

RECEIVABLES MANAGEMENT: THE IMPORTANCE OF FINANCIAL INDICATORS IN ASSESSING THE CREDITWORTHINESS

Siekelova A., Kliestik T., Svabova L., Androniceanu A., Schönfeld J.*

Abstract: Trade credit is a strategic tool in the hands of the company. Favourable payment terms are the competitive advantage for the company. On the other hand, negatives of providing trade credits have to be seen. This is particularly the risk of late payments or non-payments, also additional costs associated with the receivables management and the fact that the capital tied in receivables does not bring a yield to the company. Receivables management is an important tool for the elimination of payment risk. Thus it constitutes an essential part of the financial management of each company. Trade receivables are an inherent part of the current assets. Provision trade credits should not be granted. It should be a premeditated move on the basis of credit standing of potential clients. Credit evaluation is performed on the basis of recommended indicators. The aim of the paper is to test the existence of a statistically significant relationship between the quick ratio and selected financial indicators.

Key words: receivables management, receivables, bad debts, creditworthiness, trade credit, Pearson correlation coefficient, Gubbs test

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Introduction

Most of the company's receivables have the character of trade credit. There is still a view that the company has limited options for their management because the receivables are more affected by external conditions of the economy, in particular the behavior of customers. (Zhong, 2014) But it is necessary to pay attention to their optimization. Decisions on capital allocation in the components of current assets can be regarded as basic financial decisions especially considering the fact that the capital tied in current assets does not bring a yield to the company and also affects its liquidity. Many authors point the passive attitude to providing trade credit. A situation in which all receivables are paid properly and on time

* Ing. **Anna Siekelova**, prof. Ing. **Tomas Kliestik**, PhD., RNDr. **Lucia Svabova**, PhD., University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Slovak Republic, Prof. **Armenia Androniceanu**, PhD., The Bucharest University of Economic Studies, Faculty of Administration and Public Management, Romania, Ing. **Jaroslav Schönfeld**, Ph.D., University of Economics Prague, Faculty of Business Administration, Czech Republic
✉ Corresponding author: anna.siekelova@fpedas.uniza.sk
✉ tomas.kliestik@fpedas.uniza.sk; lucia.svabova@fpedas.uniza.sk;
armenia.androniceanu@man.ase.ro; jaroslav.schonfeld@vse.cz

is unrealistic, and therefore many companies understand certain level of outstanding receivables as a normal part of business practice. They do not give adequate importance to receivables management. Author Wells (2004) states that the company should modify the conditions of providing trade credit for individual groups of consumers in line with its strategic interests and consider a decision not to provide a trade credit if the customer is too risky. Company should seek to optimize the level of trade receivables due to the risk and liquidity. Receivables management plays a very important role in this process. (Mian, Smith, 1992)

The financial crisis has verified the financial stability of enterprises. (Kestens et al., 2012) Companies have had serious liquidity problems as a result of providing trade credit to customers who have not paid properly and on time. Many current domestic and foreign authors deal with management of receivables. (Paul, 2012; Michalski, 2013; Soucek and Kubickova, 2011) In our paper we focused on an algorithm of receivables management, its importance and key roles. A decision to provide trade credit is the most important part of receivables management. It is based on the client's creditworthiness that is determined mostly on selected indicators of financial analysis. We test the existence of a statistically significant relationship between the quick ratio and selected financial indicators that should inform about the client's creditworthiness.

The Importance of Receivables Management and its Algorithm

Capital tied in individual components of current assets represents a significant proportion of company's funds, so we cannot overlook the importance of their effective management. Authors Levy and Sarnat (1988) said that the management of current assets is one of the most important activity in the company. Receivables management can be understood as purposeful activity of company leading to optimal controlling its receivables. Effective receivables management can be considered as one of the possible insolvency protection. Many surveys stressed the need to effectively manage corporate assets particularly trade receivables. Under the optimized amount of receivables we can imagine the determination of the total amount trade credits which the company is willing and able to provide to its customers. According to Melicherikova (2014) the total amount of trade credits is influenced by:

- the amount of costs related to the providing trade credits and tie funds in receivables, like receivables management cost or bad debt loss cost,
- the amount of opportunity cost representing a loss of revenue due to the rejection to provide trade credit.

The basic prerequisite for providing trade credit is that the company expects a profit. The concept of profit maximization was used by the authors Nicholas, Holt and Michsein (Melicherikova, 2014). The decision to provide trade credit is derived from the comparison of the usefulness of the transaction and the costs of the transaction. Maximizing profit is a function of supplier's optimal choices

taking into account internal and external factors affecting the success of the company. Maximizing profit is thus partly a function of risk that the company decides to take in the provision of trade credit. Any decision on providing trade credit means additional risks that company takes. It is necessary to determine whether risk-taking is relevant based on the marginal utility of the decision to provide trade credit. If company decides to provide additional trade credit and customer pays properly and on time, profit and utility increase. Otherwise, there is the loss of material cost, which is accompanied by a reduction in the utility. If it can be seen that the material costs are higher than the expected profit, thus reducing the utility (if a customer does not pay properly and on time) is higher than the increase (if a customer pays properly and on time), the company should carefully consider offering trade credit (Abdou et al., 2016). Kralovic and Vlachynsky (2002) distinguish the following basic activities within the receivables management: activities that precede the conclusion of the sales contract, negotiations on the conditions of the sales contract, monitoring of incurred receivables. Author process of receivables management partially divided into three main parts, namely prevention, monitoring, recovery. Receivables management is a complex process. In our contribution, we focused on the first phase – prevention. Prevention, as part of receivables management, can be considered as the most important phase, which would help to prevent the emergence of outstanding receivables or bad debts, thereby significantly reduce costs that relate to the process of recovery. (Dengov and Gregova, 2010) Prevention is the first phase of efficient receivables management in the company answers questions to whom and under what conditions to provide trade credit. We focused on the answer about “to whom company should provide trade credit” especially which selected indicators of financial analysis should be followed when company makes decision to this question.

Data and Methodology

Many authors emphasize individual approach to customer in providing trade credits. (Soucek and Kubickova, 2011) Selection and analysis of a business partner consists of collecting information about customers, quantification their creditworthiness and distribution customers to creditworthy groups. Currently, there is variety of information sources about their customers (books, internet, etc.). It is therefore easier to obtain the necessary information that can help the company minimize credit risk. Company can obtain information from the Commercial Register, Register of Financial Statements, the Commercial Bulletin, black list of debtors or from internal company's system and there are also credit rating agencies that can be used. We can divide the information about customers into four levels. The information of the first level includes company name, legal form, owner information, addresses etc. The information of the second level includes basic economic information about the size of the company or management. The information of third level includes detailed information about the management

of the customer, such as indebtedness, profitability, solvency and the discipline (Becerra-Alonso et al., 2016). The information of the fourth level includes strategic information about customers that the company has obtained with long term cooperation with them. We focused on the information of the second level and relation between them. Financial statements provide an objective idea of business partner's financial health. Based on these data company can identify the warning signs that warn that the financial health of its business partner may not be all right. The experts recommended monitoring liquidity, liabilities to assets, days sales outstanding, the amount of trade receivables and return ratios. (Gorczyńska, 2011) Substance of the article is to assess the relationship between quick ratio and selected indicators based on the Pearson correlation coefficients. We focused on indicators which are recommended to follow in the process of assessing the creditworthiness of the client in providing trade credit. (Kollar et al., 2015) The following table 1 shows selected indicators and procedure of its calculation.

Table 1. Selected indicators

Selected financial indicator	Procedure of calculation
Quick Ratio	$\frac{\text{Financial Accounts} + \text{Short-term Receivables}}{\text{Short-term Foreign Resources} + \text{Short-term Accrued Liabilities}}$
Liabilities to Assets	$\frac{\text{Foreign Resources} + \text{Accrued Liabilities}}{\text{Total Assets}}$
Days Sales Outstanding	$\frac{\text{Trade Receivables}}{\text{Revenues from Sales of Goods, Products and Services}}$
Days Payable Outstanding	$\frac{\text{Trade Payable}}{\text{Total Cost}}$
Trade Receivables	The amount of the balance sheet
Trade Liabilities	The amount of the balance sheet
Return on Sales	$\frac{\text{Earning after Taxes}}{\text{Revenues from Sales of Finished Products, Goods and Services}}$

Results

In the first step, we selected a sample of 9,821 Slovak companies. We focused only on companies with private domestic ownership structure. Next, we calculated the selected indicators of financial analysis for these enterprises in 2015. Because it is

a large number of companies the following table 2 shows only the outline of the results.

Table 2. Calculation of selected indicators

Quick Ratio [coef.]	Liabilities to Assets [coef.]	Trade Receivables [€]	Trade Payables [€]	Days Sales Outstanding [days]	Days Payable Outstanding [days]	Return on Sales [coef.]
1,073	0,880	894365	481069	168,037	90,82	0,02
0,612	0,804	8350	21569	16,991	42,36	-0,01
...

Then we tested correlation between selected indicators (Quick Ratio and Liabilities to Assets/Trade Receivables/Trade Payable/Days Sales Outstanding/Days Payable Outstanding/Return on Sales) to find out which of the selected indicators have the greatest impact on quick ratio, which determines the ability to pay provided trade credit. The values of some indicators in enterprises showed a striking deviation from others. Such values are called outliers, and it is recommended to exclude them from the database because it can falsify the results of other analyses. (Svabova and Durica, 2016). Grubbs' test was used for the identification of outliers. This test detects outliers from normal distributions. The result is a probability that indicates that the data belongs to the core population. Grubbs' test is defined for the hypothesis:

H_0 : There are no outliers in the data set.

H_a : There is at least one outlier in the data set.

The significance level was set at $\alpha=0.05$. Grubb's test results for each indicators are as follows. Tables 3 – 9 show the results of the test statistics of Grubbs test and figures 1 – 7 shows distribution of outliers of selected indicators.

Table 3. Quick Ratio

G (Observed value)	65,515
G (Critical value)	4,559
p-value (Two-tailed)	< 0,0001
Alpha	0,05

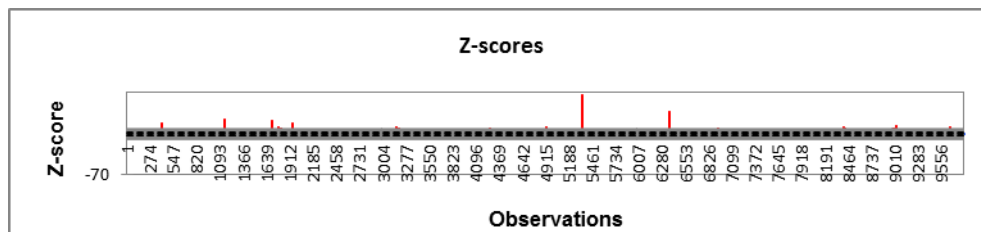


Figure 1. Distribution of outliers of indicator: quick ratio in the data set

Table 4. Liabilities to Assets

G (Observed value)	62,311
G (Critical value)	4,557
p-value (Two-tailed)	< 0,0001
alpha	0,05

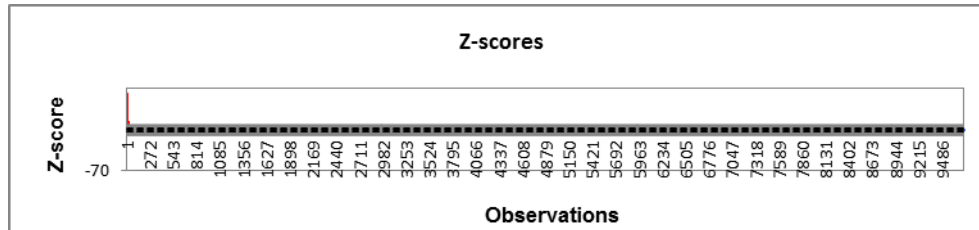


Figure 2. Distribution of outliers of indicator: liabilities of assets in the data set

Table 5. Trade Receivables

G (Observed value)	49,989
G (Critical value)	4,557
p-value (Two-tailed)	< 0,0001
alpha	0,05

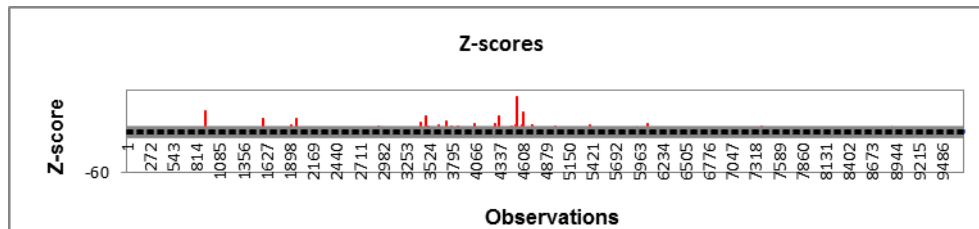


Figure 3. Distribution of outliers of indicator: trade receivables in the data set

Table 6. Trade Payables

G (Observed value)	40,103
G (Critical value)	4,557
p-value (Two-tailed)	< 0,0001
alpha	0,05

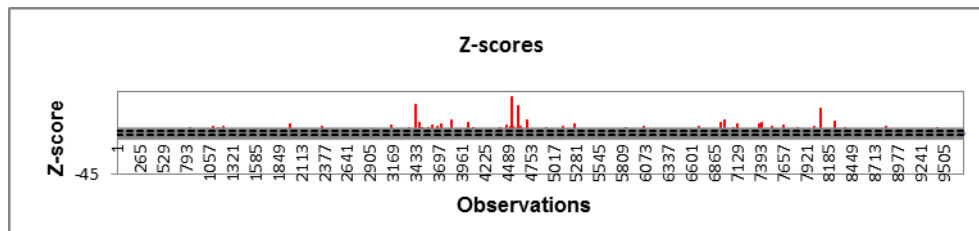


Figure 4. Distribution of outliers of indicator: trade payables in the data set

Table 7. Days Payable Outstanding (DPO)

G (Observed value)	84,024
G (Critical value)	4,558
p-value (Two-tailed)	< 0,0001
alpha	0,05

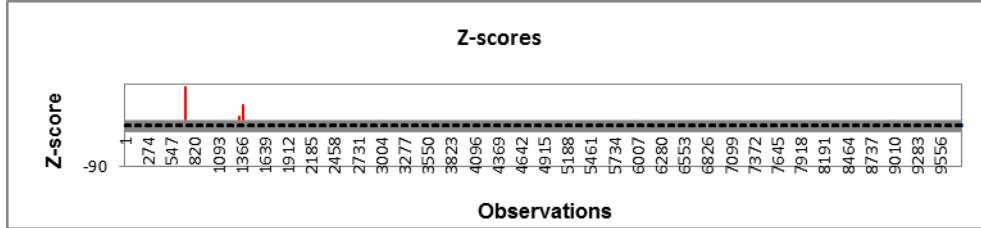


Figure 5. Distribution of outliers of indicator: DPO in the data set

Table 8. Days Sales Outstanding (DSO)

G (Observed value)	68,678
G (Critical value)	4,559
p-value (Two-tailed)	< 0,0001
alpha	0,05

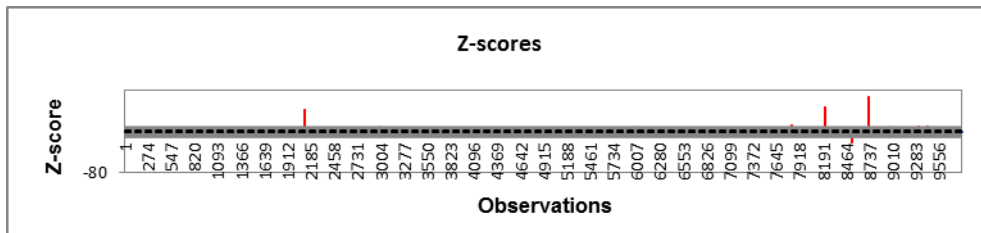


Figure 6 Distribution of outliers of indicator: DSO in the data set

Table 9. Return on Sales

G (Observed value)	68,678
G (Critical value)	4,559
p-value (Two-tailed)	< 0,0001
alpha	0,05

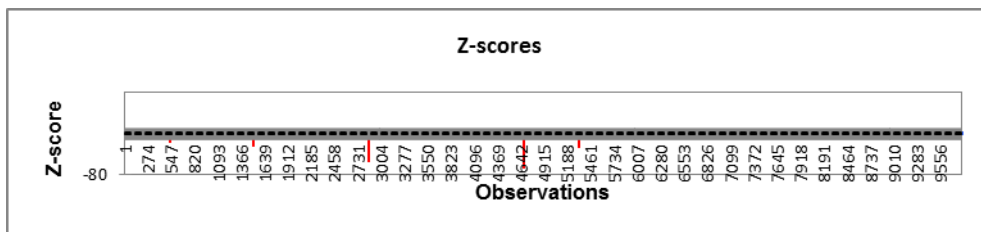


Figure 7. Distribution of outliers of indicator: return on sales in the data set

As the computed p-value is lower than the significance level alpha, we should reject the null hypothesis and accept the alternative hypothesis about existing outliers in our data set. The risk to reject the null hypothesis while it is true is lower than 0.01%. Values displayed in bold were outliers and after identification they were excluding from next analysis. After excluding outliers we have verified the correlation between selected indicators and its intensity using by Pearson correlation coefficients. Test results for each group of indicators are in table 10 shows results of Pearson correlation coefficient.

Table 10. Correlation matrix (Pearson): Quick Ratio and selected indicators

Variables	Quick Ratio
Liabilities to Assets	-0.302
Trade Receivables	-0.162
Trade Payables	-0.123
Days Sales Outstanding	X
Days Payable Outstanding	-0.256
Return on Sales	0.112

Discussion

Delayed payment is very dangerous for the company. In many cases it directly threatens its survival. Bad debts losses in selected European countries increased in 2014 from 3.0% to 3.10% (total amount of 360 billion euros). (Culkova et al., 2015) It is the highest amount since 2008. The percentage of written off revenue due to bad debts in 2016 were significantly varies within countries. The lowest value were achieved in Denmark (0.4%), Sweden (0.8%), Serbia (0.8%), Finland (0.9%), Latvia (0.9%), on the other hand the highest were achieved in South Europe (5.8% in Greece). Surprisingly high value achieved also in Germany (2.7%). The percentage of written off revenue due to bad debts in 2016 in Slovakia was 1.5%. This is the second lowest level in the framework of the Visegrad Group V4 after a Hungarian (1.4%). In the Czech Republic, the percentage of written off revenue due to bad debts is 1.9% and in Poland it is slightly above 2%. (European Payment Index Report, 2016) The survey results strongly highlight the need to effectively manage trade credit to minimize credit risk. On a sample of 9,821 Slovak companies, we examined the relationship of various financial ratios that are recommended to follow in assessing the creditworthiness of the customer. At the beginning, we calculated indicators that experts recommend to follow with potential customers before providing trade credit. Table 1 shows these selected indicators and the process of its calculation. Before testing various pairs of variables, we had to identify outliers, which we had excluded from testing. Grubbs' test was used for the identification of outliers. Quick ratio was used to describe the company's ability to repay the trade credit in the future. Then we

used Pearson correlation coefficient to examination of dependence between indicators of quick ratio and other selected indicators. In interpreting the results Cohen's interpretive of Pearson correlation coefficient was used as follow: $0 < |r| \leq 0.1$ trivial dependence, $0.1 \leq |r| \leq 0.3$ small dependence, $0.3 < |r| \leq 0.5$ moderate dependence, $0.5 < |r| \leq 0.7$ large dependence, $0.7 < |r| \leq 0.9$ very large dependence, $0.9 < |r| \leq 1$ nearly perfect correlation. (Cohen, 2003)

Between quick ratio and liabilities to assets exist moderate negative correlation. It means that if quick ratio increases, liabilities to assets decreases and vice versa. By supplementing calculating the coefficient of determination, we have determined that the change in quick ratio can be explained to 12.45% by change of liabilities to assets. It is therefore important to monitor this indicator in providing trade credit, because it influences the ability of future repay. Between quick ratio and trade receivables and trade payables exist small dependences. Thus, a potential client with a higher amount of trade receivables and trade payables does not represent such a threat for the company. On the other hands, financial stability of client with higher amount of trade receivables is significantly affected by solvency of its own customers. This fact should be taken into account when the company evaluates the creditworthiness of such client despite small dependences between quick ratio and selected indicators. Between quick ratio and days sales outstanding was the value of Pearson correlation coefficient 0.0012. In such cases, it is recommended to carry out a test of significance of the correlation coefficient. Based on the results of this test, we reject the existence of a linear correlation between these variables. Between quick ratio and days payable outstanding is small negative correlation. It means that if quick ratio increases, days payable outstanding decrease. Therefore it is important to monitor this indicator of potential client. If a potential customer has this ratio too high, we can assume that he will require an extended maturity of invoices. Despite that we reject existence of linear correlation between quick ratio and days sales outstanding, we confirmed moderate correlation between days sales outstanding and days payable outstanding (0.312). The relationship between these indicators is shown also in the Intrum Justitia survey. Currently many companies considered outstanding receivables from the customer as a reason to not meet its own liabilities to suppliers. The last pair between which the correlation was examined is quick ratio and return on sales. Between these indicators small positive correlation exists. By supplementing calculating the coefficient of determination, we have determined that the change in quick ratio can be explained to 4.02% by change of return on sales.

Conclusion

The positive perception of providing trade credit was significantly affected by the global economic crisis in 2008, when there was a significant change in the payment discipline of enterprises in several countries. By providing trade credit company temporary finance needs of its customers. During the global economic crisis just

trade credit has become the cheapest way of financing needs of the enterprise. Maturity of invoices is greatly extended, and some of them even have not been paid at all, which is significantly threatened the solvency of the company that provided trade credit. Many businesses tagged the insolvency of customers as one of the main reasons for delays in payment of own commitments. The current results of many surveys highlight the key role of proactive management of corporate receivables with a focus on the field of providing trade credits. In providing trade credit it is very important to properly assess future ability of client to repay it. It is usually recommended to monitor the selected indicators of financial analysis. However, there are a large number of these variables and not all directly affect the ability to repay trade credit properly and on time. The aim of the paper is to test the existence of a statistically significant relationship between the quick ratio that represents ability to pay and selected financial indicators. Test of correlation was made on the sample 9,821 Slovak companies by using Pearson correlation coefficient. The results may help enterprises in the selection of essential indicators at the client's solvency valuation. At the same time, these results may represent a basis for developing an econometric model for managing liquidity in Slovak companies.

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**ZARZĄDZANIE WIERZYTELNOŚCIAMI: ZNACZENIE WSKAŹNIKÓW
FINANSOWYCH W OCENIE ZDOLNOŚCI KREDYTOWEJ**

Streszczenie: Kredyt handlowy jest strategicznym narzędziem w rękach firmy. Korzystne warunki płatności to przewaga konkurencyjna przedsiębiorstwa. Z drugiej strony należy zauważyć negatywy w dostarczaniu kredytów handlowych. Związane jest to w szczególności z ryzykiem opóźnień w płatnościach lub brakiem płatności, dodatkowymi kosztami związanymi z zarządzaniem wierzytelnościami oraz faktem, że kapitał powiązany z należnościami nie przynosi zysku spółce. Zarządzanie należnościami jest ważnym narzędziem eliminacji ryzyka płatności. Stanowi zatem zasadniczą część zarządzania finansami każdej firmy. Należności handlowe są nieodłączną częścią aktywów obrotowych. Nie należy pochopnie przyznawać kredytów handlowych, powinien to być przemyślany ruch na podstawie zdolności kredytowej potencjalnych klientów. Ocena kredytowa przeprowadzana jest na podstawie zalecanych wskaźników. Celem pracy jest sprawdzenie istnienia statystycznie istotnego związku pomiędzy wskaźnikiem szybkiej płynności a wybranymi wskaźnikami finansowymi.

Słowa kluczowe: Zarządzanie wierzytelnościami, złe kredyty, zdolność kredytowa, kredyt handlowy, współczynnik korelacji Pearsona, Test Grubbsa

受託管理：財務指標在評估中的重要性信用社

摘要：貿易信貸是公司手中的戰略工具。有利的付款條件是公司的競爭優勢。另一方面，不得不看到提供貿易信貸的負面因素。這特別是延遲付款或不付款的風險，也是與應收款管理相關的額外成本以及與應收款相關的資本不會給公司帶來收益的事實。應收款管理是消除支付風險的重要工具。因此，它是每個公司財務管理的重要組成部分。應收賬款是流動資產的固有部分。提供貿易信貸不應授予。在潛在客戶的信用狀況的基礎上，這是一個有預謀的舉動。信用評估是根據推薦指標進行的。本文的目的是測試快速比率和所選財務指標之間存在統計學上顯著的關係。

關鍵詞：應收賬款管理，應收賬款，壞帳，信譽，貿易信貸，Pearson相關係數，Gu bbs檢驗。