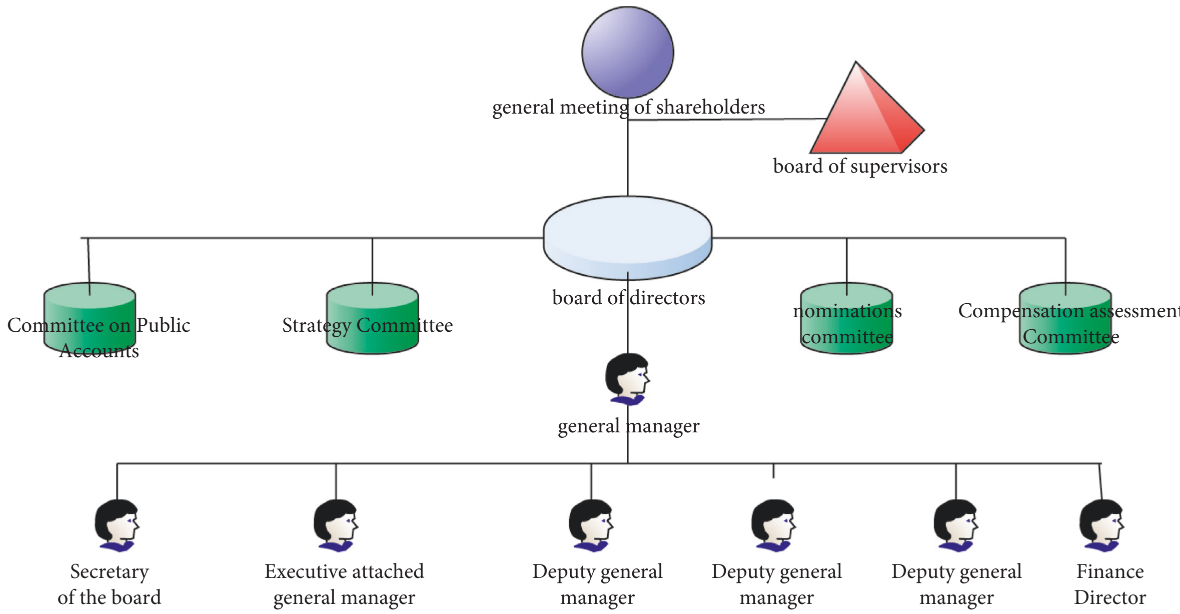

Figure 1: X company management structure.

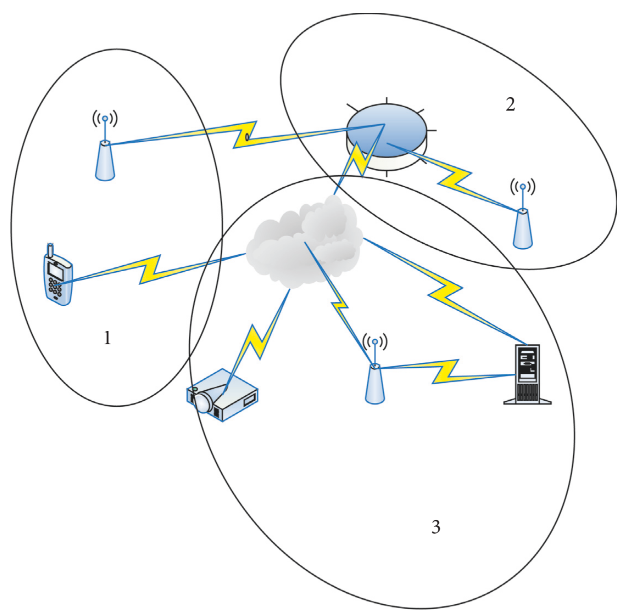

Figure 2: Three architectures for mobile edge computing.

technology. Among them, cellular communication is unified resource scheduling and management by the base station, which has a wide coverage area and strong transmission reliability. The standardized mobility management scheme can be better adapted to the access transmission of mobile devices. Compared with cellular communication, D2D communication technology is more flexible. It can perform centralized signaling control transfer via base stations and can also independently complete link establishment in a distributed manner without infrastructure. Due to its flexibility, D2D communication technology has excellent applications in networks that support relay and multihop, but it also has problems such as short communication distance and unstable connection. It is necessary to design an effective scheduling and offloading scheme to adapt to the mobility of the device.

Whether it is a single device or a network system, its environment is complex and changeable. Continuous data perception and real-time analysis of the surrounding environment are required to obtain effective cognition about the state of the environment, and then make correct analysis and decision-making. For applications such as monitoring and control with strong real-time requirements, it is particularly important to obtain timely and effective cognition in a dynamic environment. Therefore, such application services also put forward higher requirements on the computational timeliness of their perceived data tasks.

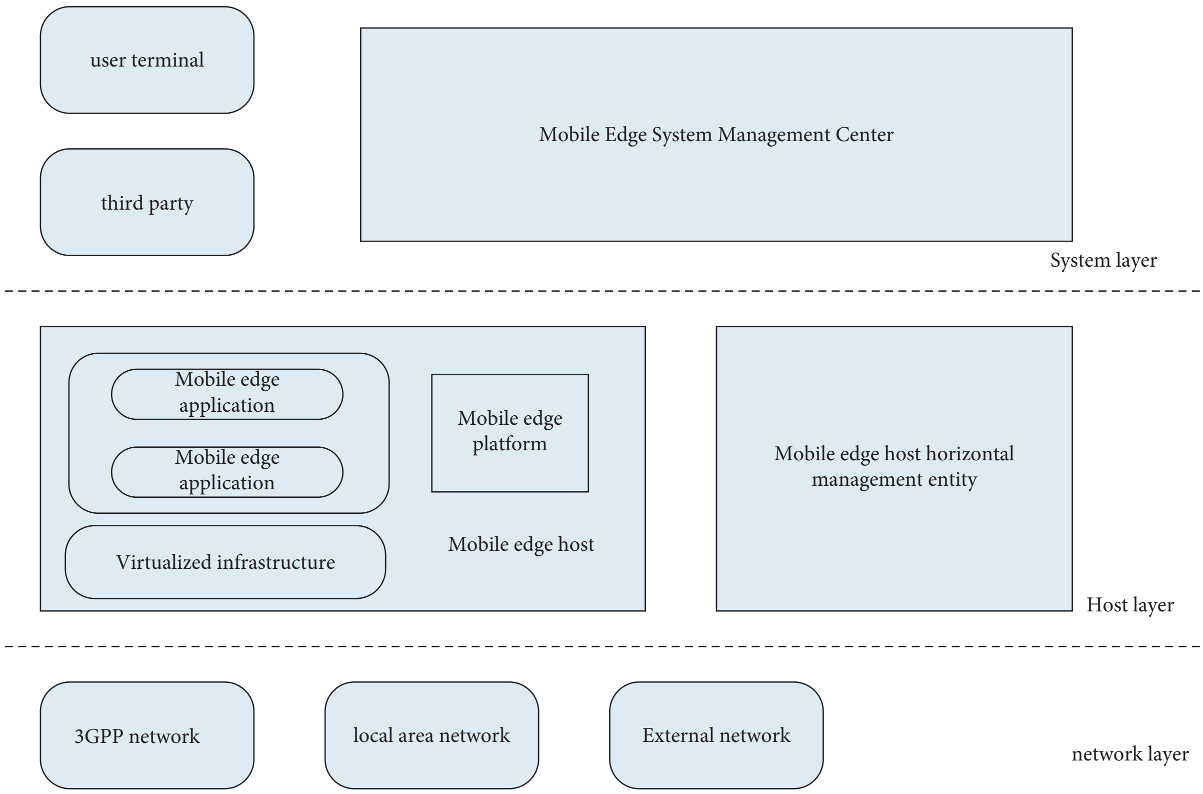

Figure 3: Basic network architecture of MEC.

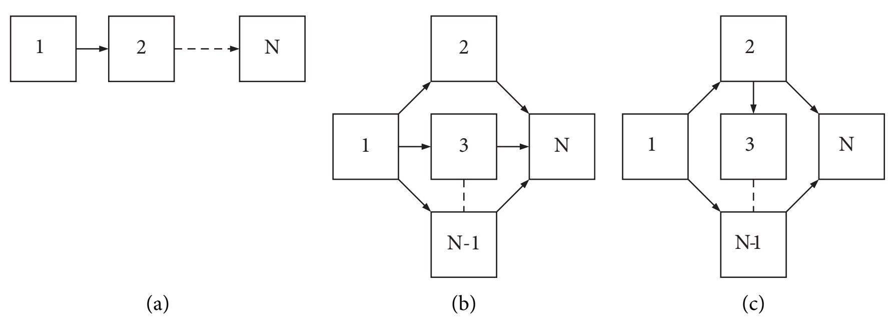

Figure 4: Task dependency model.

Information age is widely proven to be a novel tool for measuring information timeliness, which is significantly different from existing measures such as latency. Such tools are crucial, especially in contexts outside of communication systems, because the ultimate purpose of communication is also for further control, reasoning, and cognition, not just for the reproduction of data, as shown in Figure 5.

3.3. Pricing-Based Computing Offloading Algorithm. Computing offload in MEC is an important part of the algorithm. Pricing-based computing offload is an efficient computing method based on the principle of mobile communication. The system model is shown in Figure 6.

In this paper, we aim to study the network total revenue problem for MEC system operators. It formulates the optimal user computing offloading decision algorithm and formulates an effective pricing mechanism according to the QoS index, so that the network revenue of the MEC system operator can be maximized. When the MSO leases the network operator's spectrum and capacity, the advantages achieved via different pathways are likewise diverse. Because mobile devices have varying computation and connectivity capabilities, the overhead required to pick each approach is also diverse. As a result, an ideal unloading model must be developed in order to optimize the benefits of MSO. The following is how it is done:

3.3.1. Local Computing. W_{k_n} represents the computing task, $f^l_{k_n}$ is used to represent the computing capacity of user k_n, and the execution time is shown in the following formula:

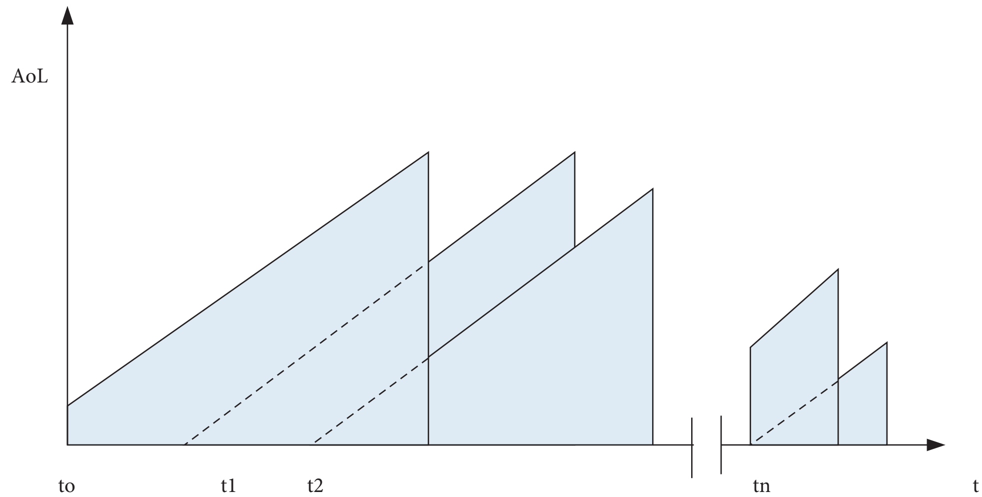

Figure 5: AoL time evolution model.

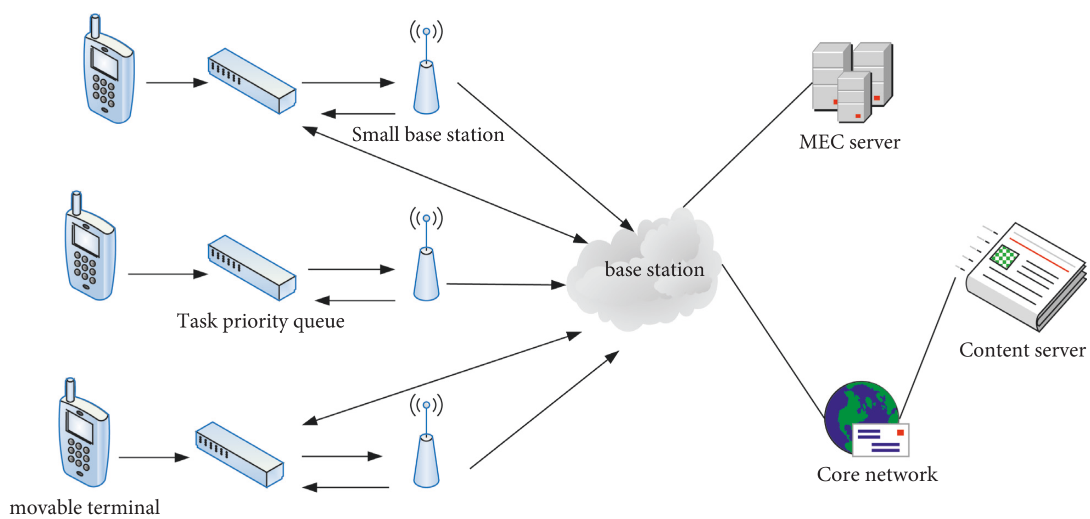

Figure 6: System model.

$$t^{L}_{k_n} = \frac{d_{k_n}}{f^{l}_{k_n}}. \tag{1}$$

3.3.2. When Offloading Tasks Directly through MeNB. The total time cost is as follows:

$$t^{M}_{k_n} = \frac{d_{k_n}}{r^{M}_{k_n}} + \frac{c_{k_n}}{f^{R}_{0}}. \tag{2}$$

f^R_0 represents the computing power of MEC server, and f^R_0 is a constant, that is,

$$r^{M}_{k_n} = \sum_{h=1}^{H} a_{k_n}, 2, kr^{M}_{k_n}, h. \tag{3}$$

Total energy consumption is as follows:

$$e^{M}_{k_n} = \frac{b^{M}_{k_n} p^{M}_{k_n} d_{k_n}}{r^{M}_{k_n}} + c_{k_n}\delta^{R}. \tag{4}$$

$b^M_{k_n}$ indicates the number of channels used by equipment k_n to transmit data to MeBS:

$$b^{M}_{k_n} = \sum_{h}^{H} a_{k_n,2,h}. \tag{5}$$

The specific uninstallation method is shown in Figure 7.

3.3.3. Small Base Station Unloading. Similarly, the small base station unloading task is similar to the local calculation [16]. That is, the total time consumption is as follows:

$$t^{S}_{k_n} = \frac{d_{k_n}}{r^{S}_{k_n}} + d_{k_n}\varphi + \frac{c_{k_n}}{f^{R}_{0}}. \tag{6}$$

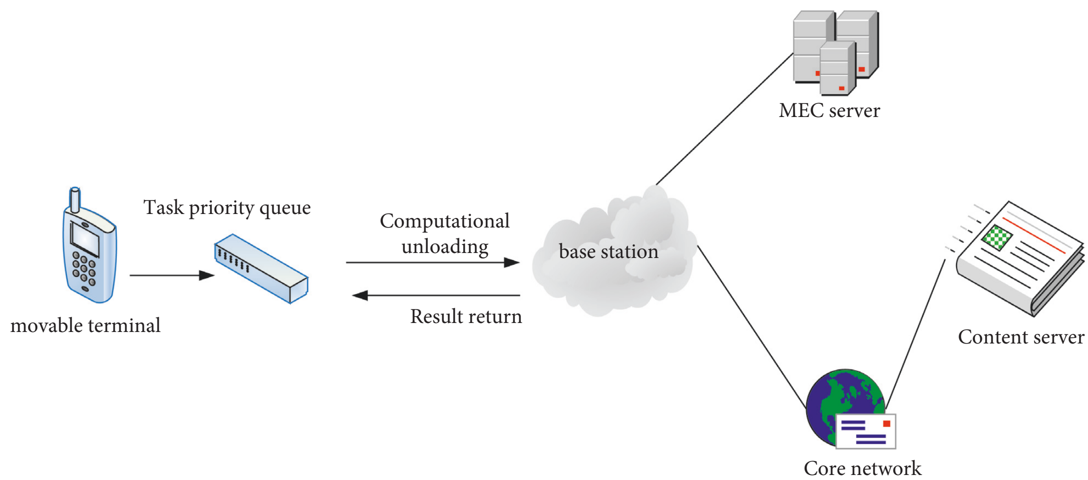

Figure 7: System diagram of uninstallation method.

φ indicates transmission rate

$$r_{k_n}^S = \sum_h^H a_{k_n,3,h} r_{k_n,h}^S. \quad (7)$$

Total energy consumption is as follows:

$$e_{k_n}^S = \frac{b_{k_n}^S p_{k_n}^S d_{k_n}}{r_{k_n}^S + c_{k_n} \delta^R}. \quad (8)$$

The computational offloading of the MEC system, according to present research results, is a reciprocal exchange mechanism of computing and communication resources. From the perspective of the MEC system operator, the mobile device trades its communication resources for the MEC server's computing resources, which includes deciding whether to undertake computational offloading and when to do so. Consider how to pick an ideal candidate server from the MEC server cluster when offloading jobs, as well as how to select an optimal computing offloading path as an essential aspect of the computing offloading process. Therefore, in this paper, the research on computing offloading is regarded as a computing-communication resource replacement problem, and the computing power and communication overhead of mobile devices and MEC servers are comprehensively considered. On the basis of satisfying the user's QoS requirements, the constraints are used to determine how much computing and communication resources to allocate. A schematic diagram of the replacement parameters of specific communication and computing resources is shown in Figure 8.

3.3.4. Optimization Objectives and Constraints. The MSO rents spectrum and backhaul from the mobile network operator to optimize the MEC operator's overall network income. Assuming that the small base station's unit pricing for spectrum is S_x, the macro base station's unit price for spectrum is M_x. Assuming that the unit transmission unit price is ψ_M when transmitting to SeNB, the transmission unit price directly transmitted to MeNB is ψ_M, and the constraint conditions are as follows:

$$w_2 = s_M \psi_M. \quad (9)$$

ψ_M represents network revenue. When the task is unloaded by type 3, the MSO is expressed in the following formula:

$$w_3 = s_{k_n} \psi_{k_n} + s_M \psi_M. \quad (10)$$

y_n represents the unit backhaul price from small base station n to macro base station. Let s_M denote the percentage of radio spectrum allocated by the MeNB to user k_n, and the macro base station allocates the same radio spectrum for each directly connected user. Definition $l_{k_n} \in \{0, 1\}$ is the percentage of computing resources allocated by the MEC server to user k_n:

$$\sum_{n \in N} \sum_{k_n \in K_n} l_{k_n} \leq 1. \quad (11)$$

The network income is shown in the following formula:

$$r = \lambda_n \left(\frac{l_{k_n} F}{d_{k_n}} - \frac{f_{k_n}^l}{d_{k_n}} \right). \quad (12)$$

4. Comprehensive Assessment and Analysis of Financial Risks

4.1. Financial Risk Measurement Based on F-score Model. When measuring the financial risk of the X listed company, this paper uses the F-score model to conduct statistical analysis and establish a model based on the company's relevant financial data to determine the potential risk level of the X listed company. Therefore, this paper will select F-score z-type for evaluation. The variables are shown in Table 1.

F-score model formula is as follows:

$$\begin{aligned} F = {} & -0.1774 + 1.1091 X_1 + 0.1074 X_2 + 1.9271 X_3 \\ & + 0.0302 X_4 + 0.4962 X_5. \end{aligned} \quad (13)$$

As shown in Table 1, X1 refers to the liquidity level of the assets held, which corresponds to the financial current ratio.

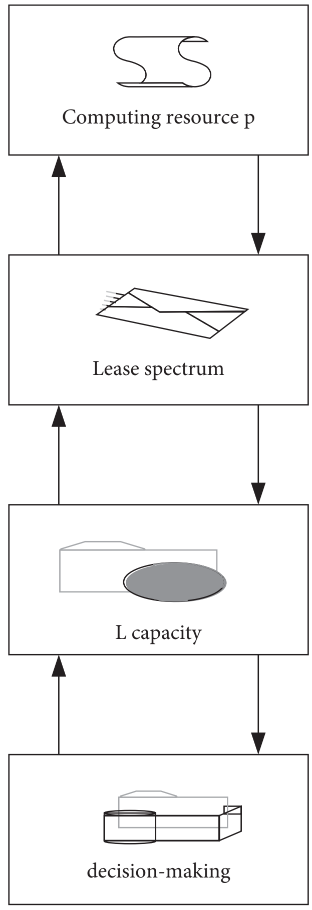

Figure 8: Schematic diagram of replacement parameters of computing resources.

Table 1: Analysis of indicators of F-score model.

Symbol	Financial indicator
X1	(Current assets-current liabilities)/total assets
X2	Retained earnings/total assets
X3	(Net profit + depreciation)/total liabilities
X4	Owner's equity/total liabilities
X5	(Net profit + interest + depreciation)/total assets

The difference between current assets and liabilities is the working capital. It can more objectively and truly reflect the net amount of funds available to the enterprise in the daily operation process, while the proportion of net working capital to total assets directly reflects the level of liquidity and liquidity of all assets of the enterprise. X2 reflects the relevant situation of accumulatively obtained income, and retained income can well reflect the overall ability to obtain benefits, past operation conditions, etc. The proportion of retained earnings in total assets emphasizes the proportion of cumulative operating performance in total assets, which is a more convincing indicator for risk measurement. X3 mainly reflects the coverage of debts by cash flow in the company's operating activities and is the level of ability to repay debts with all cash flows held. X4 reflects the ability to repay debts, from the traditional book value of owners' equity to the revised market value of owners' equity, which more objectively reflects the value of the enterprise and the strength of net assets to repay debts.

In the F-score model, if the F value is small, financial risk is more likely. If the value does not exceed 0.0274, it indicates that the enterprise is about to go bankrupt; if it exceeds 0.0274, it indicates that the enterprise can continue to exist; when $-0.0501 \leq F \leq 0.1049$, it reminds the management of the company to remain vigilant and continuously strengthen monitoring to prevent financial risks. Compared with the Z-score early-warning model, the F-score early-warning model takes the cash flow factor into the early-warning range on the basis of the Z-score early-warning model. Expanding the independent variables X3 and X5, it can more accurately predict whether the enterprise has financial risks and crises.

According to the financial reports of X listed company and other information, this paper uses various financial indicators to conduct a comprehensive analysis of its financial risks. The data are shown in Table 2.

The obtained results show that there are great hidden risks in financing, investment, operation, and so on. However, considering that various financial indicators only analyze the individual and specific financial situation of X listed company, it is impossible to judge the degree of financial risk of the company as a whole, so it is difficult to propose targeted and directional risk prevention measures from a systematic perspective. Therefore, based on the

Table 2: X listed company F-score model relevant financial data.

Relevant financial data	2017	2018	2019
Current assets	2,570,350.98	3,040,410.00	4,802,672.64
Current liabilities	815,034.48	1,628,621.59	2,997,046.32
Total assets	3,538,379.21	4,606,254.93	7,540,818.06
Total liabilities	2,593,691.40	3,635,514.28	6,134,332.87
Total equity	944,687.81	970,740.65	1,406,485.19
Net profit	14,012.60	16,861.65	17,977.87
Depreciation	2,225.35	8,965.20	10,532.27
Interest	8,106.70	13,164.76	54,277.37

financial index analysis method, this paper uses the financial risk model to accurately measure the overall risk level of X listed companies and gives feasible and effective preventive measures according to specific situations.

Based on the financial statements of X listed company from 2017 to 2019, the relevant X data are brought into the formula, and the result is shown in Figure 9.

It can be seen from the calculation results that the F value of Company X in the three years has exceeded 0.0274, which shows that it is in a good financial position and can continue to operate and develop. However, judging from the company's recent three-year data, the F-value shows a clear downward trend. It has decreased by 52.74% and 41.90% from 0.3997 in 2017, 0.1889 in 2018, and 0.1097 in 2019, respectively, and the financial situation continues to deteriorate. In particular, the F value in 2019 dropped by 0.1097, close to 0.1049, indicating that the company still hides financial risks. Managers need to continuously analyze and treat with caution, so as to achieve effective risk prevention.

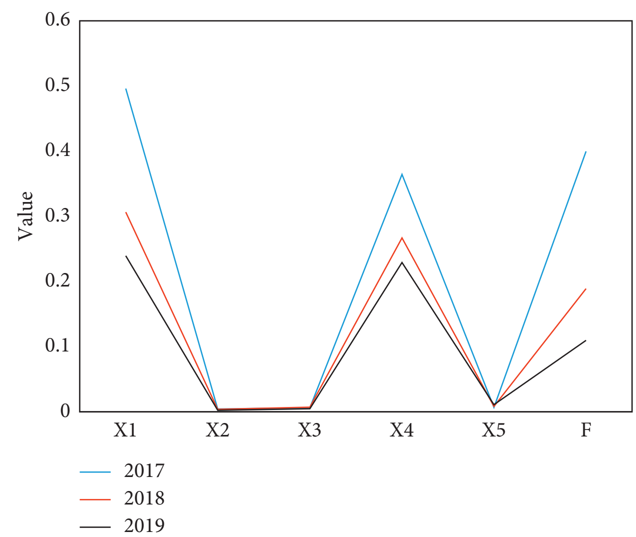

Figure 9: X listed company financial risk F value chart.

4.2. Financial Risk Measurement by Efficacy Coefficient Method. The efficacy coefficient method mainly makes a unified plan for different multi-objectives and sets the corresponding satisfactory and nonallowable values for each index involved. And based on the two, the actual situation of each indicator in reaching the satisfactory value is calculated and scored. Finally, the weighted average calculation is carried out based on the obtained scores to realize the judgment of the comprehensive level. Compared with more neural network models, the efficacy coefficient method is not only simple and easy to understand but also has strong operability, and it is more consistent with the situation of Chinese enterprises. It can comprehensively consider different indicators in the enterprise to meet the characteristic needs of different enterprises. Through the combined analysis of a single indicator and a comprehensive indicator, the source of the enterprise's financial risk can be quickly clarified, and measures can be taken to prevent risks in a timely manner.

Because the basic and adjusted scores of the traditional efficacy coefficient method are too fixed, they are not suitable for research in the financial field. In order to further improve the applicability and sensitivity of the efficacy coefficient method, and make the early warning system that integrates various indicators more scientific, objective, and accurate, this paper will adopt the improved efficacy coefficient method for financial research. The specific formula is as follows:

$$\begin{aligned} S_0 &= \propto \times \beta_0, \\ S_1 &= \propto \times \beta_1, \\ T &= \frac{(R - A)}{B - A} \times (M - N), \\ X &= N + T, \\ Y &= \sum X. \end{aligned} \tag{14}$$

Among them, S_0 and S_1 represent the basic score of the upper grade and the basic score of this grade, $\propto$ is the index weight β_0, and β_1 is the standard coefficient of the upper grade and this grade. T is the adjusted score, and X and Y represent the individual index score and the total score, respectively. In addition, the score of each indicator must be lower than its corresponding weight; that is, an indicator performs very well, the actual value exceeds the highest-grade excellent value, and the weight of this indicator should be directly used as its final score; when the performance of an indicator is poor, the indicator should be directly scored as zero.

Based on the available data and the financial status of X listed companies, this paper extracts as much data as possible

Table 3: X list of financial indicator selection of listed companies.

Comprehensive indicators	Basic indicators
Solvency B1	Asset-liability ratio (%) C11 Quick ratio (%) C12
Profitability B2	Return on equity (%) C21 Return on total assets (%) C22 Cost and expense profit margin (%) C23
Operational capability B3	Inventory turnover (%) C31 Accounts receivable turnover (%) C32
Operational growth capability B4	Operating profit growth rate (%) C41 Growth rate of total assets (%) C42

Table 4: Financial risk warning levels.

Grade	Interval	Risk situation
No alarm	[0.8, 1]	No risk
Light alarm	[0.6, 0.8)	Pay attention to risks
Medium alert	[0.4, 0.6)	Greater risk
Heavy alarm	[0.2, 0.4)	Big risk
Super alert	[0, 0.2)	Significant risk

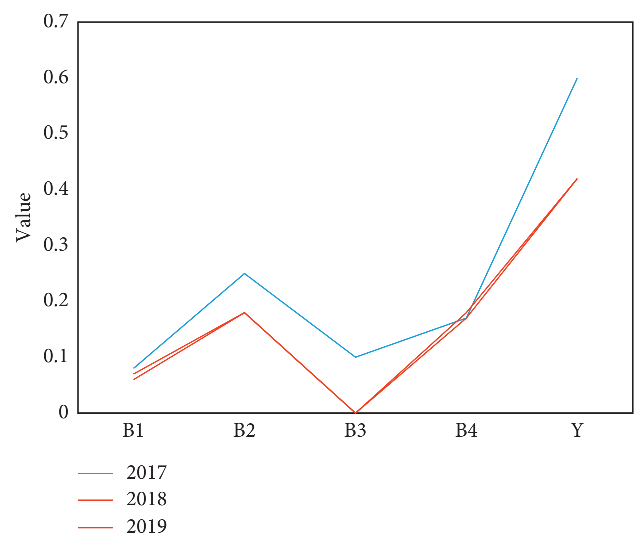

Figure 10: X listed company financial risk efficacy coefficient.

to calculate various financial indicators. A total of 9 indicators in 4 aspects were finally determined. The specific indicators are shown in Table 3.

The financial risk early warning level is a measure of the financial risk early warning result of an enterprise. This paper divides the risk level of this paper through the sorting and research of references, as shown in Table 4.

This paper extracts the relevant data from the financial statements of X listed companies from 2017 to 2019 and uses the index calculation formula to calculate the actual value of a single evaluation index. By comparing the actual value with the reference value, the standard coefficient and efficiency coefficient of the gear are determined, and the basic score and the adjustment score are calculated based on this, and then, the comprehensive score of the single index is obtained. The comprehensive score of the comprehensive indicators is the result of adding each individual indicator, and the total score of each year is the result of weighting by each comprehensive indicator. Then, by comparing the total score of each year with the financial risk early warning level table, the financial risk status of each year is finally evaluated. The result is shown in Figure 10.

It can be seen from the warning results that the comprehensive scores of the financial indicators of X listed companies from 2017 to 2019 are 0.60, 0.42, and 0.42, respectively. Comparing the financial comprehensive index results of X listed company with the risk level table, we can draw the following conclusions: in 2017, the financial risk of X listed companies was in a state of light alarm, and in 2018 and 2019, it was in a state of moderate alarm.

In addition, comparing the results of the F-score model to identify the financial risks of X listed companies, we can draw conclusions that are consistent with the efficacy coefficient method. Therefore, I think that from the perspective of the overall financial risk of X listed company, the company's financial risk is severe year by year, especially after 2018, the company faces relatively high financial risks.

5. Conclusion

The financial risks of X listed companies are mainly concentrated in the following three aspects: the first is the financing risk, that is, the continuous expansion of the scale of liabilities, the huge pressure on the centralized payment of liabilities, and the poor repayment ability. The second is investment risk; that is, the capital expenditure of investment projects is huge, the company's single business structure cannot effectively diversify risks, the entrusting party of some investment projects has a heavy debt burden, and there is a problem that the ability to pay the return on investment is weak. The third is operational risk; that is, under the influence of policies, there may be the risk of falling prices and the risk of capital turnover due to large accounts receivable and long recovery periods. Although this article analyzes the financial risk of X listed company and puts forward, the financial risk prevention measures pertinently. However, there is no further detailed analysis on how these measures should be put into practice in more specific and detailed ways, and it needs to be continuously improved and supplemented in the future practice process.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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