# Handbook of Research on Entrepreneurship, Innovation, and Internationalization

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# Chapter 21
# Managing Customer Credit to Reduce the Company's Risk and Overdue Credits

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## ABSTRACT

*Most companies give credit to customers when selling products or providing services. It has advantages as more customers may be willing to negotiate with the company, but it increases the company's risk. Therefore, the company must analyze the pros and cons of giving credit. This chapter summarizes all information needed for a company to establish credit policy for each customer or group of customers. First, credit risk and customers' credit risk are explained to call the attention to the need to manage it. Then it shows how a company can manage credit to maximize its value and reduce its risk. The inputs needed to determine a customer credit policy are explained. Credit risk models are presented. And finally, a recovery method to collect overdue credits is presented. This chapter aims the help the company to solve liquidity and solvency problems and to stablish long-term relationships with customers.*

## INTRODUCTION

In a competitive world, companies need to sell differentiate products or provide singular services to survive. Although it is not enough, and thus companies need to have a strategy and management techniques to assure economic and financial sustainability. Moreover, risks should be avoided as they are related with uncertainties and the probability of negative events. Some risks the company cannot foresee, as for example changes in policies, while others the company can try to forecast and avoid or reduce it. Credit risk is one of this risk that the company can manage to decrease it.

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Some companies receive the payment of the products sold or services provided in the moment of delivering or before, in the moment of the order. Although, most companies give credit to customers, not only because their competitors also do it, but also to appeal their products and services to customers. The problem arises when customers do not fulfill the contract obligations, it means, when customers do not pay in the contract period, delaying payments, or do not pay at all. If customers delay or fail their payments, the company must deal with costs, as cost of materials, workforce costs, supplies and services costs, among others, but have no revenue (income) to support it, leading to some financial distress, and to losses.

Managing customers' credit is not a new issue, but it has gained prominence in the last years specially after the financial crisis of 2007/2008. Diverse companies went to bankrupt or had solvency problems. This has led to a snowball effect: customers have not payed to suppliers, suppliers who are also customers of other companies have failed their payments, and in the end diverse companies have deal with financial problems, and some went to failure.

Moreover, not only customers financial problems are relevant. Some problems arise due to countries' financial problems. For example, some customers give authorization to pay their obligations to foreign suppliers, although the country government did not allow the bank to transfer the money and thus, the customer failed its contract obligation, but not due internal causes. Likewise, it is important not only to understand customers financial situation, but also the industry and the market situation.

Managing credit risk nowadays is crucial to almost every company but is even more relevant when the company sell or provide services to external markets due to the country risk, and the difficulty to solve divergences when it happens since the legal system is different.

This chapter aims to explain how the company can manage credit risk, from the moment of the decision to grant credit till the moment the amount in debt is collected. How the company should manage credit? Which information the company should collect? Where the company can look for that information? How the collected information should be related and supported? Which factors should be considered in the moment of credit decisions? Should the company look for additional protection to avoid risk? Which procedures should be used to collect the money? How to deal when the customer does not pay even if the company have used all the ways to receive the amount in debt? How to reflect bad debts and doubtful accounts in financial statements? This chapter provide answer to these questions, helping companies in their decision of granting credit.

Using the information provide in this chapter, companies can draw customers' profile and understand if should or not give credit to them. Moreover, they will understand which procedures should be following to act proactively instead of solving existing problems. The main aim is to avoid bad debts, increase company's return, solvency and liquidity, and decrease company's risk. This chapter is relevant to practice but is also relevant to theory since it is an in-depth study that provides all information needed to deal with this thematic.

The chapter is organized as follows. After this introduction topic, in topic 2, a definition of risk is provided, as well as risk's classifications to frame the thematic. Then credit risk and its relevance to companies its explained. Topic 3 explains how to manage customer credits and the steps companies must follow to deal with it. The conclusion is in topic 4, some recommendations in topic 5 and the chapter ends with suggestions for future analyses.

# BACKGROUND

## Risk Definition

Every company deals with several risks that impact its activity and return (Brealey, Myers, and Allen, 2017). Usually risk is linked with uncertainty, an exposure to danger, a probability to damage, a loss or any negative occurrence (Securato, 2002; Silva, Mota, Queirós, & Pereira, 2013). Financially speaking risk is the probability of a return be different than the expected one. Likewise, risk is related with the volatility of assets and liabilities.

The Federation of European Risk Management Association (FERMA, 2010) argues that risk is the effect of an uncertainty on the company's aims, and can be positive, negative or a simple deviation on an expected fact. Therefore, in some situations risk can lead to opportunities, being good for the company's improvement and success, while other times it can lead to threats and negative impact in the company. This last type of risk is the one that companies want to avoid or at least reduce.

Company's should identify, measure and apply procedures to avoid negative consequences of risk. There are several classifications of risk, depending on the perspective. Drew and Kendrick (2005) argue that risks can be classified according to its source, nature, impact, probability of occurrence and duration.

## Risk Types

In this work the classification of risk proposed by Neves (2012) is followed. The author argues that risk can be divided into two main groups: systematic and unsystematic risks, and then divided in other sub-groups.

Systematic risk, also called market risk or undiversifiable risk, is the uncertainty inherent to the entire market or a market segment. This risk results from external factors and is not controlled by a company or individual. It is difficult to eliminate through investment diversification, since it influences all the industries, and are beyond the control of a specific company. It is related with (Banco de Portugal, 2007; Neves, 2012; Silva *et al*, 2013):

- Interest rate risk arises from changes in interest rates, it means, is the percentage of the amount charged by a lender to a borrower for the use of assets;
- Inflation risk occurs due to changes in the price level of goods and services in the economy over a period;
- Currency risk appears when the currency is other than the domestic one; it is related with exchange rates;
- Country risk results from investments in foreign markets, and is more significant in emerging markets;
- Political risk occurs due to instability or changes in a country, as recession, wars or others.

The unsystematic risk or specific, diversifiable risk is the risk that affects an industry or a specific company. It can be eliminated using investment diversification since its impact is different depending on the industry, company's dimension, among others (Neves, 2012). Examples of this type of risk are (Banco de Portugal, 2007; Deloitte, 2017; Neves, 2012):

- Industry risk, which is the uncertainty of an industry, as for example liquidity risk that is common in the construction industry; change is specific legislations, that can increase costs or difficulties of production, product recall, among others;
- Strategic risk results from technological changes, new competitor in the market, shifts in customers' demands, among others;
- Operational risk is related with failures in the company's day-to-day, caused by employers or processes. For example: a lack of internal or external information, lack of the definition of responsibilities, lack of aims and strategical plans, frauds, process layout not accurate, system overloads, among others;
- Financial risk is related with financial losses that a company can have. Examples are credit risk, risk due to debt loans, and others;
- Reputational risk is when the company's image is damaged due to bad reputation.

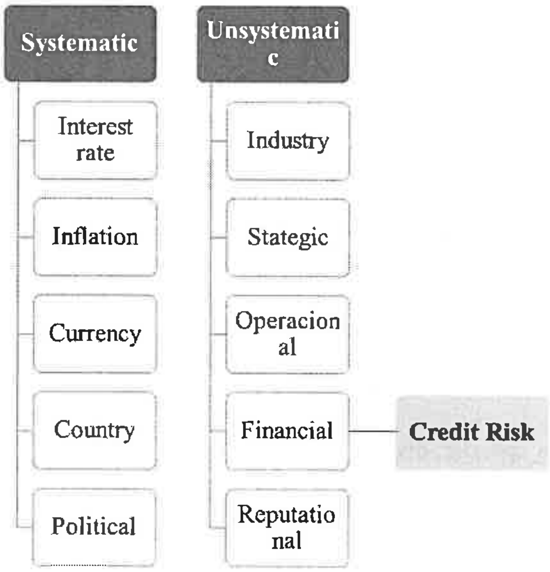
Schematically, the different classifications o risk can be presented in figure 1.

Companies cannot avoid all risks, but can manage them, drawing a strategy do lead with them in the day-to-day activity. Likewise, the company can benefit from the positive consequences of risks which will help to reach its aims.

## Credit Risk

Credit risk results when the company gives credit to customers. The company and the customer establish a contract where the company accepts to provide the product or service requested, and the customer

*Figure 1. Types of risk*
*Source: researchers*



(debtholder) agrees to fulfill the contract' obligations. Although, the customer may fail the agreement, and may not pay the money in debt (Securato, 2002).

Every company wants to increase profits. To reach it, the company needs to increase sales to benefit from the dilution effect of the fixed costs (fixed costs does not change with quantity so the unit fixed cost decreases with quantity). Therefore, to use all the company's capacity there is a tendency to increase sales, even if for it the company needs to sell on credit.

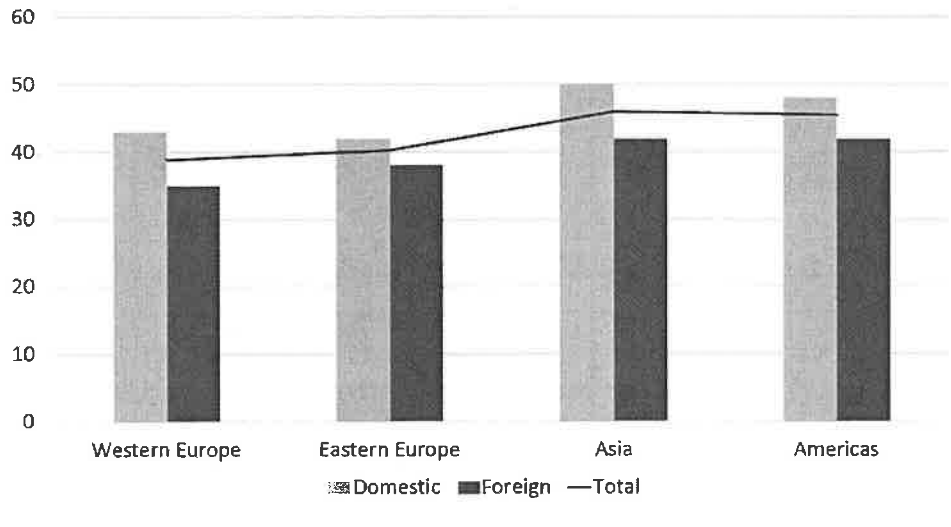
Some companies receive the payment of the products sold or services provided in the moment of its delivering (e.g. accommodation, catering, retail, among others), although, most industries give credit to customers. Giving credit is a requirement in today's economy as it is a way to compete in the market. Brealey *et al.* (2017) argue that to industrial companies accounts receivable is more a less one third of current assets. Selling on credit has advantages since more customers may be willing to negotiate with the company. Although, it increases the company's uncertainty as buyers must threat credit terms.

Companies all over the world give credit. According to Atradius (2017b), the proportion of sales made on credit is (in mean) the presented in figure 2.

Figure 2 shows that more than 40% of the sales all over the world are made on credit, especially to the domestic market. With regards to exports, as suppliers are less protected by law, since there are different codes and legislation, depending on the country, companies usually receive the amount in debt promptly or sell on credit but receive part of the payment in advance as a guarantee. These results are mean values, to some industries the average of sales made on credit is higher, while to others is zero, as for example the industries of accommodation, catering and similar (Banco de Portugal, 2018).

Giving credit increases the amount of accounts receivable in the balance sheet and decreases the amount of cash flows (Siekelova, Kollar & Weissova, 2015). Therefore, it has impact on the company's working capital. Working capital represents the company's operating liquidity. It is the difference between current assets, namely cash and equivalents, accounts receivables, inventories, among others, and current liabilities – accounts payable, and others (Brealey *et al.*, 2017).

*Figure 2. Proportion of sales made on credit*
*Source: Researchers with information collected in Atradius (2017b)*



$$Working\ capital = Current\ Assets - Current\ Liabilities$$

Working capital depends essentially from the credit given to customers, the amount invested in inventories and the credit received from suppliers (Neves, 2012). A company that pays to suppliers before receiving from customers has financing needs. A higher investment in working capital means that the company has a lot of money to receive in the future (or that is already money if it is cash or equivalents), but in the present needs to finance its activity since the company must pay to suppliers, to workers, VAT and other taxes, and have not received yet income. The quickly the company receives from its customers, the less investment in working capital, and consequently more cash flow the company has. When the credit given to customers increases, current assets also increases, and if the company needs cash flow it must look to bank loans or others. Forecasting accounts receivables is so relevant to understand the working capital and financing needs (Szpulak, 2010).

Suppose the following example. In year N a company sell € 100 000. The company's manager has two possibilities: 1) give a credit of 60 days to customers, 2) receive sales promptly. Ignore VAT or other taxes. See the example in table 1.

In table 1, it is possible to observe that income statement reports the same amount of sales. The difference is in the balance sheet; if the company sells on credit its cash flows in the moment are reduced (the amount in cash is smaller), and thus the company's financial needs to sustain its activity will increase, since the amount in accounts receivable increases (accounts receivable is calculated multiplying the total value of turnover per day multiplying by the number of credit days).

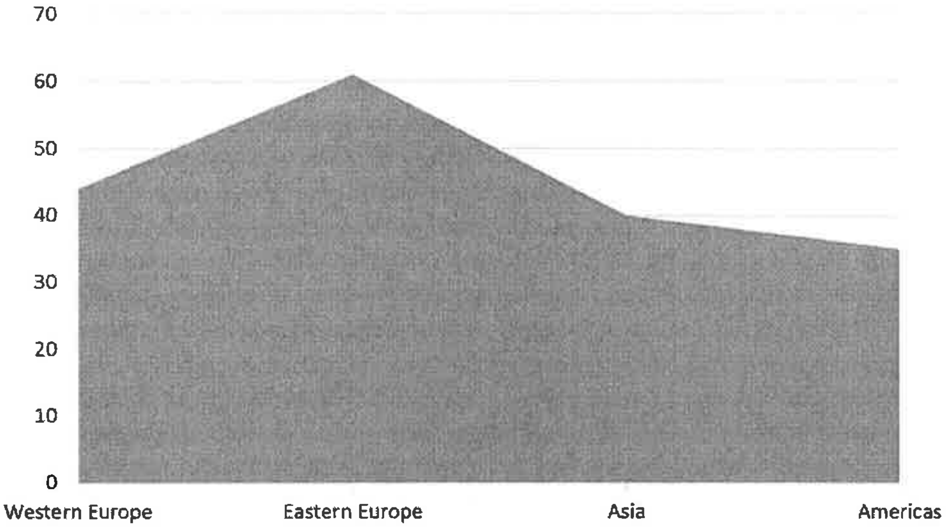
This example calls the need to the company to establish a singular credit policy. Although, when the company is not unique in the market, it must follow the mean value of the industry otherwise may have no customers interested in its products or services. Moreover, the days sales outstanding (DSO) depends on the country analyze. While some countries, as countries in Eastern Europe, have longer payables cycles (for example Poland has 80 days of average DSO), in other countries the average of days sales outstanding is shorter (the DSO in Australia is in average 22 days) as we can see in figure 3 (Atradius, 2017b).

*Table 1. Impact in financial statement of giving credit*

| | **Hypothesis 1** | | **Hypothesis 2** |
|---|---|---|---|
| **In income statement** | | | |
| Net sales (turnover) | € 100 000 | | € 100 000 |
| **In balance sheet** | | | |
| **ASSETS** | | | |
| **Current Assets** | | | |
| Cash | € 83 562 | | € 100 000 |
| Marketable Securities | | | |
| Accounts receivable | € 16 438 | (100 000 x 60/365) | |
| Inventories | | | |
| Prepaid income taxes | | | |
| Other current assets | | | |
| **Total current assets** | **€ 100 000** | | **€ 100 000** |

Source: researchers

*Figure 3. Mean of days sales outstanding*
*Source: Researchers with information collected in Atradius (2017b)*




This means that some companies have more financial needs than others. This problem increases as sales and services can be paid later than the agreed period. Atradius (2017b) reports that more 41.9% of credit is overdue all over the world (in the Americas is more than 46.2%). Therefore, every company must take decisions to avoid customer's non-payment as it can cause a negative impact in the company's financial position. If a customer does not pay back his/her obligations, the company not only has this loss, but also must support costs with costs of goods sold, workforce costs, and other, that will not recuperate. This may cause an increase in the company's indebtedness and risk.

In 2017, 1 to 2% of sales were uncollectable, especially the sales done in the domestic market (Atradius, 2017b). The main reason given by customers is financial problems (insufficient funds to pay). To external customers, the complexity of the payment procedure is also a reason to not pay on time. Bloem and Gorter (2001) argue that customers do not pay back to suppliers due to 1) an inadequate policy of credit management, and 2) inflation and/or special conditions of the market.

Bad debt is one reason of the company's failure. When a company does not receive from customers, then will have insufficient money to pay to suppliers, and may ask for bank loans, increasing it indebt and the difficulty to pay back. This leads to the domino-effect (Ooghe e Prijcker, 2008). Therefore, every company must establish an accurate credit policy to act proactively instead of reacting to problems after they appear (Ketzner, 2005).

## MANAGING CUSTOMER'S CREDIT

Establish a credit period is not enough to assure that credit will be collected. Therefore, the company must manage customer's credit not only to control customers and avoid bad debts, but also to increase cash flows and decrease indebtedness, to help in the decision making, to understand the company's threats and try to change it into opportunities, to have an overview of the business, to efficiently use capital, special liabilities, to efficiently use assets, to reduce earnings volatility, to increase the company's image, to be more efficient (FERMA, 2010). Liu, Mao and Nini (2018) found that companies with riskier receivables have more difficulties in access to debt, since "trade credit represents an asset that is effective collateral for supplier firms" (Liu *et al.*, 2018, p. 456). Moreover, these firms when facing negative liquidity shocks have greater probability to default (Mateut and Chevapatrakul, 2018).

To reduce the risk the company must identify, control, plan and establish mechanisms to anticipate threats, rather than try to solve problems after it happens. Understand the reasons for late payments and understand the entire process from sales/services till receiving the money in credit is crucial. In fact, some risks arise inside the company due to lack of experience, fraud, dishonesty when managing customers (Santos, 2003). This type of risk can be eliminated when all the process is known, and the performance is measured. Risks inherent to customer, industry and country are more difficult to control, but when managed they can be at least reduced.

Every company should decide its credit policy. Batista (2004) argues that there are three main types: restrictive, moderate and liberal. The restrictive policy is when the company only grants credit to customers that have almost sure that they will pay back their credits. It is a type of non-risk taken policy. Applying this type of policy will guarantee no financial problems, as receivables will be transformed into cash flows, but will limit the company's growth in the future, since other competitors will give better conditions to customers. In the moderate credit policy, the company also analyses customers and gives credit if customer's risk is not too high. In this case the company takes more risk than adopting the previous policy but, will also have more customers and a better image in the market. Finally, in the liberal policy, companies grant credit to obtain more customers, even if their risk is high. This type of policy cannot be applied for long periods as the company can have some cash flow's problems as well as high risk of failure.

There is not an optimal type of credit policy (Lewellen, McConnell & Scott, 1980), it depends on the customer, industry, country, and the company itself (life cycle of the company and products). Usually companies prefer the moderate credit policy but in some moments of the time can use the liberal or the restrictive policy. According to Ross, Westerfield and Jafe (2016) a company's optimal credit policy is the one that match the equilibrium between the benefits and costs, it means, when cash flows increasement is enough to support the additional costs supported due to the increasement in accounts payable. These costs are costs to give credit, as costs to manage credit, costs due to uncollectable credits, and others, and opportunity costs, as lost turnover because the company do not give credit to customers (Ross *et al.*, 2016). Managing customers credit is not only relevant to sustain but also to increase a healthy credit portfolio.

Therefore, the company must establish credit policies, it means, a set of rules that help to guide managers to grant credit (Batista, 2004). For it, the company must create criteria and methodologies to analyze and evaluate credit decisions.

Not all companies must give credit. It depends of various factors. Suppose a company that is producing a specific product to a customer and supports high distribution costs. In this case the company must receive the amount of sales in advance, or at least part of it (for instance 30% or 40%) to assure that the customer will maintain the contract with the company (Brealey *et al.*, 2017). Moreover, companies that sell perishable products usually do not give credit but receive the amount in debt in the moment when acquired since the customer will consume the product in a short-period (Brealey *et al.*, 2017). The consumer demand should also be considered. A systematic customer may return and buy again to the company. Therefore, the probability that the company will recover the amount in debt is high, comparing to a customer that buy only one time it is difficult to recover the debt. When the profit when selling a product or providing a service is small, the company must avoid giving credit since it may increase its costs, leading to losses. Finally, the company must analyze the customer financial situation (the authors will explain later how), its bargaining power, and the competitors, since the company is not alone in the market (Brealey *et al.*, 2017, Mateut & Chevapatrakul, 2018).

When giving credit, the payment conditions should be adjusted to customer and discussed with them. It is not stable over time as the customer financial situation or the market or country environment change overtime, impacting the customer's conditions to pay their credit. Therefore, the company must have three areas: to analyze customers' financial situation and decide whether to grant credit and the credit period and other conditions, to follow customers to analyze if they meet credit obligations or not, and to recover credits when customers do not fulfil their obligations on time to avoid bad debts (Ross *et al.*, 2016). The four steps presented after are recommended to be follow.

## Understand the Customer's Financial Situation and Risk

Stiglitz (1985) argued that the lack of information increases the company's risk due to the probability of existing bad debts. Therefore, the company must have a department or a person responsible to collect accurate information to help to analyze the risk of every customer.

Collecting information is hard to achieve, not only because this data must be collected from multiple systems, and sometimes it can be costly, but also it has diverse formats, making it difficult sometimes to identify potentially risks. The technological evaluation helps to surpass some of these difficulties making easier to the company to access to different information.

To analyze the customer's ability to meet their obligations, its historical and financial statements should be collected, and credit risk models must be used to analyze the customer's financial situation, to verify its creditworthiness, and to decide if guarantees or credit insurance will be needed.

This analysis should be done to every customer, but it should be done in more detail to new ones, since to existent customers the company already has a previous analysis and a history of payments, the new analysis is to detect changes in financial situation.

### Collecting Information About the Customer

Information about the customer can be collected directly with him/her and through specialized companies. When the company has a close relationship with customers and they have nothing to hide, the customer usually provides their own financial information. The most relevant information are financial statements as income statement and balance sheet, historical payments of the customer with other suppliers and with the company (to an existing customer), and credit quality given by the bank or other financial institution (Ross *et al.*, 2016). Auditing reports, fiscal and legal incidents, and additional information can also support to draw customer's profile. Mateut and Chevapatrakul (2018) argue that customers with strong financial health have low accounts payable since have already paid do suppliers.

With this information the company can do a characterization of the customer, regarding credit risk. For it the 5 C's model proposed by Weston, Besley, and Brigham (1996) can be used. This model helps the company to decide whether to give credit to a customer.

## Character

It includes information about the customer's intention and ability to pay their obligations. The customer's punctuality to meet obligations, the existence of negative information's given by banks or other suppliers, the change in procedures, and some characteristics about the customer as age, size, source of income, effort to meet obligations, and other are relevant factors to decide about the customer's character.

To understand the customer's punctuality to meet obligations and change in procedures usually the company considers historical relations with customers to see if they have paid on time and how they are doing it. The company must see if the customer fails more than x days the period of payment. If the customer fails he/she is defaulting, and the company should consider this information for future contracts with him/her. Although the future ability to pay is not directly related with the past. Moreover, to new customers the company had no access to this information. Likewise, the company must ask information to other suppliers and banks if possible. The answer should be positive or negative.

To understand customer's characteristics, some variables can be used as (Neves, 2012; Ohlson, 1980, Pindado & Rodrigues, 2004):

Age defined as being the number of years that the firm has been operating, or its natural logarithm. Older firms have more available information to understand its ability to meet obligations.

Size measured as the natural logarithm of a company's assets or number of workers. Large-size firms are usually more diversified and thus have less risk, although may have more difficulties to manage the company itself.

Source of income, measure as turnover over total income, helps to understand if the company is focusing in the main activity and try to increase sales and services or no.

Effort to meet obligations usually measured as the days payment outstanding (DPO).

$$DPO = \frac{Suppliers}{Purchases \times \left(1 + VAT\right)} \times 365$$

It helps to understand the mean number of days the company needs to pay to its suppliers. The higher the value of DPO means that the company or has negotiate a large period of credit with suppliers or has difficulties to pay its obligations.

Efficiency measured as turnover over total assets. A low value means that the company is not generating sufficient volume of business given its investments.

Although, describe customer's character is difficult as sometimes some customers have possibility to pay and delay some the payment some days, while have no financial possibility to pay their obligations and need to sell some assets to meet their obligation. The character of both is different but is difficult to know the real reasons for the payment delay.

## Capacity

The company must analyze the customer's ability to manage the commercial and financial areas. Not only the payment ability is relevant, but also the competitiveness, the company's return, solvability and liquidity. For it the company must calculate some ratios to understand the credit risk (Neves, 2012; Pindado & Rodrigues, 2004).

Solvency measures the company's ability to meet liabilities using own capital.

$$Solvency = \frac{Equity}{Total\,Liabilities}$$

Creditors prefer high solvency ratio since a low value means that liabilities may not be paid due to insufficient capital. In theory it should be greater than 50% to give confidence do creditors but in practice it depends on the industry and the firm's age. New firms have more liabilities and less equity since have few retained earnings (leading to low equity) and need to finance all the investments of the firm (thus it increases liabilities). Some industries also need to successively invest in fixed assets to follow the market, and thus are too dependent of bank loans or similar, which is translate in an increase in liabilities and a decrease in this solvency ratio.

Current ratio measures the company's short-term solvency.

$$Current\,ratio = \frac{Current\,Assets}{Current\,Liabilities}$$

Creditors prefer high current ratio since it means that the company have money or will receive money in a short term that is enough to meet obligation due one year. In theory it should be greater than 100% to give confidence do creditors but in practice it depends on the industry. Moreover, a high value may not be a good sign of solvency since the company must have a large amount in accounts receivable and some of these credits may be difficult to recovering, so will not be transformed in cash as expected. Although high value means that the company is doing nonproductive investments. If the high value is due to customers it means that the company in not efficient in receiving its creditors; if it is due inventories the company may have some troubles since inventories are not turn into cash quickly; if it is due to cash and equivalents the company should try to paid promptly to suppliers, receiving some discounts, or could invest without looking for bank loans.

Some researchers exclude inventories from current assets as inventories are more difficult to sell when the company needs to pay some obligation (at least selling without additional discount).

Working capital to total assets ratio measures the amount of the company's operating liquidity over total investment made.

$$Working\,capital\,to\,total\,assets\,ratio = \frac{Working\,Capital}{Total\,Assets}$$

A higher value means the company can generate more money in the short run, so has more probability to pay its obligations.

## Collateral

The company must understand if the customer has assets that can be used as collateral in case of failing an obligation. It is usually measured using asset structure.

Some researchers also include inventories to fixed assets as inventories can have significant value at the time of the company's liquidation.

## Capital

The company must also analyze customer's financial independence, its market value, and return as it helps to understand its ability to pay obligations. Usually the following ratios help to understand this factor (Neves, 2012; Pindado & Rodrigues, 2004):

Capital ratio shows the company's financial independence, it means, how much the company's investment is financed through own funds.

$$Capital\ Ratio = \frac{Equity}{Total\ Assets}$$

In theory it should be higher than 35% but in practice it depends on the industry and the company's age since some industries make high investment in fixed assets and for it need bank loans or other type of liabilities, and new firms have lower equity since have few amounts of retained earnings. A company with a low capital ratio (compared with the industry) is more in debt and gives less confidence to creditors and suppliers, since it will be more difficult to pay all debts. Likewise, it will be costly to the company to borrow additional funds without raising total equity since creditors will be reluctant to lend money. A company with negative capital ratio means that have negative equity due to negative past earnings. In this case the company is in technical bankruptcy and its risk is too high.

EBITDA-to-interest coverage ratio measures if the company's profitability is enough to pay off its expenses. It is used to analyze the company's financial durability.

$$EBITDA\text{-}to\text{-}interest\ coverage\ ratio = \frac{EBITDA}{Interest\ Expenses}$$

A high value means that the company generate enough earnings to pay financial expenses, giving more confidence to creditors.

Percentage of retained earnings shows how much the company's investment is finance though self-finance.

$$\%\ retained\ earnings = \frac{Retained\ Earnings}{Total\ Assets}$$

The higher the ratio the less dependent is the company from other sources of finance. It provides good sign for the company as the company is efficient in reinvesting funds to make new investment.

Return on assets (ROA) measures the company's operational activity per euro of investment.

$$ROA = \frac{EBIT}{Total\,Assets}$$

Return on assets should be positive, to mean that return is generated, and the highest as possible, to means that the company is efficient since the investment made are generating returns. Although if the value is too high the company may be close to its maximum capacity.

## Contextual Surrounding

Economic and industry factors may decrease or increase the customer's risk. It includes governmental policies and instabilities, regional factors, natural disasters, competitors, among others that may impact the customer's ability to pay its debts. Usually it is measured analyzing the annual growth of the gross domestic products, but the country risk can also be considered.

Some authors also call the attention to the need to consider information about the industry since some payment practices are explained by it.

This information is relevant to design the customer's profile, although, when analyzing financial ratios some precautions should be taken because the financial information of a period may not reflect the financial situation of a company. Companies with some problems of solvency and liquidity but with profitability growth are usually companies that have made new investments. If the financial situation does not change and the financial independence is low the company may enter in distress. Moreover, the financial situation of some companies may be growing in the last years, and so it is expected that its financial situation will be better in the future, while others are in a decreasing position, so if the company do not change its strategy and try to recover its financial situation, it may fail. Analyzing only one year in at a moment of time may be insufficient to make decision.

To existent customers, the seller can also help to design customer's profile as the seller is in direct contact with the customer and may have additional information that can be relevant in the decision making. Although, as sometimes friendship connections are established, it can also contribute to barging for a higher credit limit or an additional discount, which may lead to an increase in the company's risk (Tsuruta, 2013).

The company must also look for additional information, not only financial but also legal and commercial information. For it the company must look for some database, as for instance: Informa D&B, Iberinform, Experian, Equifax, Atradius, Cosec, among others.

- Informa D&B (https://www.informadb.pt/) provides a report about the company (customer) risk, with information about the risk of failure, the risk of payment, the credit limit recommended and legal incidents. It uses a traffic lights to classify the company's risk as high (red color), moderate (yellow color) and low (green color) risk. This indicator ranges from 1, low risk, till 4 high level of risk. The failure risk is based on a scoring model and helps to see the company's probability of failure with debts to pay. If the failure score is 13/100 it means that this firm as high probability of failure is the future. This score ranges from 1, high probability of failure, till 100, reduced probability of failure in the future. The payment index - Paydex®, created by Dun & Bradstreet, shows the company performance with regards payments. It helps to understand how many days, after the days sales outstanding provide by the supplier, the company need to pay their debts (in mean) and compare it with the industry and the market (national and international). Moreover, Informa D&B report information about the monthly credit limit recommended, if some credit is recommended.

- Iberinform (http://iberinform.pt) helps to analyze the customer's risk, providing information about previous problems with payments of debts. Iberinform creates a score to evaluate risk from 1 to 10 (high to small risk) that shows the default's probability of a company in the following 12 months. It looks for a company's financial statements and previous problems with payments, then considers the industry and finally macroeconomic factors. With this information the company should decide if gives credit to customer or no. Additionally, to credit and risk management, they help to manage contacts and payments, and provide help to recover the money in debt.
- Experian (https://www.experian.co.uk/) provides a credit report with a credit score (number) and its classification, explaining the positive and negative factors. They look for 6 years information to classify the credit.
- Equifax (https://www.equifax.pt/) they provide information about the customer that are in different data base in a singular one. The information is daily update. Moreover, they have a software that allows to control and classify the customer risk, to anticipate the probability of the customer fail its credit obligations.
- Atradius (https://group.atradius.com) provide services to help a company to deal with customers credit risk. They provide credit insurance using an anonymous policy. It the customer has two positive experiences in a year, Atradius will say how much will grant from credit. Likewise, bad debts are avoided. Moreover, the company provide a service of debt collection to help the company to recover the money.
- Cosec (https://www.cosec.pt/) is an insurance company that offer different credit solutions. They provide feedback about customers and their ability to meet their obligations, a service to collect money in debt, and they cover against non-payment of credits and limits granted by Cosec.

## CREDIT RISK MODELS

Another way to analyze customers risk is using credit risk models. There are several models. The more relevant are the following:

### Credit Scoring

The scoring method consists in give a score to customer's credit risk using statistical analysis (Caeiro, 2011). It takes into account several factors as age, industry, financial-economic situations, among other. Then it classifies customers in: customers with probability to meet their obligations and creditors with high probability of default. Using credit scoring the company has additional information to decide customer's credit conditions and can see the risk the company faces when give credit to the specific customer. Some companies also use credit scoring to decide about credit limit.

Vale (2010) argues that it is important to establish the notion of credit default for the company, the type of customers and the aim of the model. Moreover, the more accurate variables considering the aim of the model and the company that is using should be selected as well as limits to these variables. Then the sample should be created to define the classifications that will help the company in the decision making of giving credit.

The ability of this model depends on the information collected and the ability to relate all information, so it is costly to apply. Usually it is based on historical information, but the risk taken is not only based on the past but also in the future, and so sometimes the company tries to speculate the customer's future financial decision. Moreover, not always the financial information in financial statement has quality, which impacts the decision making (Anderson, 2007).

Even with these limitations, researcher consider that using credit scoring a company will understand if credit given will be paid back on time, and so bad debts will be avoided, and company's earnings will increase (Anderson, 2007).

## Rating Models

Like the previous ones, rating models classify the customer risk into letters, considering the customer's financial history and ability to meet its obligations. It is usually provided by credit agencies that classify credit from the better to the worst. The more common international rating agencies are Moody's, Standard & Poor's, and Fitch. Their rating classifications are in table 2.

Credit classified as AAA means that the credit quality is high and the probability to meet obligations is high. For another side, the letters C and D are related with speculative credit, the probability of default is very high since the customer may be unable to meet its obligations.

To create a rating model, the company must consider qualitative information as information about the industry the customer belongs, their market share, macroeconomic and political conditions, as well as quantitative information obtained through the calculation of financial ratios as solvability, capital ratio, current ratio, among others (Securato, 2002).

This model also has advantages and disadvantages. If for one side helps to reduce the company's risk, for another side, customer's situation changes too fast and these models usually not follow these changes, and consequently, may suggest the company to give credit to a customer that has nowadays financial problems.

*Table 2. Rating classifications*

| | Credit Quality | Moody's | Fitch | Standard&Poors |
|---|---|---|---|---|
| Investment grade | Excellent quality | Aaa | AAA | AAA |
| | Good quality | Aa | AA | AA |
| | High capacity of payment | A | A | A |
| | Accurate capacity of payment | Baa | BBB | BBB |
| Speculative grade | Maybe payments are insure | Ba | BB | BB |
| | High risk debts | B | B | B |
| | Probability of non-compliance | Caa | CCC | CCC |
| | Default or bankruptcy | Ca | CC | CC |
| | | C | C | C |
| | | - | D | D |

Source: Adapted from information collected in Moody's, Fitch and Standard&Poor

## Establish Credit Conditions

Understanding the customer's profile, the company can decide if should give credit or no. In case of an affirmative answer, the company must set the days sales outstanding as well as cash or other's discount, specially to encourage the customer to pay early. For that the company must know in detail its competitors, specially the main competitor, with regards not only the product sold, and service provided, post-sales service, price, and credit sales. Information about the country is also relevant to understand the government strategy. For example, if money transferences to foreign countries are not allowed, the company must not sell to that specific country. If the country has financial difficulties the customers of that country must also have, making it difficult to receive from that customers.

First the company must analyze the opportunity cost to increase days sales outstanding to the same or higher than competitors. If the company normally gives 25 days of credit and their competitors give 30 days, the company must analyze how many additional customers can win if reduce DSO, and which additional costs (financial and others) will have to support. See the example in table 3.

In this example, the company gives more 5 days of credit period. It represents more € 50 000 of money invested (5 days x one day's sales), and an additional financial cost of € 2 500 (considering 5% as the cost of borrowing funds if the company needs). Although, if the amount of daily sales increases, this cost can be support and the company can have more benefits.

For another side, the company must also analyze the early-payment discount that can give to customers. For it the company must understand the potential saving that will benefit if the customer pays promptly or early than the normal credit period. If the company receive early the days sales outstanding reduce, and more cash is available to reinvest in the company.

Suppose a company that usually giver 90 days of credit and support a cost of borrowing funds of 8%. The amount of discount that the company should propose to customer if he/she pay promptly is the following:

$$discount\,rate = 1 - \frac{1}{\left(1+8\%\right)^{\frac{90}{365}}}$$

$$discount\,rate = 1.9\%$$

This is a simple example that ignore some relevant factors. First, the company must understand how customers pay. If they use cash transfer, the money will be available in the same day or the day after,

*Table 3. Impact of DSO change*

| DSO | 25 | 30 | 5 days difference |
|---|---|---|---|
| One Day's Sales | € 10 000 | € 10.000 | - |
| Cash Invested | € 250 000 | € 300 000 | € 50 000 |
| Annual Interest Supported (i=5%) | € 12 500 | € 15 000 | € 2 500 |

Source: Researchers

but if they use bank check, the company may wait some days till the money be available. Therefore, the company's credit conditions should also take it into attention. Moreover, if the company has high levels of indebtedness, it may benefit to receive early from customers, even if the discount rate is higher than the calculate one, since the company may have difficulties to access to new bank finance.

The company can ask the customer for additional assets to grant credit. The amount of the guarantee must be similar or superior than the amount in debt to assure that if the customer goes to bankruptcy, the company will recover the amount in debt. Not all the business use guarantees it depends on the customer location, costs to access to customer, its liquidity, among others.

At this moment of time, the company can also decide to contract a credit insurance. In this case the company looks for a credit company that will indemnify in case of debt default. The company pays a commission to the credit company and if the customer fails credit obligation the credit company will indemnity the company. The conditions of the insurance will be negotiated between the company and the credit company, mainly the rights and obligations of both parts, the risk, commission and indemnity.

Credit companies will also analyze customer information and give an opinion about whether credit should be given to a specific customer and till what amount. Although, using credit insurance does not substitute managing customer's credit.

Some companies prefer to use factoring, that is a financial transaction. In this case the company sells its invoices to a third part, the factor, at a discount. The factor will be responsible to manage invoices and collect the money. It helps the company in the way that the factor will give immediately the cash of the invoice less the discount. Moreover, the costs to manage credits are avoided, as bad debts are reduced, since not only the company analyze customer's risk, but also the factor do it. Although, this amount works as a lending as if the customer fails the payment the company will be responsible for a part of that amount, depending on the contract negotiations (Santos, 2001).

## Establish Credit Limits

The company must also establish credit limits to approve new orders and avoid bad debts. Some credit limits are establishing based on the maximum number of invoices in payment, the maximum amount of credit, the number of additional days the customer may have to fulfill his/her contract obligations, or other. When these limits are exceeded the company must block new orders, since if customers have not payed yet the amount in debt, will have more difficulties to pay a high amount in debt, leading to bad debts.

Suppose the following example: a customer that usually orders quantities for one month and have 30 days of credit; to reduce the amount of payment in one time and to benefit from more time can decide to order quantities per week (only 25% of the monthly amount), instead of quantities per month. Doing it the customer will enlarge the period of payment, although the company will also have more costs since instead of delivering one time must deliver four times. To avoid this the company can limit the number of invoices in payment.

Another example is a customer that has a credit limit of € 10 000. Suppose that the customer orders a new amount of € 2 000. Two situations can happen: 1) the sum in debt with this new order not exceed credit limit, 2) it exceeds. In the first situation the company can release the order, since the limit is not surpassed. In the second situation the order should not be release, since if the customer already has a big amount in debt and the company is not sure if he/she will pay back, increasing this amount only increases the company's risk and probability of increase its costs.

Although, credit limits should be regularly revised as the customer and external situation can change. For it, the company must have a credit department to analyze all situations and give timely information to sales department. The idea is to act proactively, before the problems arise.

## Decide Which Procedures Will Be Followed Till the Money Is Collected

Following all the previous steps does not guarantee that the company will not have credit risk since the customer may still fail the contract obligations. The risk only finishes when the customer pays the amount in debt (Santos, 2003). Therefore, managing customer's credit only finishes when the contract also ends.

The company must decide which procedures should be followed to assure the credit sales are collected. How and when the customer will be contact? Who is responsible for the contact with the customer? Which protocol should be followed? These procedures should be written in internal manuals.

The company must have a department or a person responsible to collect customer's payment (Albright, 2017). They will be responsible to follow the credit and to collect the money in debt. Therefore, they need to know and understand the conditions given to customer and what the company wants to accomplish (zero delay, increase the number of customers, among others).

The Accounting Minute blog by Sutherland Global Services (in McDaniel, 2017:26) suggests that "26% of invoices 3 months old are uncollectible, 70% of invoices 6 months old are uncollectible, 90% of invoices 12 months old are uncollectible". Hence, the company must try to receive early or near the credit deadline to assure that credit will be pay. The responsible to collect customer's payment should act proactively to assure instead of reacting when debts are overdue (Batista, 2004).

One way to control customers credit is using the aging method summary to see the amount in debt due, and the amount overdue and the time of delay. See the example in table 4.

Using this draft the company can predict the uncollectible amount and act previously to payment get uncollectible. Moreover, can monitor the payment and be more aware about the customer's delay to meet their obligations, which is relevant information to include in the credit models explained before.

The days sales outstanding (DSO) can also be used but as it is a mean value the information provided can biased the decision making. Thus, usually companies analyze the time taken to collect each invoice to see how many days effectively the customer needs to fulfill its obligations.

To avoid credit overdue the company must contact the customer and ask for payment. Sending reminder emails, phone calls or letters helps to decrease uncollectable (Siekelova *et al.*, 2015). Some companies combine emails and phone calls, others only use one method. Each company should see the methods more accurate to the business itself and explain to all collection team.

*Table 4. Aging method summary*

| | Total Amount In Debt | Not Overdue | Overdue | | | | Impairments |
|---|---|---|---|---|---|---|---|
| | | | 0-30 Days | 31-60 Days | 61-90 Days | More Than 90 Days | |
| Customer A | € 100 000 | € 80 000 | € 10 000 | € 10 000 | - | - | - |
| Customer B | € 150 000 | - | - | € 30 000 | € 100 000 | € 100 000 | € -80 000 |
| Customer C | € 50 000 | € 10 000 | - | € 30 000 | € 10 000 | - | - |

Source: Researchers

Sometimes, customers are not consciously when decide to avoid paying their debts, they simple forget, so it is relevant to remember that the period of credit is finishing (McDaniel, 2017). Other times the payment delays are due problems in invoices - the amount in invoice is different from the agreed one. Therefore, the company must contact the customer to understand the reason of the payment delay. If the customer has some financial difficulties a payment schedule can be design. If the reason is non-matching balance, the company and the customer can try to solve this divergence. If the customer does not give any reason, neither try to solve the problem, the company should be persistent in contacts (Batista, 2004). The collection team should also understand the payment methods used by customers, since if they use bank checks the payment delay can be due to delays in mail delivering, for instance.

The company must recall the customer to remember to pay their obligations. If after one month the customer continues in delay, the company must try to find an agreement to reschedule the payment. If after two months the credit still overdue the company can ask help of a collection agency or lawsuit. All the process should be document to prove that the company has make all the efforts to recover the money in debt.

Schematically the payment collection process will be as presented in figure 4.

At the same time the company must create the impairment of the credit overdue. Likewise, company's financial statements will show the money that can real be collected and the additional costs the company has because has some overdue credit.

The following example (in table 5) show the difference between a company that create the impairment to credit overdue and another that do not do it.

In the first hypothesis the company decide to not create the impairment of overdue credit. Therefore, its net profit and total assets will be higher than the ones of the company in hypothesis 2, that create the impairment to overdue credit. In this second case the company has an additional cost, the impairment of 6 000 of overdue credits, and the amount in accounts receivable is also smaller in the same amount. Some companies avoid creating impairments special when have net losses, but this is not an accurate procedure and can lead to earnings management.

*Figure 4. Payment collection*
*Source: Researchers*

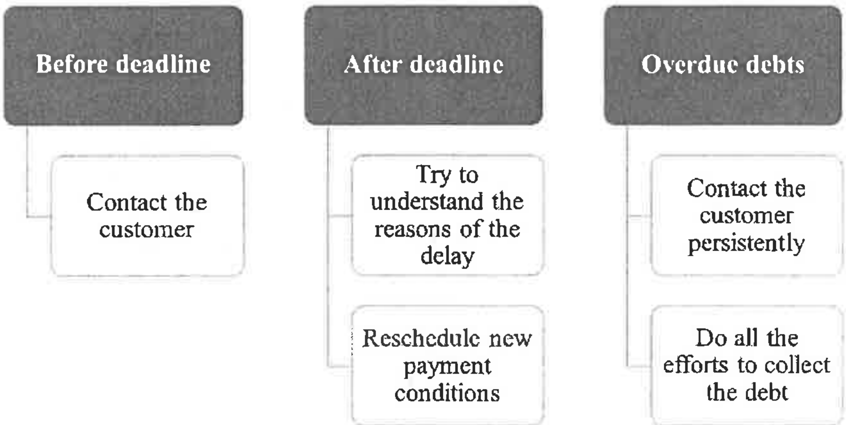


*Table 5. Impact of impairment in financial statements*

| | Hypothesis 1 | | Hypothesis 2 |
|---|---|---|---|
| **In income statement** | | | |
| Net sales (turnover) | € 100 000 | | € 100 000 |
| Impairment | | | **€ -6 000** |
| **In balance sheet** | | | |
| ASSETS | | | |
| **Current Assets** | | | |
| Cash | € 83 562 | | € 83 562 |
| Marketable Securities | | | |
| Accounts receivable | € 16 438 | DPO = 60 days<br>€ 6 000 are overdue | **€ 10 438** |
| Inventories | | | |
| Prepaid income taxes | | | |
| Other current assets | | | |
| **Total current assets** | **€ 100 000** | | **€ 94 000** |

Source: researchers

The experience of the collection team and the good relationships with customers are two relevant factors to avoid bad debts. A company that manage customer's credit is more efficient in collecting debts, has more cash flows and less investment in credit granted, avoid bad debts and doubtful accounts. For it the company must analyze accounts receivable, see trends and signs of negative changes, must set credit limits and establish credit criteria. The company should act proactively. Although, credit conditions depend on the industry, country and macroeconomic conditions. Hence, it is important to consider everything in the moment of the decision making.

## CONCLUSION

Companies need to adapt management practices to follow the market tendencies. The high competitiveness and the globalization of the world have contributed to decreases in gross margins. This has led to an increase in the company's risk, that is heighten when the company gives credit to customer. Diverse companies sell on credit to attract more customers, since they buy today but will only pay latter. A contract is established between the company and the customer. Although, sometimes the customer fails its contract obligations and fail the payment of the amount in credit. This problem is enhanced when customers belong to external markets as the legal system to solve this problem is distant. Likewise, every company should carefully manage customer's credit.

Credit policies should be adapted to every customer or group of customers. Customer's singularities, regarding the capacity of payment, the character, the capital, the collateral assets, and the surrounding context, have impact on its profile. Therefore, the first step the company should do is look for information about the customer, financial, legal, commercial and other relevant information, to see the customer's risk. This information should be actual and true, otherwise the decision making can be skewed. This step is more relevant to new customers, as the company has no historical information about them. Although, to existent ones, the company should also regularly update information. Moreover, industry and country factors, as well as macroeconomic environment also change over time, and may cause impact in customer's ability to pay their credits. Credit models should also be used to help the company in its decision of whether to give credit to a specific customer.

The company then should decide about the more accurate days sales outstanding, discounts, and the need of guarantees. These decisions should be discussed with the customer and included in the contract. At this moment the company can also increase its protection against doubtful receivables by contracting a credit insurance or looking for factoring or other financial instrument to collect money.

Internally the company must establish credit limits and have a person or a department to follow the customer till credit obligations finishes. Failures in payments, delays or other identified situations should be reported to the sales department to stop new order to avoid the increase in the amount of bad debts.

The company must have a close relationship with the customer, should try to understand the reasons of the payment delays, and should try to solve all divergences and problems. The faster the company collects customer's credit, the lower will be its risk. Moreover, the company will have more cash flows and will need less finance, which leads to an increase in the company's financial independence and solvency.

## RECOMMENDATIONS

Companies that manage customer's credit avoid bad debts and have fewer financial problems since are more efficient in generating cash flows. Therefore, every company should do it.

First, the company must design the customer's profile. With this information the company can be aware of the customer's credit risk. This should be done to all customers, but in more detail to new ones as are the ones without historical relations with the company.

Although customer financial situation, as well as macroeconomic factors change over time. Hence, the company should collect credit information and updated it regularly, to the decision-making be the more accurate. The company must understand if credit terms are appropriate and discuss it with sales department. Should additional credit limits be considered? Should days sales outstanding be reduced or enlarged? How much should be the discount given to customers to encourage then to pay early?

Moreover, the company should see if invoices are accurate and prompt. The company should use electronic invoices to reduce the collection cycle, since if invoices are sent by mail it can delay the payment two to six days on average (McDaniel, 2017). This procedure also contributes to decrease labor and material costs.

The person or department responsible for credit collection knows the procedures to follow? And understand the credit conditions given to customers? The aging method summary is relevant to understand the overdue debts and to be aware of the credits that may be not recovered at all. Moreover, information about past-due accounts should be given to sales department to have accurate information in the following credit conditions. The company should remember the customer to pay on time, and if the deadline is exceeded they should try to understand why customers are failing their contract obligations. Are these reasons due to customer's problems, changes in the industry, country impositions or are internal problems (problems in products delivering or services providing, lack of quality of the products/services, invoices inaccurate or delivered late, discrepancies in invoices, among other). Should the company consider outsourcing to collect the money? Finally, the company must create impairments to overdue credits to show a true picture of its financial situation in financial statements.

The company must work together with customers, training them to pay on time. Moreover, when customer delay their payments, the company must try to negotiate longer periods to pay their credits to suppliers, to try to first receive from customers and then pay to suppliers, decreasing cash pressures.

Finally, the company must focus on the idea of profits and value maximization, avoiding bad debts, and thinking in the future since what happened in the past may not be repeated (Braley *et al.*, 2017).

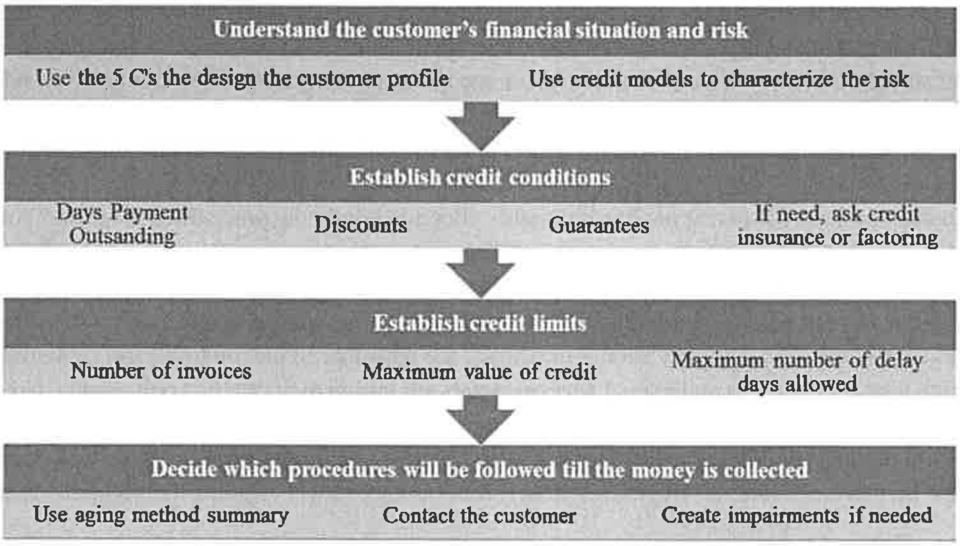
Schematically, the process is the presented in figure 5.

## FUTURE RESEARCH DIRECTIONS

With this work companies and financial institutions will understand what they should do to avoid bad debts and doubtful accounts. Moreover, they will understand which methods are more accurate from the moment the company decide to provide credit till the moment the credit is collected. Moreover, this is one of the first works with a deep analysis about customer's credit management, being useful to all readers. Although the thematic does not finish with this work.

For future analysis will be relevant to see the impact of the proposed procedures in the company's performance and risk. When the company manage customer's credit its performance increases and its risks decrease? Are the differences significant? The company will have more customers working with them? And the impact in financial risk is also relevant? The researcher proposes a set of procedures to avoid bad losses, and thus to reduce the company's risk and increase net profit, as less impairments will be created. Although, the impact of these procedures is not analyzed in this work, so it is a future line of research.

*Figure 5. Summary*
*Source: researchers*



Moreover, country risk should also be addressed to this analysis. The researchers only argue that the surrounding context should be consider in the analysis. Although, a deep analysis about country risks should be addressed in the future and included in the 5 Cs model proposed.

Companies may use additional financial instruments depending on the country. In riskier countries the impact of using the proposed procedures in the company's performance and risk may be different. Moreover, companies that use additional instruments to protect from country risks and the remain may have different risk. These comparisons should also be address for future analysis.

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