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Original Research

The Effect of Risk Management on the Speed of Adjustment of Commercial Credit by Considering the Role of Structural Characteristics of Companies' Management

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ABSTRACT

This research aims to investigate the effect of risk management on the speed of adjustment of commercial credit by considering the role of structural characteristics of companies' management. The statistical population is all the companies listed on the Tehran Stock Exchange, and using the systematic elimination sampling method, 124 companies were selected as the research sample. They were examined in the ten years between 2014 and 2023. The results of the research hypotheses test showed that risk management has a direct and significant effect on the adjustment speed of trade receivables and payables. Also, the interaction of management history with risk management directly affects the speed of commercial credit payable and receivable adjustment. The interaction of management independence and risk management has a direct and significant effect on the speed of adjustment of trade credit payable, the interaction of these two variables has an inverse impact on the speed of adjustment of trade credit receivable, and finally, the interaction of the position of management and risk management influences the speed of adjustment of trade credit payable and is not receivable. In summary, this research indicates that risk management plays a significant role in the speed of trade credit adjustment, and this relationship is influenced by the company's managerial structural characteristics. The findings emphasize the importance of risk management strategies and managerial structure in enhancing financial transparency and efficiency.

1 Introduction

Commercial credit is the most important source of short-term financing for companies and commercial enterprises [15]. Commercial credit is one of the methods by which companies provide funding for short-term periods. Trade credit plays an essential role in the business activities of any company, indicating the level of trust of suppliers and creditors in a company, and is considered a short-term financing tool [35]. Companies with optimal commercial credit receive suppliers' needed goods and services without paying cash. On the other hand, banks and other creditors grant facilities by checking

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the company's commercial credit [15]. As providers of short-term financing, suppliers consider several vital aspects when they want to extend trade credit to their customers, including the profit margin from additional sales on credit, the ability of the customer company to pay its trade obligations on time, and the long-term financial condition of the customer company [21]. When suppliers sell goods to their customers on credit, the adequate profit margin can be lower than the nominal profit margin Because, in such a case, due to the time value of money, the effective selling price of products decreases [28]. Furthermore, giving credit to customers by suppliers is like providing customers a loan, but without receiving interest (same source). Luo [18] stated that companies have a target trade credit and use a dynamic model to show that companies actively move towards the target trade credit and close the gap between the actual and target trade credit at a specific rate each year cover and adjust [18]. In the way of moving from the commercial credit point to the optimal commercial credit, there will be risks facing the company, and by controlling these risks, the speed of obtaining this funding source will be easier and more accessible, which can be related to the company or outside the company [8]. The company can be discussed through programs to control these risks and form risk committees to manage risk. In general, enterprise risk management is measuring or evaluating risk and then planning strategies for risk management [1]. Risk management is identifying, evaluating, and taking action to control and correct possible risks, which are specific consequences of damage or lack of change in the current situation [24]. Therefore, this question comes to mind whether risk management can improve the speed of trade credit adjustment. So far, this matter has yet to be dealt with in comprehensive research anywhere in the world. Managers always play a vital role in organizations [5]. The effect of outstanding managers in earning income, profit, and organizational success is evident in many successful organizations today. On the other hand, the quick response to the threats and opportunities of today's era has made the manager a vital resource in solving problems in organizations, based on which the need of organizations for competent managers has become more apparent. Managerial competencies consist of knowledge, skills, abilities, and motivations so that the manager can perform the assigned tasks well [31]. Therefore, this question comes to mind: does the interaction of management characteristics with risk management affect the speed of adjustment of the company's commercial credit? It has been stated that the level of trade credit on the balance sheet of the total non-financial business of the United States is almost three times larger than that of bank loans and 15 times larger than that of commercial paper. For example, in South Korea, the supply of commercial credit amounts to 19% of total assets, which is 21% in the United States [18]. One of the main reasons companies are involved in financial crisis and bankruptcy is not paying the company's debt on time. A financial crisis is when the company cannot obtain sufficient financial resources to continue its operations. Therefore, the necessity and importance of using commercial credit in this situation is vital for companies. Thus, commercial credit can solve the problem of financing companies that are impossible through traditional methods. Companies with high commercial credit receive their needed goods and services from suppliers without paying cash, and banks and other lenders also grant them facilities by checking the company's commercial credit. The discussion related to the credit status of companies is essential not only for the companies themselves but also for other company stakeholders, including creditors and current investors. Therefore, it is of great importance to address the discussion of the speed of adjustment of commercial credit concerning the comprehensive discussion of the company's risk management concerning the risks facing them. This research examines the vital role of Trade Credit as a source of short-term financing for companies. Trade credit, which signifies the level of trust between

suppliers and customers, enables companies to receive goods and services without the need for immediate cash payment. In this context, the role of managers and risk management strategies in adjusting and optimizing trade credit has been considered. The research indicates that although trade credit is an effective solution for short-term financing and navigating financial crises, risk management and managerial characteristics can influence the speed of achieving optimal trade credit. The main innovation of this research lies in investigating whether risk management can help improve and accelerate the process of adjusting trade credit for companies. This aspect has not been comprehensively studied to date, and a research gap exists in this regard. The research seeks to uncover how individual characteristics and managerial competencies, alongside risk management strategies, influence the speed and efficiency of a company's trade credit adjustment. The study emphasizes the vital role of trade credit as a solution for companies facing financial crises and those who have been left behind by traditional financing methods. As mentioned in the text, "This issue has not been comprehensively studied anywhere in the world to date." This statement signifies a clear research gap that the current research aims to fill. While the importance of managers in organizational success is evident, the direct and specific impact of the interaction between managerial characteristics, risk management, and a particular financing tool like trade credit has received less attention. This research aims to clarify this relationship. Given that the failure to pay debts on time is one of the primary reasons for financial crises and bankruptcy, research into the optimization and effective management of short-term financing sources like trade credit is essential for maintaining the financial stability of companies. By clarifying how risk management and managerial competencies can influence the speed of trade credit adjustment, companies can develop better strategies for their financial management. In the continuation of the research structure, the research hypothesis's development has been discussed by presenting theoretical and experimental foundations. In continuation of that, the research methodology and, finally, the findings and results of the research are presented.

2 Research Background

Companies and economic institutions need appropriate and timely financing for investment repayment of debts and increases in working capital. Financial managers always try to increase the company's value by inventing new financing methods [18]. The researchers' findings show that risk premium was a determining factor in explaining changes in investors' expected rate of return, and that there was a conditional relationship between the Downside Beta and expected return. Therefore, to explain the relationship between risk and return, one must pay attention to the market direction [26]. Using the Huang and Salmon model, researchers examined the impact of herding behavior of institutional investors on the stock returns of companies listed on the Tehran Stock Exchange, and their research results showed that there is a relationship between these two variables. Other findings of this study showed that the relationship between herding behavior and stock returns is greater in larger companies than in smaller companies, and also in companies with higher financial leverage; it is greater than in companies with lower financial leverage [27].

Xu et al (2020) in a study entitled Readability of Annual Reports and Business Credit, stated that the level of business credit is higher for companies in business service industries, and this relationship weakens when companies disclose illegible files [34]. Goncalves et al (2016) investigated the effect of product market power on business credit decisions using a sample of 8602 companies in the US stock market. They found that the change in the competitive strength of the company's product market reduces

the commercial credit in the financial crisis [11]. Among the types of financing sources, we can mention the commercial credit of companies. Delayed payments to suppliers are considered financing through trade credit. In the world, this method of financing is widely used as a short-term financing tool [4]. Wang et al (2023) in research in the field of supply chain and suppliers and business credit, stated that although previous studies have investigated the financial benefits of improving the transparency of supply chain disclosure, in practice, companies widely hide their information in this regard [33]. The results of his research reveal that companies with lower supply chain transparency receive more commercial credit. Trade credit is a source of short-term financing for small and medium enterprises [30]. Trade credit is a bilateral agreement between a seller (supplier) and a buyer (requester). Nguyen (2025) In a study examining financial constraints and the speed of trade credit adjustment, they stated that We find that Vietnamese firms do adjust toward their target trade receivables, and this process occurs slightly faster during the Covid-19 period. Furthermore, easing internal financial constraints enhances firms' ability to close the gap to their target levels more effectively. To our knowledge, this is the first study to examine the effect of financial constraints on trade receivables adjustment speed in the context of a developing country. Finally, we show that Covid-19 exerts a mixed effect on the relationship between financial constraints and speed of adjustment of trade receivables, depending on the proxy of constraint. Based on the research findings, we provide relevant implications for the management of trade credit in a developing country [21].

In signaling theory, it is stated that companies send signals to the market and stakeholders through their actions. Strong risk management can be a signal of financial stability, predictability, and a company's ability to manage fluctuations. A company that has effective risk management (e.g., liquidity risk, customer credit risk, operational risk) signals to its suppliers that the likelihood of default or non-payment of its debts is lower. This positive signal can lead suppliers to behave more flexibly with the company, including offering more trade credit or adjusting credit terms more quickly (e.g., extending repayment periods or reducing implicit interest rates). Contingency theory states that there is no single "best" approach to management. The best approach depends on specific conditions and contingencies (such as the external environment, company size, and industry). Risk management in the context of trade credit should be consistent with the specific circumstances of the company and its operating environment. In general, commercial credit has two dimensions: supply and demand. The demand side of trade credit is reflected in accounts and trade payable documents, and the supply side is reflected in accounts and trade receivables and demand documents [6]. Demand for commercial credit is a method of financing, and the supply of commercial credit to customers is considered one of the ways of investment [32]. Then, the demand for trade credit is reflected in accounts and trade payable documents. Trade credit has become one of the important sources of short-term financing for companies [19]. Barrot (2016) notes that the level of trade credit on the balance sheet of total US non-financial businesses is approximately three times larger than bank loans and 15 times larger than commercial paper [3]. Generally, trade credit constitutes a significant part of companies' assets and liabilities in different countries. Therefore, the correct management of trade credit can have a significant impact on the value of the company and the wealth of its shareholders. Due to the advantages of commercial credit, in the economic system of most countries, the amount of commercial credit used by companies is higher than the amount of short-term bank loans [35]. Dao et al (2022) provided evidence that companies with more effective internal controls than others settle their trade credit contracts faster. In addition, He pointed out that companies have a higher demand for trade credit when companies have ineffective internal controls [7]. Previous studies show significant cross-sectional variation in the use of trade credit and indicate that trade credit acts as

a potential substitute for bank credit when firms face difficulties securing capital from external sources [19]. Asif and Nisar (2022) in research entitled "Does trade credit stimulate company performance," stated that profitable companies with high involvement in trade credit can increase their performance by optimally using trade credit resources. However, obtaining bank loans for companies that do not have operational needs can disrupt their financial health and ultimately threaten their performance. This relationship is more evident for large companies [2]. Existing studies suggest market imperfections or failures, such as asymmetric information between firms, financial institutions, and suppliers, are the main motivations for using trade credit [19]. Hasan (2021) investigated the relationship between company life cycle and trade credit. They stated that companies in the introduction, growth, and decline stages use significantly more trade credit, while companies in the maturity stage use significantly less trade credit. they do. These studies show that companies use more trade credit when they need help securing capital from external sources [13]. Empirical studies support this argument and show that trade credit is important alternative financing for companies that face asymmetric information, financial constraints, liquidity shocks, or the risk of financial helplessness [20]. Luo (2021) investigated the effect of Covid-19 on the speed of trade credit adjustment and showed that Covid-19 significantly increased the speed of convergence of US companies towards the target trade credit and, in addition, companies that were exposed to higher operational risk tended to adjust their business credit toward target more quickly than less risk-averse firms [18]. However, due to various internal (commercial risk) and external risks and macroeconomic shocks (such as political risk, exchange rate risk, economic risk, etc.), the observed commercial credit level of the company often deviates from its target and optimal level. In this condition, the company cannot use all its capabilities in this context, as the managers are trying to achieve the target (optimal) commercial credit at a higher speed [17]. The optimal and effective management of risks facing companies has a very effective role in the efficiency and effectiveness of these institutions. Many foreign institutions consider a predetermined framework to deal with all kinds of risks facing the company, called risk management [31]. Risk management is the process of identifying, analyzing, and responding to risk factors that may occur during the life of a project. If risk management is done correctly, it can prevent possible risks by controlling future events. These risks and crises must be identified and analyzed before they occur. Accordingly, there is a controlled way to overcome the crisis, which will ultimately lead to the least damage or unpleasant consequences, and this can be achieved with risk management [25]. If risk management is implemented well in the business unit, it can create a competitive advantage. By creating a competitive advantage, it can be expected that despite capable management, risk management techniques can play an important role in increasing investment productivity and ultimately improve the company's terms of receiving and paying credit. The company can reach the company's optimal commercial credit more quickly. Therefore, it is expected that by properly managing the risks faced by the companies, the company can more quickly compensate for the gap between real and optimal commercial credit so that it can finally use this source of financing with maximum power. Therefore, the first and second hypotheses of the current research are stated as follows:

H1: The company's risk management affects the speed of adjustment of its payable trade credit.

H2: The company's risk management affects its trade receivables' speed of adjustment.

In today's knowledge-based and competitive economy, management is recognized as one of the most vital factors of production and organizational success. Moving beyond the traditional view that positioned management merely alongside labor, capital, and raw materials, management today plays a pivotal role in integrating, guiding, and optimizing these resources. This prominent role is particularly

emphasized in modern Corporate Governance theories, which highlight the importance of oversight structures and processes to ensure efficient and accountable performance [26]. Stakeholder Theory suggests that companies should consider the interests of all stakeholders, including shareholders, employees, customers, and creditors. Experienced and independent managers play a key role in balancing these interests and ensuring the long-term sustainability of the company. Furthermore, Agency Theory addresses the potential conflict of interests between managers (agents) and shareholders (principals) [28]. In this regard, the board of directors' structure, particularly the independence and competence of its members, acts as a crucial mechanism for reducing agency costs and aligning managers' interests with those of shareholders. Independent directors can effectively oversee the decisions of executive managers and prevent decisions that solely benefit managers and not shareholders. Managerial ability refers to the set of skills, knowledge, and experiences managers possess in optimally allocating the company's resources to achieve higher operational and financial efficiency. Highly capable managers are able to make more efficient decisions and better identify opportunities in complex and uncertain situations. This concept has increasingly gained attention in financial literature [30]. Demerjian et al (2013) showed that managerial ability has a positive association with a company's earnings quality. Capable managers can improve operational processes through efficient management, thereby providing more reliable and transparent financial information [5]. Managers with high background and ability have more experience in dealing with various challenges and risks. This experience allows them to identify, assess, and manage risks more effectively. In other words, managerial ability can act as an important factor in strengthening internal control mechanisms and enterprise risk management [12]. Khoo and Cheung (2022) specifically examined the impact of managerial ability on trade credit. They concluded that companies with higher managerial ability often have greater trade credit received. This suggests that creditors perceive managerial ability as a positive signal of a company's financial health and operational stability [14]. Moreover, this effect is more pronounced in companies with greater financial constraints or lower credit quality, as managerial ability can reduce the risk of default. The concept of speed of adjustment refers to the pace at which companies adjust their trade credit balances (both receivables and payables) towards their optimal or target level. Companies tend to adjust their trade credit balances to a desirable level to reduce costs associated with deviations from the target. This speed can be influenced by various factors, including adjustment costs, financial constraints, environmental uncertainty, and managerial characteristics. The structural characteristics of the board of directors, including the independence of directors, their work experience, and their power (strong position), can influence the company's decision-making processes, particularly risk management and trade credit policies.

Independent directors, due to their lack of affiliation with executive management, can provide more impartial oversight of the company's performance and protect stakeholders' interests against risky or non-transparent decisions. In risk situations, they are more inclined to make decisions that ensure the company's and stakeholders' long-term interests [28]. This independence can contribute to improving the company's risk management and consequently optimizing trade credit policies. Managers with longer tenure in the company or in the relevant industry usually possess deeper knowledge and experience. This background enables them to identify risks more accurately and react more effectively to them [6]. Managerial experience is recognized as an important factor in managers' ability to guide the company through uncertainty and optimize risk management. A strong managerial position can refer to managers' influence and impact on the company's major decision-making, which can stem from key

positions on the board, share ownership, or professional credibility [30]. Managers with a strong position can implement risk management policies more decisively and ensure that decisions related to trade credit are made in line with the company's overall objectives and risk optimization. Considering the theoretical foundations discussed, this study examines the moderating role of managerial characteristics (experience, independence, and strong position) on the relationship between optimal corporate risk management and the speed of trade credit adjustment. It is predicted that positive managerial characteristics will strengthen this relationship, enabling companies to adjust their trade credit policies towards optimal levels with greater speed and efficiency, especially in situations requiring optimal risk management. Therefore, according to the stated contents, the third to eighth research hypotheses are stated as follows:

H3: Management history affects the relationship between the company's optimal risk management and the speed of adjustment of payable trade credit.

H4: Management history affects the relationship between the company's optimal risk management and the speed of adjustment of trade receivables.

H5: Management independence affects the relationship between the company's optimal risk management and the speed of adjustment of trade credit payable.

H6: Management independence affects the relationship between the company's optimal risk management and the speed of trade credit adjustment.

H7: The management's strong position affects the relationship between the company's optimal risk management and the speed of adjustment of the trade credit payable.

H8: The strong position of the management affects the relationship between the company's optimal risk management and the speed of adjustment of trade receivables.

3 Methodology

The presented research is of applied type and from the point of view of methodology because it has investigated it after an event; it is of the causal and post-event correlation. The statistical population studied in this research is Tehran Stock Exchange companies, and the studied period is from 2014 to 2023. Companies that meet the following conditions were selected as the final sample in systematic elimination. Regarding comparability, the financial year chosen by the company is at the end of March. They have kept the financial year during the period (10 years) investigated and the information required in the research. Also, the companies should not be part of banks, insurance, and investment companies. By applying the above conditions, 124 companies were included in the final screening from the statistical population as the final sample. The sample companies' information was analyzed using the combined panel data method, EViews 12 software, and the robust standard error for the final test of the hypotheses. Time and place in different periods provide complete and reliable information to the researcher, and regression by applying the powerful standard error tool can be the best option to investigate the relationships in the current study. Regression has been chosen for hypothesis testing because its primary goal is to examine and measure the relationship between one or more independent variables and a dependent variable. Regression not only reveals the relationship but can also be used to predict the values of the dependent variable based on the values of the independent variables. This helps in simulating different scenarios and predicting the potential impact of changes in risk management on the

speed of trade credit adjustment. By employing multiple regression, the effects of other variables that may influence the speed of trade credit adjustment can be controlled, leading to a better understanding of the relationship. Regression is a very common and accepted statistical method in scientific research, particularly in the fields of finance and accounting. Many previous studies that have examined similar relationships have utilized this method, demonstrating its validity and efficiency.

Research dependent variable: Trade credit adjustment speed (TCAS): According to Luo [18] in many studies measuring the speed of adjustment, the partial adjustment model is used to measure the speed of adjustment [28]. In the partial adjustment model, in the first stage, both real and optimal commercial credit leverage should be measured. Still, since optimal commercial credit cannot be measured directly, its value must be obtained by replacing other variables. In this research, those apparent characteristics of the company that influence financing decisions are considered, and other characteristics, such as the economic situation and unobservable (uncontrollable) effects that affect financing decisions and are not easily measured, are considered errors. The estimator is considered. The optimal business credit is estimated with the help of the following model [18]. According to Luo's research [18] the partial adjustment model is used in many studies measuring the speed of adjustment [10]. In the partial adjustment model, in the first stage, both real and optimal commercial credit leverage should be measured. Still, since optimal commercial credit cannot be measured directly, its value must be obtained by replacing other variables. In this research, those apparent characteristics of the company that influence financing decisions are considered, and other characteristics, such as the economic situation and unobservable (uncontrollable) effects that affect financing decisions and are not easily measured, are considered errors. The estimator is considered. The optimal business credit is estimated with the help of the following model [18].

$$\mathrm{TR}_{i,t} - \mathrm{TR}_{i,t-1} = \lambda(TR^*_{i,t} - \mathrm{TR}_{i,t-1}) + u_{it} \quad (1)$$

TR∗ i,t+1 is the firm's target trade credit in year t. (λ) the unobservable adjustment speed to the target is the gap between the target and current trade credit. (TR∗ i,t − TRi,t− 1) Therefore, a high value of λ indicates a higher adjustment speed. u_{it} It is the same as the residual of the model. The target trade credit (TR∗ i,t) is unobservable but can be estimated with the following model:

$$TR^*_{i,t} = \beta' x_{it-1} + u_{it} \quad (2)$$

Where Xi,t-1 is the vector of explanatory variables determining the target's business credibility. According to previous studies such as [18]. suggestions of these studies, different variables (accounts receivable) AR and (accounts payable) AP are determined, respectively. Xi,t - 1 For AR, the determinants include sales, sales growth, firm size, inventory, retained earnings, firm age, and short-term debt.

Xi,t - 1 for AP, includes costs, cost changes, company size, inventory, accumulated profit, company age, and short-term debt. It is also used in the current research to estimate the target's business credit.

Table 1: Applied Variables of the Characteristics of Participation in the Research Model

Variable	symbol	How to Operate
Buy	Sale	Total sales divided by total assets
Positive sales changes	Sale $^{+}\Delta$	If the sales change is positive, then one or zero.
Negative sales changes	Sale $^{-}\Delta$	If the sales change is negative, then one or zero.
Costs	Cost	The cost of the goods sold is divided by total assets
Positive cost changes	Δ Cost $^{+}$	If the cost changes are positive، then one or zero.
Negative cost changes	Δ Cost $^{-}$	If the cost is negative، then one or zero.
Company Size	SIZE	Natural logarithm of total assets
Inventory	Inventory	The ratio of total inventory to assets (Lou, 2022).
Accumulated profit	RE	The ratio of cumulative profit divided by total assets.
Age of company	AGE	Natural logarithm of the date of the establishment of the company from the desired date.
Short-term debt	Short debt	Short-term debt ratio to total assets (Lou, 2022).
Business Credit Payable	Ap	Accounts payable by total assets (Lou ، 2022).
Business Credit Receivable	AR	Accounts receivable divided by total assets.

Source: Lu (2021), Aflatooni et al (2021)

By replacing the company's characteristics in model 1, the following model will obtain the optimal trade credit received and paid.

How to calculate (AR) (trade credit receivable) (supply)

$$TR^{*}_{i,t} = \beta_1 SALE_{it} + \beta_2 \Delta SALE_{it} + \beta_3 size_{it} + \beta_4 Inventory_{it} + \beta_5 RE_{it} + \beta_6 AGE_{it} + \beta_7 Short\ debt_{it} + u_{it} \quad (3)$$

How to calculate (AP) (trade credit payable) (demand)

$$TR^{*}_{i,t} = \beta_1 COST_{it} + \beta_2 \Delta COST_{it} + \beta_3 size_{it} + \beta_4 Inventory_{it} + \beta_5 RE_{it} + \beta_6 AGE_{it} + \beta_7 Short\ debt_{it} + u_{it} \quad (4)$$

As mentioned, the partial adjustment model obtains the optimal trade credit adjustment speed. In this research, the partial adjustment model of Fama and French [9] is used as follows:

$$\Delta TR_{it} = \lambda\left(TR^{*}_{i,t} - TR_{it-1}\right) + v_{it} \quad (5)$$

ΔTR_it, is the difference between the real commercial credit of the current year and the real commercial credit of the previous year; TR^*_it, target trade credit; TR_(it-1), real trade credit of the previous year; λ is the rate of adjustment and vit is the one-way error component that includes firm unique fixed effects (uit Model 2) and the error component (eit).

This model allows the named company to reduce the gap between its actual and target trade credit by one each year. The range of coefficient 1 is between zero and one, and a value close to one indicates a higher adjustment speed and vice versa. For the final calculation of the adjustment speed of the above two patterns, the following pattern is obtained by merging.

$$TR_{it} = \emptyset_1 SALEE_{it} + \emptyset_2 \Delta SALE_{\ it} + \emptyset_3 size_{it} + \emptyset_4 Inventory_{it} + \emptyset_5 RE_{it} + \beta\emptyset_6 AGE_{it} + \emptyset_7 Short\ debt_{it} + (1-\lambda) TR_{it-1} + v_{it} \quad (6)$$

$$TR_{it} = \emptyset_1 COST_{it} + \emptyset_2 \Delta COST_{\ it} + \emptyset_3 size_{it} + \emptyset_4 Inventory_{it} + \emptyset_5 RE_{it} + \beta\emptyset_6 AGE_{it} + \emptyset_7 Short\ debt_{it} + (1-\lambda) TR_{it-1} + v_{it} \quad (7)$$

The above model states that managers usually adopt strategies that reduce the gap between their current received and paid business credit position and their desirable and desired position. Additionally, this relationship assumes that all firms adjust their trade credits at the same rate. Therefore, the speed of trade credit adjustment will be obtained by subtracting the estimated coefficient for 〖TR〗_(it-1) from the number one.

trade credit adjustment speed =1-(1-λ)

Independent research variable: enterprise risk management (ERM): According to Gordon et al [12] research, the following comprehensive model has been used to operationalize comprehensive risk management:

$$ERMIi,t = \beta 0 + \beta 1 EUit + \beta 2 CIit + \beta 3 FSit + \beta 4 FCit + \beta 5 MBDit + \text{Ɛ}\ it \quad (8)$$

It is ERMI (risk management components according to the Cuzo model), EU (environmental uncertainty factor), CI (degree of competition in industries), FS (firm size), FC (firm complexity), and MBD (regulatory role of the corporate board). In the introduced model, Ɛ is the residual of the model. The lower the residual component of the model, the higher the company's risk management, and the higher the residual component of the model, the lower the risk management in the company. Therefore, the absolute value of the obtained residual multiplied by a negative one indicates risk management in this research, and the introduction of each of the indicators has been discussed in the following.

Risk Management Components (ERMI): The model introduced by Kozo16 in 2004 for measuring risk management is as follows:

$$ERM_I = \sum_{k=1}^{2} Strategy + \sum_{k=1}^{2} Operation + \sum_{k=1}^{2} reporting + \sum_{k=1}^{2} Compliance \quad (9)$$

Strategy refers to the solutions companies adopt to maintain competition in the market. To maintain a competitive status, companies operating in a specific industry try to make the most of the sales opportunities that have arisen, and sales higher than the average of this factor in the industry show a successful competitive strategy and maintain the company's position. On the other hand, the effectiveness of risk management can be tested by measuring the company's ability to contain and control risk. Therefore, the following two relationships can be used to measure the competitive strategy.

$$Strategy_1 = \frac{Sales_{it} - \mu Sales}{\sigma Sales} \quad (10)$$

In the introduced model, Sales (company sales), μSales (average industry sales), and σSales (standard deviation of sales of companies in the industry) are.

$$Strategy_2 = \frac{\Delta\beta - \mu\Delta\beta}{\sigma\Delta\beta} \quad (11)$$

In the above model, Δβ (the beta of the company in year t minus the beta of the company in year t-1), μΔβ (the average beta of the industry), and σΔβ (the standard deviation of Δβ of all companies in the industry).

Productivity (Operation): Productivity is operationalized by establishing a relationship between business inputs and outputs in setting up a business. If the company's output exceeds the inputs, it shows high performance and productivity. To operationalize productivity, two models can be used as follows:

$$Operation_1 = \frac{Sales}{Total\ Assets} \quad (12)$$

In the above model, Sales is Total Assets.

$$Operation_2 = \frac{Sales}{Number\ of\ Employees} \quad (13)$$

In the above model, Sales is the number of Employees.

Financial reporting risk management: Reporting at this stage is the confidence level in the company's financial reports. Disclosing fraud-free and transparent reports can guarantee the company's survival and reduce the company's risk. To operationalize this factor, the modified Jones model was used according to the following model, which shows the weakness in financial reporting, and because both optional and non-optional accrual factors can usually be negative, both factors were taken because their relative strength is more reliable [10].

Reporting1= (non-accrual accrual of absolute value items)/(optional non-accrual of absolute value items + optional accrual of absolute value items)

This model calculates the total accrual items (net profit minus operating cash). Also, all non-discretionary accrual items are obtained through the following model:

$$TAi,t\ /Ai,t\text{-}1 = \alpha1(1/Ai,t\text{-}1)+\alpha2(\Delta REVi,t - \Delta RECi,t)\ /Ai,t\text{-}1 +\alpha3(PPEi,t/Ai,t\text{-}1) +\varepsilon i,\ t \quad (14)$$

In the above model, TA (total accruals), ΔREVi,t (changes in income in period t compared to t-1), ΔRECi,t (changes in accounts receivable in period t compared to t-1), PPEi,t (gross fixed assets), Ai,t-1 (the book value of assets in period t-1) and εi,t (the residual of the model). After calculating alpha coefficients in the above model, it has been calculated using the following model of non-discretionary accrual items (NDA):

$$NDAi,t = \alpha1(1/Ai,t-1)+\alpha2(\Delta REVi,t - \Delta RECi,t) /Ai,t-1 +\alpha3(PPEi,t/Ai,t-1)+\varepsilon i,t \quad (15)$$

Discretionary accruals (DA) after determining the NDA have been operationalized with the following model, which is equal to the remainder of the model:

$$DAi,t = (DAi,t /Ai,t-1) - NDAi,t \quad (16)$$

Reporting2= (Material Weakness) + (Auditor Opinion) + (Restatement)

In the second model, which shows the health of financial reports from the point of view of a reference called the auditor:

Material Weakness (the number of items in the auditor's report), Auditor Opinion (a two-valued qualitative variable based on the auditors' opinion, which is coded as one if it is declared acceptable and zero otherwise), Restatement (a two-valued qualitative variable that is coded if the updated financial statements are presented one or zero will be considered).

Compliance and alignment with regulations can reduce risk. To operationalize compliance from

The following two patterns can be used (Gordon, Loeb and Tseng, 2009).

Compliance 1= (cost audits)/ (companies total assets)

Compliance2= (net (loss) profit)/ (companies total assets)

Environmental Uncertainty Factor (EU): Environmental uncertainty is defined as an increase in unpredictable future events. Therefore, environmental uncertainty is an influential factor in risk management. This environmental uncertainty can cause many problems for organizations. Financial reporting and performance measurement are more complicated in companies with variable and highly volatile business operations. Risk management, as a subset of the management control system, aims to identify and manage uncertain future events in companies. Therefore, environmental uncertainty can influence risk management [10]. Therefore, to operationalize this factor, the following three factors have been used:

Coefficients of income changes ((Sit)CN), b) Coefficients of capital cost changes, c) Coefficients of changes of net profit before tax ((Iit)CV), and Iit is the net profit before tax of the company in the current period.

$$EU = Log\left(\sum_{k=1}^{3} CV(X_k)\right) \quad (17)$$

$$CV(X_k) = \frac{\sqrt{\frac{\sum_{t=1}^{11}(Z_{k,t} - \bar{Z}_k)}{n}}}{|\bar{Z}_k|} \quad (18)$$

In the above model, CV(Xk) is the coefficient of uncertainty changes, t (periods under study), Xkt (uncertainty k in the current period), and Zk (average changes of uncertainty k during n years).

3, 2, and 1 = K for uncertainty: 1) the coefficient of changes in income, 2) the coefficient of changes in capital cost, and 3) the coefficient of changes in net profit before tax.

The cost of capital is derived from the following model:

$$WACC = \left(\left(\frac{E_M}{E_M + D_M}\right)K_S + \left(\frac{D_M}{E_M + D_M}\right)K_D\right) \quad (19)$$

In the above model is DM (book value of liabilities), EM (market value of equity), KD (minimum interest rate expected for facilities in cooperative contracts published by the central bank) KS (cost of shareholders), which is used to implement the expected cost rate of common stock is used from the Gordon model in the following way:

$$K_S = \frac{D_0(1+g)}{P_0} + g \quad (20)$$

In the presented model, D0 (cash dividend for period t), P0 (first price of the period), and g (growth rate of dividend) are, where g is calculated according to the following pattern:

$$gt = ROE * [(1-(DPSt / EPSt)] \quad (21)$$

Where,

DPST (cash dividend paid per share) and Pt-1 (share price at the beginning of the year), gt (profit growth rate), ROE (return on equity), and EPS (earnings per share).

Industry Competition (CI): Industry competition shows concentration in industries, where low concentration means high competition operationalized by the following model:

$$CI = 1 - \sum_{i=1}^{n}\left(\frac{S_{it}}{TotalS_{st}}\right)^2 \quad (22)$$

In the presented model, CI (the share of each company in the given industry), Sit (the number of companies' sales during the current period), and Sst (the total amount of sales of the industry during the current period) are [10].

Firm size (FS) is the natural logarithm of total assets.

The complexity of the company (FC): The complexity of the company will cause non-integrated information and weakness in the internal control of the employer, so to reduce the complexity, strong management of organizational risks is necessary, which results from the correlation coefficient of income and profit in negative one, according to the following relationship has been

FC =-1* CORREL (revenues & earnings) (23)

Monitoring of the board of directors (MBD): Considering the minimum number of board members of the company, which is five people, managers with different experiences, expertise, and thoughts can be beneficial to increase the performance of the company because the number of managers affects the value of the company and its risk-taking is influential. Also, the size of the board of directors influences the decision-making process and the effectiveness of the board of directors. Some studies about group decision-making in economics and social psychology have shown that more effort is needed for a large group to reach a consensus. The ratio of the number of people on the board of directors to the logarithm of the company's sales revenue has been used to measure the supervision of the board of directors.

Research moderator variables

Management position (MP): To measure the management position, we will use a two-dimensional variable so that if the CEO is also the chairman of the board of directors, it will be considered as management with a strong position and the value of one. Otherwise, the number will be zero [30].

Management history (MEX): To measure the work history of managers, the number of consecutive years that the managers have been in the management position of the company is used. In fact, for example, a manager has five years of company management experience, and five years is considered the manager's work experience [30].

Independence of managers (MIND): The ratio of non-executive directors to all board members has been used to measure managers' independence [30].

Research control variables: According to various studies in the field of commercial credit, such as Luo [18] the following variables have been applied to control unwanted factors in the research model.

ROA: Net profit divided by total assets

SATE: If the largest shareholder is a government or government-affiliated company, the number will be one. Otherwise, it will be zero.

SIZE: natural logarithm of total assets

Growth: Sales revenue minus the sales of the previous period divided by the sales of the last period.

CASH: the ratio of operating cash to total assets

LEV: The ratio of the total liabilities of the company to the total assets of the company at the end of each financial period.

Comprehensive regression model of research: According to empirical research such as Luo [18] the following mathematical model has been designed.

$$\begin{aligned} TCAS_{it} = {} & \beta_0 + \beta_1 ERM_{it} + \beta_2 MEX_{it} + \beta_3 ERM_{it} \times MEX_{it} + \beta_4 MIND_{it} \\ & + \beta_5 ERM_{it} \times MIND_{it} + \beta_6 MP_{it} + \beta_7 ERM_{it} \times MP_{it} + \beta_8 STATE_{it} \\ & + \beta_9 ROA_{it} + \beta_{10} SIZE_{it} + \beta_{11} CASH_{it} + \beta_{12} Growth_{it} + \beta_{13} LEV_{it} + \varepsilon_{it} \end{aligned} \quad (24)$$

4 Findings

The research findings include descriptive and inferential statistics, first presented in the table below descriptive statistics of quantitative (continuous) research variables.

Table 2: Descriptive Statistics of Research Variables

Variable Name	Mean	Max	Min	St. dev.
TCAS	0.477	0.989	0.053	0.182
TCAS	0.251	0.991	0.0261	0.242
MIND	0.653	1.00	0.20	0.179
MEX	3.754	20.00	1.00	3.567
Erm	-0.615	-0.014	-1.77	0.456
Cash	0.046	0.280	0.002	0.048
Growth	0.347	1.653	-0.360	0.42
LEV	0.559	0.975	0.104	0.203
ROA	0.143	0.594	-0.289	0.155
SIZE	14.72	19.77	11.30	1.534

Source: Research findings

Descriptive statistics generally shows the amount of data dispersion in the statistical sample of the research; the main central index is the average, which indicates the balance point and the center of gravity of the distribution and is an excellent index to show the centrality of the data. For example, the average value for the financial leverage variable is equal to (0.55) hundredths, which shows that most of the data are concentrated around this point. This number indicates that half of the company's assets are in debt. The average speed of adjustment of payable commercial credit, which is the dimension of the company's demand for commercial credit, is on average (0.47), which shows that companies have an annual average of 47% of the gap between the actual commercial credit and the target commercial credit cover the demand for commercial credit. The average speed of adjustment of the commercial credit receivable, which is the dimension of the company's supply for commercial credit, is (0.25) on average, which shows that companies have an annual average of 25% of the gap created between the actual commercial credit and the target commercial credit are covered in the supply side for commercial credit. In general, dispersion parameters are a measure to determine the degree of dispersion from each other or their degree of dispersion compared to the average. One of the most essential dispersion parameters is the standard deviation. The value of this parameter for company management history is equal to (3.56) and for cash holding (0.04), which shows that these two variables have the highest and lowest standard deviation, respectively. As shown in Table 3, the total number of company-years under investigation is 1240. Of these, 187 company-years, equivalent to 15.08% of managers, had strong positions, while 1053 company-years, equivalent to 84.92% of managers, did not have strong positions. Furthermore, 530 company-years, equivalent to 42.74% of the total company-years, had political ties, and 710 company-years, equivalent to 57.26%, did not have political ties.

Table 3: Frequency Distribution of Qualitative Variables (Discrete) of Research

Variable Name	Description	Frequency	Percentage
Mp	1	187	15.08
STATE	1	530	42.74

Source: Research findings

According to the results obtained in Table (4), the significance level of the variables in the significance test is less than 5%, which indicates the significance of the research's quantitative variables.

Table 4: Stability Test of Quantitative Variables of Research

Variable Name	Test Statistics	Sig	Results
TCAS	-14.3284	0.0000	Stationary
TCAS	-13.2270	0.0000	Stationary
MIND	-4.23755	0.0000	Stationary
MEX	-36.5608	0.0000	Stationary
Erm	-16.8017	0.0000	Stationary
Cash	-7.89402	0.0000	Stationary
Growth	-2.51189	0.0060	Stationary
LEV	-12.9620	0.0000	Stationary
ROA	-9.52191	0.0000	Stationary
SIZE	-12.2389	0.0000	Stationary

Source: Research findings

According to the results presented in Table 5, the White test's significance level in the research model is less than 5%, indicating the presence of heteroscedasticity in the model's disturbance terms. Furthermore, the significance level of the serial autocorrelation test in the research model is also below 5%, which points to the existence of serial autocorrelation within the model. This issue was addressed in the final model estimations by executing the gls command and utilizing the robust standard error features in Eviews 12 software. The significance level of the Chow test for the research hypothesis test model is less than 5%, supporting the adoption of a panel data model. To confirm this, a Hausman test is required, and its results are presented below (Aflatooni, 2018). The Hausman test's significance level in the research hypothesis test model is greater than 5%, which suggests that the common data model is acceptable.

Table 5: Results of the Classical Regression Presupposition Test

Test (dependent variable)	Test Statistics	Sig
Credit Payable		
White Tests	227.16	0.0000
Brush pagan Test	293.3	0.0000
F-Limer Test	169.3	0.0000
Hausman Tests	7.336	0.29
Credit Receivable		
White Tests	187.98	0.0000
Brush pagan Test	18.25	0.0000
F-Limer Test	182.6	0.0000
Hausman Tests	6.754	0.66

Source: Research findings

The results of Table (6) show that in the part of the speed of adjustment of payable trade credit, the risk management variable with a positive coefficient (0.17) and a significance level of less than 5% (0.0000) has a direct relationship with the speed of adjustment of payable trade credit; Therefore, the first research hypothesis is not rejected at the 5% error level. The interaction of management history and risk management with a positive coefficient (0.005) and a significance level of less than 5% (0.015) directly affects the speed of adjustment of trade credit payable. Therefore, the third hypothesis of the research is accepted at the 5% error level. The interaction of management independence with risk management with a positive coefficient (0.160) and a significance level of less than 5% (0.000) directly affects the

speed of adjustment of commercial credit payable. Therefore, the fifth hypothesis of the research is rejected at the error level of 5%. The interaction of the position of management and risk management with a significance level higher than 5% (0.890) does not affect the speed of adjustment of trade credit payable, so the seventh hypothesis of the research is rejected at the error level of 5%. The control variables of return on assets, company size, cash holding, and financial leverage have a significant relationship with the dependent variable of the research (adjustment speed of trade credit payable), with a significance level below 5%. The coefficient of determination is equal to 72%, which shows that the independent and control variables in the model have been able to explain 72% of the changes in the dependent variable. Also, the value of Durbin-Watson's is equal to 1.67, and since our number is between 1.50 and 2.50, it shows no strong autocorrelation between the disturbance sentences of the model. The collinearity statistic was checked and is below the number 5, which shows no strong correlation between the research variables. The test statistic (F) with a significance level below 5% shows that the research model fits well. To solve the serial autocorrelation created in the research model, considering that the model was entered using time effects, the break of the remaining sentence of the initial model (Res1) was used, which shows with a significance level below 5% that the autocorrelation problem The type of self-explanatory process is the first order, and this problem has been solved by placing the statistic of our Durbin-Watson between 1.50 and 2.50.

Table 6: The Result of the Test of the Research Hypotheses

dependent variable	**Speed of adjustment of credit payable**		**Receivable Credit Adjustment Speed**	
Variable Name	**Coef**	**Sig**	**Coef**	**Sig**
ERM	0.17	0.0000	0.20	0.0000
MEX	0.003	0.0007	0.010	0.0000
ERM* MEX	0.005	0.0001	0.013	0.0000
MIND	0.16	0.0000	-0.20	0.0000
ERM* MIND	0.16	0.0000	-0.19	0.0000
Mp	0.003	0.82	0.034	0.13
ERM* MP	0.001	0.89	-0.002	0.91
STATE	0.006	0.46	-0.010	0.44
ROA	-0.10	0.0000	0.011	0.72
SIZE	-0.006	0.003	-0.003	0.28
CASH	0.22	0.0000	0.58	0.0000
Growth	-0.005	0.44	0.0003	0.97
LEV	-0.059	0.004	-0.001	0.95
Res(1)	0.53	0.0000	0.13	0.0000
C	0.81	0.042	0.39	0.0000
Coef determination	0.72		0.53	
Watson Durbin	1.67		1.77	
Statistics F	208.49		89.68	
Sig	0.0000		0.0000	

Source: Research findings

5 Discussion and Conclusions

The purpose of this study is to investigate the relationship between risk management and the speed of adjustment of business credit with regard to the moderating role of managers in this regard. Companies have a business credit receivable and payable purpose. The advantage of business credit is that the customer does not need to make a cash payment to receive the goods at the time of purchase, and only

creates a debit or payable account on the customer's balance sheet, enabling them to use this money in future payments. When the company is able to mitigate the risks it faces through risk management, it is in an ideal position in terms of liquidity cycle, excellent financial position, and inventory. Management is the main decision-making pillar in companies and commercial institutions. When the manager has the executive authority and the ability to manage the affairs, he can protect the company from possible crises by having a plan to control the risks facing the company with written and principled rules. Companies actively use commercial credit (received and paid) as a tool to facilitate transactions and improve their financial position. Reducing operational risks through risk management improves the state of the liquidity and inventory cycle, enabling the company to benefit from business credit as a leverage in transactions. The findings of the research complement previous studies such as Lou (2021 and 2022) that emphasized the importance of risk in optimizing the company's operations and profitability, and the gap in risk management was felt in the meantime. The background and experience of managers in risk management plays an important role in increasing the speed of receiving business credits. More experienced managers who are familiar with business risks use risk management as a tool to accelerate the supply and demand for business credit. This finding complements the existing knowledge on the impact of managers' experience on financial decisions by Peter et al. (2013) and Salehi et al. (2021) and shows how this experience specifically affects the speed of adjustment of business credit. This directly answers the research question about the role of managers in this process. The independence of managers, along with risk management, leads to self-sufficiency and standardization in the company's work routine. Independent managers help build credibility through risk management by adopting an approach that ensures readiness for acceptance and financing by all stakeholders. However, the results show that the interaction between independent managers and risk management leads to a decrease in the speed of receivables adjustment, which means that independent managers with risk management put the company in an ideal situation where long-term credits are less needed (especially during the liquidity crisis) and turn risks into opportunities. This finding adds a new dimension to the existing literature on how board independence can influence credit adjustment strategies by managing risk, and answers the research question about the role of independent directors. Contrary to the initial expectation, the interaction between the position of managers and risk management did not show a significant effect on the speed of supply and demand of the company's commercial credits. In other words, even if managers are in several key positions, their ability to steer the company toward the ideal market on their own, without taking into account larger factors (such as market dynamics), cannot be a bridge of risk management to achieve optimal business credibility more quickly. This result shows that environmental and market factors play a more prominent role than the mere managerial position in this field. These results answer the research question about the effect of managers' position and show that this factor alone is not enough. The findings of this study complement the existing knowledge in the field of risk management and business credit with an emphasis on the moderating role of managers (history and independence). While previous studies have focused on the importance of risk management and business credit. This research specifically shows how managers' individual characteristics (such as seniority and independence) can shape the channels influencing risk management on the speed of business credit adjustment. The finding related to the lack of influence of managers' position proposes a new view that macro-market factors may overcome the role of management in this area. In summary, this study was able to answer its main questions about the relationship between risk management and the speed of adjustment of business credit, as well as the moderating role of managers' history and independence, and shed light on a new aspect about the mere inadequacy of managerial position in specific situations.

According to the findings of this study, which show that macro-market factors can affect the role of managers in adjusting business credit, it is suggested that the effect of factors such as general market conditions, interest rates, and customer loyalty on the speed of adjustment of business credit of companies be investigated in future studies. Given the high cost of financing companies, future research could focus on identifying and optimizing risk management strategies to reduce these costs and accelerate access to finance.According to the findings of the research, the following practical suggestions can be presented in order to help improve the performance of companies, investor decision-making, evaluation of creditors, and promotion of capital market stability:

1. Suggestions for company managers:
    - Strengthen risk management: Managers should focus on the strategic importance of risk management. Establishing a strong risk management framework will not only protect the company from potential crises, but it will also serve as leverage to achieve optimal business credibility and expedite transactions.
    - The importance of managers' background and experience: Companies should invest in selecting and retaining experienced managers who have sufficient knowledge of business risks. The track record of CEOs and board members directly impacts the company's ability to use risk management to improve business reputation.
    - Rethinking the role of directors' independence: While executive independence is essential to good corporate governance, care must be taken to ensure that this independence, along with risk management, does not lead to a slowdown in receivables adjustments, unless it is an informed strategic decision to avoid unnecessary risks. Directors must find a balance between protecting the interests of stakeholders and maintaining the company's financial resilience.
    - Understanding the limitations of the managerial position: Managers should understand that simply having a high position or a lot of influence does not guarantee the rapid achievement of optimal business reputation. Macro-market factors and industrial dynamics also play a vital role and should be considered in the company's strategies.
2. Suggestions for investors:
    - Risk Management Quality Assessment: Investors should pay special attention to the quality and effectiveness of the risk management system in analyzing companies. This can demonstrate the company's ability to manage operations and maintain financial health.
    - Attention to the experience of the management team: The background and experience of senior managers, especially in the field of risk management, can be an important indicator for predicting the future performance and the ability of the company to attract financial resources.
    - Analyzing the role of independent managers: Investors should evaluate how independent managers interact with risk management strategies. This interaction can provide insight into the company's approach to risk taking and liquidity management.
3. Suggestions for creditors (banks and financial institutions):
    - Comprehensive Assessment of Customer Risk Management: Creditors should seriously evaluate the applicants' risk management system in the accreditation process. Companies with stronger risk management are likely to have more stable returns and lower risk of default.
    - Consider the background of the directors: The background and expertise of the directors of the company applying for credit, especially in the field of risk management, can be considered as a positive factor in the evaluation of credit.

- Flexible credit policies: Given that macromarket factors play an important role in the supply and demand of business credit, creditors can help facilitate companies' access to financial resources by adopting more flexible credit policies and better understanding market dynamics.

4. Suggestions for legislators and capital market supervisory bodies:

- Encouraging the implementation of risk management frameworks: Regulators can encourage companies to adopt and implement best practices by providing standard guidelines and frameworks for risk management.
- Transparency in risk reporting: Regulators should increase transparency requirements in corporate risk reporting so that investors and creditors can make a more accurate assessment of the financial and operational status of companies.
- Improving corporate governance standards: Focusing on improving the quality of boards, including the independence and experience of board members, can help improve financial decision-making and risk management in companies.

References

[1] Asgari Rashtiani ,H., Mohammadi Nodeh, F., Kheradyar, S., Rezaei ,F., The Role of Social Interest Rate Risk Management in the Relationship between Sustainability Performance and Investment Efficiency, *Math Finance Appl*. ,2020;5(4):549-568. doi:10.22034/amfa.2020.674951

[2] Asif, R., Nisar, S. ,Does trade credit spur performance of the firm: a case study of non-financial firms in Pakistan, *J Islam Account Bus Res.*, 2022. doi:10.1108/JIABR-10-2021-0289

[3] Barrot ,JN. ,Trade credit and industry dynamics: Evidence from trucking firms, *J. Finance*, 2016;71(5):1975-2016. doi:10.1111/jofi.12371

[4] Cao, F., Ye, K., Zhang N., Li S. ,Trade credit financing and stock price crash risk, *J. Int. Financ Manag Account*, 2018;29(1):30-56. doi:10.1111/jifm.12067

[5] Demerjian ,PR., Lev B., Lewis MF, McVay SE., Managerial ability and earnings quality, *Account Rev*., 2013;88(2):463-498. doi:10.2308/accr-50318

[6] Dak-Adzaklo, A., International competition laws and trade credit financing, *Econ. Lett*., 2025;247:112097. doi: 10.1016/j.econlet.2024.112097

[7] Dao, M., Pham ,T., Xu, H., Internal control effectiveness and trade credit, *Rev Quant Finance Account*, 2022;59(4):1423-1452. doi:10.1007/s11156-022-01079-3

[8] Esmaili ,H., Afshar Kazemi MA., Radfar R., Pilevari N., Uncertainty Quantification and Human-Centric Risk Control via Neural–PDE Integration in Complex Volatile Systems, *Adv Math Finance Appl*.,2025;4(10):471-484. doi:10.71716/amfa.2025.21202563

[9] Fama ,EF., French KR., Testing Trade-Off and Pecking Order Predictions About Dividends and Debt, *Rev Financ Stud*. ,2002; 15:1-33.

[10] Flannery ,MJ., Rangan, KP. ,Partial adjustment toward target capital structures, *J Financ Econ*. ,2006;79(3):469-506. doi: 10.1016/j.jfineco.2005.03.004

[11] Goncalves, A., Schiozer R.F, Sheng, HH. ,Trade Credit during Financial Crisis: Do Market Power and Financial Constraints Matter? [Working Paper]. Universite Libre de Bruxelles; 2016. Available from: SSRN 2723504.

[12] Gordon, LA., Loeb ,MP., Tseng CY. ,Enterprise risk management and firm performance: A contingency perspective, *J Account Public Policy*, 2009;28(4):301-327. doi: 10.1016/j.jaccpubpol.2009.06.006

[13] Hasan, MM., Cheung, A., Tunas ,L, Kot ,HW. ,Firm life cycle and trade credit, *Finance Rev*., 2021;56(4):743-771. doi:10.1111/fire.12264

[14] Khoo, J., Cheung, A., Managerial ability and trade credit, *Finance Rev*., 2022;57(2):429-451. doi:10.1111/fire.12289

[15] Liu ,Z., Zeng ,S., Xu, X., Lin ,H., Ma ,H., Corporate misconduct, trade credit and charitable donations: evidence from Chinese listed companies, *Chin Manag Stud*. ,2019;13(3):664-686. doi:10.1108/CMS-07-2017-0209

[16] Li ,HQ., Yang ,Y., Xue, FW., Liu ,ZY. ,Annual report readability and trade credit financing: Evidence from China, *Res Int Bus Financ*. ,2024;69. doi: 10.1016/j.ribaf.2024.102220

[17] Luo, H., Do firms chase trade credit target? *Finance Res Lett*. ,2021;43(1). doi: 10.1016/j.frl.2021.102026

[18] Luo, H. ,COVID-19 and trade credit speed of adjustment, *Finance Res Lett*. ,2022;47(1):102541. doi: 10.1016/j.frl.2021.102541

[19] Martínez-Sola, C., García-Teruel ,PJ., Martínez-Solano P., Corporate cash holding and firm value, *Appl Econ*. ,2013;45(2):161-170. doi:10.1080/00036846.2011.595696

[20] Molina, CA., Preve, LA. ,An empirical analysis of the effect of financial distress on trade credit, *Finance Manag*., 2012;41(1):187-205. doi:10.1111/j.1755-053X.2012.01182.x

[21] Nguyen ,L., Speed of Adjustment of Trade Receivables: The Case of a Developing Country, *J Int Commer Econ Policy*, 2025;12(1):1-14. doi:10.1080/23311975.2025.2483376

[22] Nasrollahi ,M., Zanjirdar, M., Davoudi Nasr, M., Presenting an Entropy-Based Systemic Risk Warning Model,*Adv Math Finance Appl*., 2025;2(10):218-234. doi:10.71716/amfa.2025.23081909

[23] Öztekin Ö. ,Capital structure decisions around the world: which factors are reliably important? *„J Financ Quant Anal*. ,2015;50(3):301-323. doi:10.1017/S0022109014000660

[24] Park ,YH. ,A study of risk management and performance measures on new product development, *Asian J Qual*., 2010;11(1):39-48. doi:10.1108/15982681011051813

[25] Peng ,P., Xu, Z., Subjective preferences, liquidity constraints and price risk management under large-scale farm management, *China Agric Econ Rev*. ,2023. doi:10.1108/CAER-12-2022-0287

[26] Demerjian ,PR., Lev ,B., Lewis, MF., McVay SE., Managerial Ability and Earnings Quality, *Account Rev*. ,2013;88(2):463-498. doi:10.2308/accr-50318

[27] Routledge ,J. ,Trade credit supply and financial distress outcomes: evidence from Australian voluntary administrations, *J Account Lit.* ,2023. doi:10.1108/JAL-01-2023-0007

[28] Salehi, M., Mousavi Shiri ,M., Hossini, SZ., The relationship between managerial ability, earnings management and internal control quality on audit fees in Iran, *Int J Prod Perform Manag*., 2020;69(4):685-703. doi:10.1108/IJPPM-07-2018-0261

[29] Seifert ,D., Seifert, RW., Protopappa-Sieke M., Trade credit: literature review and research directions, *Eur J Oper Res*. ,2013;231(2):245-256. doi: 10.1016/j.ejor.2013.03.016

[30] Song, WL., Wan, KM. ,Does CEO compensation reflect managerial ability or managerial power? Evidence from the compensation of powerful CEOs, *J Corp Finance*, 2019;56(1):1-14. doi: 10.1016/j.jcorpfin.2018.11.009

[31] Stan-Maduka, E. ,The impact of risk management practice on the development of African businesses, *World J Entrepreneurship Manag Sustain Dev*., 2010;6(3):213-219. doi:10.1108/20425961201000016

[32] Tsuruta ,D., Does SME policy enhance the adjustment of trade credit? Evidence from a revision of the Subcontract Act in Japan, *Jpn World Econ*., 2025; 74:101310. doi: 10.1016/j.japwor.2025.101310

[33] Wang ,Y., Liu ,B., Chan HK, Zhang T. Who pays buyers for not disclosing supplier lists? Unlocking the relationship between supply chain transparency and trade credit, *J Bus Res*. ,2023;155(1):113404. doi: 10.1016/j.jbusres.2022.113404

[34] Xu, H., Pham ,TH., Dao M., Annual report readability and trade credit, *Rev Account Financ*, 2020;9(3):363-385. doi:10.1108/RAF-10-2019-0221

[35] Zou, H., Xie ,E., Mei ,N., Political connections and firms' trade credit in emerging economies, *J Bus Ind Mark*., 2023. doi:10.1108/JBIM-11-2022-0513

[26] Nikumaram, H., Rahnamay Roodposhti, F., Zanjirdar, M., The Explanation of Risk and Expected Rate of Return by Using of Conditional Downside Capital Assets Pricing Model, *Financial knowledge of securities analysis*,2008;3(1):55-77

[27] Zanjirdar, M., Khojasteh,S. , The Impact of Investors' Herding Behavior on the Stock Returns Using Huang and Solomon Model, *Quarterly Journal of Fiscal and Economic Policies*, 2017;4(15): 115-134