



CORPORATE CREDIT MANAGEMENT

TRAINING MANUAL for ECOLAB SERVICES POLAND
SP. Z O. O.

About the Polish Institute of Credit Management (PICM)

Polish Institute of Credit Management (PICM) is a non-for-profit organization with a goal to build and promote credit management knowledge.

The Polish Institute of Credit Management offers a unique program of corporate credit management trainings. Our offer is based on the modern theory and trainers extensive experience. We combine the theoretical knowledge with the practical applications and case studies.

Why this training?

With the aim of ensure that the people in your organization have the expertise and knowledge to do their works well, you need learning program that hold their attention, motivate them to learn, and deliver real business results.

The Polish Institute of Credit Management understands that the best learning programs deliver not just a content, but the real value added. An intelligent assessment strategy, outstanding education tools and methodologies, deep understanding of the markets and their real impact on how people do business, insightful analysis and reporting, strong partnerships, and highly engaging instruction and support are all essential for delivering a best-in-class program that positively impacts the business results. Our learning framework brings together these components in a comprehensive way to deliver optimum solutions and support. Our courses cover more than just the fundamentals. PICM courses cover current market conditions, so that we can relate the subject matter to what learners are experiencing daily. Highly experienced market practitioners keep our course material fresh and relevant.

About this training

CORPORATE CREDIT MANAGEMENT defines the concepts of credit risk, how it is managed, and the types and effects of credit decisions that are made on a day-to-day basis in an enterprise. Participants will learn in a clear manner the basic credit risk assessment methodology, including 5C techniques and CAMPARI, commonly used in business practice. The training will present the quantitative and qualitative factors affecting the company's credit profile and the importance of industry and local characteristics. In addition, classes will clarify the meaning of credit analysis and the types of external entities used in Credit Management. At the end of the training the participant will gain knowledge of the instruments for management and security of receivables.

Why this training manual?

This manual will provide the training participants with a practical guide to corporate credit management.

Corporate credit management, as it will be referred to in this manual, plays an integral part in managing the company's financials, especially the trade receivable part of the balance sheet.

This manual should not be regarded as a text or operating manual nor an attempt to cover all possible situations.

This manual is not intended to provide legal or other professional advice and readers should not act on information contained herein without seeking specific advice on the particular transactions with which they are concerned. Within its limitations, it is hoped that this manual will serve as a basic tool in understanding the concept and right approach to corporate credit management.

Participant's profile

Professionals managing the handling of trade receivables, especially performing credit risk assessment of the company's customers within an international corporation. The training is addressed as well to those who would like to gain the knowledge about the corporate credit management important knowledge.

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The role of Corporate Credit Management

The modern credit manager should take on a more coordinating role with responsibilities moving away from chasing late payers. Instead, they should play a more active role towards better business decision making with close collaboration with marketing and sales departments. The focus should be more towards the provision of insights into markets, customers and prospects.

Here are the several roles of modern credit manager of the future.

Coach

In most organizations, sales individuals mainly focus on turnover and may ignore several other determining factors when securing new business. With the help of credit managers, they can be better equipped to fully comprehend how finance teams view customers and prospects.

Salesperson

The focus of the new style credit manager will shift towards yielding a maximum return from the maximum turnover possible. Credit Managers will increasingly become more commercially adept.

Optimist

Bad payers also offer opportunities. Stimulate them to pay more promptly by giving them a reduction in exchange for cash payment. Your customer will pay slightly less, but you do have your money immediately. A change in mindset is required.

Calculator of probability

Customer scoring is a technique that unambiguously maps risks and opportunities. Credit managers use customer scoring to divide customers into groups with the intention to bring up the best out of each customer group.

Guru

Credit managers can convince other departments, such as marketing and sales, of the use of customer scoring. In this way, they can clear the way to more objective processes throughout the company.

Bridge builder

The new credit manager will take on a coordinating role. For example, they must ensure clear lines of communication and cooperation between the debtor management, marketing and sales functions to avoid any conflicts from disrupting the bottom-line objectives.

Analyst

Based on predictive analytics, the new credit managers may detect connections and patterns. This will enable the company to gain insights into future customer behavior and to anticipate this.

Why do we assess the credit risk?

There are three main reasons why every company should assess the credit risk of its customers:

1. The answer to the question about granting a loan is not so unambiguous. If I am a company that has a lower risk appetite, and I want to buy from me, I can say 'yes'. That is, I will sell, but at a higher price, which will allow me to accept the risk. Either I ask for additional security or for partial prepayment etc. **Credit analysis becomes a helpful tool in trade negotiations, and the credit manager is part of it** - which is advisable. The risk assessment function adds value to the company not only in the sphere of a pure financial function. It becomes a real support function of the sales department and not only the most disliked department in the company.
2. **There is also the second function of multi-level risk assessment: customer segmentation.** Here it is extremely useful in the process of monitoring receivables. Knowing the different risk classes of clients in the portfolio, we can think about how to separate the work of the debt collection department, so that the most attention will be focused on customers who are more "at risk" and less on those with less risk. This allows you to increase the efficiency and effectiveness of work. Collectors are busy with what is important and not unnecessary bureaucracy that can be automated. The credit department has more time to build relationships, visit clients, meetings within the company with other departments (including primarily sales).
3. Let's not forget about **most valuable credit department function: protecting the margin.** As we can see in many examples, bankruptcy could be caused by not putting the appropriate focus on margin, and more attention on increasing of sales numbers. If margins are not protected, the company could not generate the cash flow and consequently creates a high risk of losing the liquidity. The realized sales are very often a result of hard work in very competitive environment. The company should be as much as possible confident that profits are cashed, not only accounted.

Corporate credit risk – concepts and definitions

In the economic landscape of the 21st century, an organization’s business model is challenged constantly by competitors and events that could give rise to substantial risks. An organization must strive to find creative ways to continuously reinvent its business model to sustain growth and create value for stakeholders.

Companies make money and increase stakeholder value by engaging in activities that have some risk, yet stakeholders also tend to appreciate and reward some level of stability in their expected returns. Failure to identify, assess, and manage the major risks facing the organization’s business model, however, may unexpectedly result in significant loss of stakeholder value.

Thus, senior leadership must implement processes to manage effectively any substantial risks confronting the organization. This dual responsibility of growing the business and managing risk has been noted by Jeffrey Immelt, Chairman and CEO at General Electric Co., when he described his position at GE: “My job is to figure out how to grow and manage risk and volatility at the same time.”

While leaders of successful organizations have always had some focus on managing risks, it typically has been from a reactive exposure-by-exposure standpoint or a silo approach rather than a proactive, integrated, across-the-organization perspective. Under a silo approach, individual organizational units deal with their own risks, and often no single group or person in the organization has a grasp of the entire exposure confronting the company (especially the overall organization’s “reputation” risk). To correct such a situation, **enterprise risk management (ERM)** has emerged in recent years and takes an integrated and holistic view of the risks facing the organization.

Risk management – the base for good decision making



In today’s challenging global economy, business opportunities and risks are constantly changing. There is a need for identifying, assessing, managing and monitoring the organization’s business opportunities and risks. The question is: How does an organization take practical steps to link opportunities and risks when managing the business? And further: What does this have to do with **risk management**?

Risk management has come a long way from its origins in engineering and health and safety.

It is now used on a wide range of applications across a range of commercial, industrial and other forms of enterprise. More and more organizations are establishing and developing risk management facilities, both as an internal initiative and in response to statutory and regulatory external pressures.

What is risk?

Risk is unavoidable and present in every human situation. It is present in daily lives, public and private sector organizations. Depending on the context (insurance, stakeholder, technical causes), there are many accepted definitions of risk in use.

The common concept in all definitions is uncertainty of outcomes. Where they differ is in how they characterize outcomes. Some describe risk as having only adverse consequences, while others are neutral.

One description of risk is the following: **risk refers to the uncertainty that surrounds future events and outcomes**. It is the expression of the likelihood and impact of an event with the potential to influence the achievement of an organization's objectives.

The phrase "the expression of the likelihood and impact of an event" implies that, as a minimum, some form of quantitative or qualitative analysis is required for making decisions concerning major risks or threats to the achievement of an organization's objectives. For each risk, two calculations are required: its likelihood or probability; and the extent of the impact or consequences.

Finally, it is recognized that for some organizations, risk management is applied to issues predetermined to result in adverse or unwanted consequences. For these organizations, the definition of risk which refers to **risk as "a function of the probability (chance, likelihood) of an adverse or unwanted event, and the severity or magnitude of the consequences of that event"** will be more relevant to their particular public decision-making contexts.

The term "risk" is usually associated with downside or bad outcomes, but when trying to understand financial risk, **limiting the analysis to just the downside would be a mistake**. Managing financial risk is as much about exploiting opportunities for gain as it is about avoiding downside. It is true that, everything else held equal, more randomness is bad, and less randomness is good. It is certainly appropriate to focus, as most risk measurement texts do, on downside measures (e.g., lower quantiles and VaR). But upside risk cannot be ignored. In financial markets, everything else is never equal and more uncertainty is almost invariably associated with more opportunity for gain. Upside risk might be better termed "opportunity," but downside risk and upside opportunity are mirror images, and higher risk is compensated by higher expected returns. Successful financial firms are those that effectively manage all risks: controlling the downside and exploiting the upside.

Definition and types of risk and credit risk

In financial management, risk relates to any material loss attached to the project that may affect the productivity, tenure, legal issues, etc. of the project. In finance, different types of risk can be classified under two main groups:

- **Systematic risk** is uncontrollable by an organization and macro in nature.
- **Unsystematic risk** is controllable by an organization and micro in nature.

Systematic risk is due to the influence of external factors on an organization. Such factors are normally uncontrollable from an organization's point of view.

It is a macro in nature as it affects many organizations operating under a similar stream or same domain. It cannot be planned by the organization.

The types of systematic risk are depicted and listed below.

1. Interest rate risk,
2. Market risk,
3. Purchasing power or inflationary risk.

Interest rate risk

Interest-rate risk arises due to variability in the interest rates from time to time. It particularly affects debt securities as they carry the fixed rate of interest.

The types of interest-rate risk are depicted and listed below.

- Price risk,
- Reinvestment rate risk.

The meaning of price and reinvestment rate risk is as follows:

1. Price risk arises due to the possibility that the price of the shares, commodity, investment, etc. may decline or fall in the future.
2. Reinvestment rate risk results from fact that the interest or dividend earned from an investment can't be reinvested with the same rate of return as it was acquiring earlier.

Market risk

Market risk is associated with consistent fluctuations seen in the trading price of any shares or securities. That is, it arises due to rise or fall in the trading price of listed shares or securities in the stock market.

The types of market risk are depicted and listed below.

- Absolute risk,
- Relative risk,
- Directional risk,
- Non-directional risk,
- Basis risk,
- Volatility risk.

The meaning of different types of market risk is as follows:

1. Absolute risk is without any content. For e.g., if a coin is tossed, there is fifty percentage chance of getting a head and vice-versa.
2. Relative risk is the assessment or evaluation of risk at different levels of business functions. For e.g. a relative-risk from a foreign exchange fluctuation may be higher if the maximum sales accounted by an organization are of export sales.

3. Directional risks are those risks where the loss arises from an exposure to the assets of a market. For e.g. an investor holding some shares experience a loss when the market price of those shares falls.
4. Non-Directional risk arises where the method of trading is not consistently followed by the trader. For e.g. the dealer will buy and sell the share simultaneously to mitigate the risk
5. Basis risk is due to the possibility of loss arising from imperfectly matched risks. For e.g. the risks which are in offsetting positions in two related but non-identical markets.
6. Volatility risk is of a change in the price of securities because of changes in the volatility of a risk-factor. For e.g. it applies to the portfolios of derivative instruments, where the volatility of its underlying is a major influence of prices.

Purchasing power or inflationary risk

Purchasing power risk is also known as inflation risk. It is so, since it emanates (originates) from the fact that it affects a purchasing power adversely. It is not desirable to invest in securities during an inflationary period.

The types of power or inflationary risk are depicted and listed below.

- Demand inflation risk,
- Cost inflation risk.

The meaning of demand and cost inflation risk is as follows:

1. Demand inflation risk arises due to increase in price, which result from an excess of demand over supply. It occurs when supply fails to cope with the demand and hence cannot expand anymore. In other words, demand inflation occurs when production factors are under maximum utilization.
2. Cost inflation risk arises due to sustained increase in the prices of goods and services. It is caused by higher production cost. A high cost of production inflates the final price of finished goods consumed by people.

Unsystematic Risk is due to the influence of internal factors prevailing within an organization. Such factors are normally controllable from an organization's point of view.

It is a micro in nature as it affects only a organization. It can be planned, so that necessary actions can be taken by the organization to mitigate (reduce the effect of) the risk.

The types of unsystematic risk are depicted and listed below.

1. Business or liquidity risk,
2. Financial or credit risk
3. Operational risk.

Business or liquidity risk

Business risk is also known as liquidity risk. It is so, since it emanates (originates) from the sale and purchase of securities affected by business cycles, technological changes, etc.

The types of business or liquidity risk are depicted and listed below.

- Asset liquidity risk,
- Funding liquidity risk.

The meaning of asset and funding liquidity risk is as follows:

1. Asset liquidity risk is due to losses arising from an inability to sell or pledge assets at, or near, their carrying value when needed. For e.g. assets sold at a lesser value than their book value.
2. Funding liquidity risk exists for not having access to the sufficient-funds to make a payment on time. For e.g. when commitments made to customers are not fulfilled as discussed in the SLA (service level agreements).

Financial or credit risk

Financial risk is also known as credit risk. It arises due to change in the capital structure of the organization. The capital structure mainly comprises of three ways by which funds are sourced for the projects. These are as follows:

- Owned funds. For e.g. share capital.
- Borrowed funds. For e.g. loan funds.
- Retained earnings. For e.g. reserve and surplus.

The types of financial or credit risk are depicted and listed below.

- Exchange rate risk,
- Recovery rate risk,
- Credit event risk,
- Non-Directional risk,
- Sovereign risk,
- Settlement risk.

The meaning of types of financial or credit risk is as follows:

1. Exchange rate risk is also called as exposure rate risk. It is a form of financial risk that arises from a potential change seen in the exchange rate of one country's currency in relation to another country's currency and vice-versa. For e.g. investors or businesses face it either when they have assets or operations across national borders, or if they have loans or borrowings in a foreign currency.
2. Recovery rate risk is an often-neglected aspect of a credit-risk analysis. The recovery rate is normally needed to be evaluated. For e.g. the expected recovery rate of the funds tendered (given) as a loan to the customers by banks, non-banking financial companies (NBFC), etc.
3. Sovereign risk is associated with the government. Here, a government is unable to meet its loan obligations, reneging (to break a promise) on loans it guarantees, etc.
4. Settlement risk exists when counterparty does not deliver a security or its value in cash as per the agreement of trade or business.

Operational risk

Operational risks are the business process risks failing due to human errors. This risk will change from industry to industry. It occurs due to breakdowns in the internal procedures, people, policies and systems.

The types of operational risk are depicted and listed below.

- Model risk,
- People risk,
- Legal risk,
- Political risk.

The meaning of types of operational risk is as follows:

1. Model risk is involved in using various models to value financial securities. It is due to probability of loss resulting from the weaknesses in the financial-model used in assessing and managing a risk.
2. People risk arises when people do not follow the organization's procedures, practices and/or rules. That is, they deviate from their expected behavior.
3. Legal risk arises when parties are not lawfully competent to enter an agreement among themselves. Furthermore, this relates to the regulatory-risk, where a transaction could conflict with a government policy or legislation (law) might be amended in the future with retrospective effect.
4. Political risk occurs due to changes in government policies. Such changes may have an unfavorable impact on an investor. It is especially prevalent in the third-world countries.

Risk management is the process by which risks are managed alongside all other aspects of the business.

It has already been established that risks are abundant and take numerous forms. Risks can be reduced and controlled up to a point, but they cannot be eliminated, nor should organizations seek to do so. The organization that is willing to take the risk may well be the one that succeeds overall. Risk management is the process that identifies risks and classifies them in some way so that they can be assessed and prioritized. It then controls and coordinates the chosen response of the organization. Risk management is therefore a control mechanism for ensuring that overall risk magnitude stays within acceptable limits.

A typical risk management system first identifies all the risks that are relevant. It analyses these risks and classifies them in some way, and then it considers the amount of risk that is acceptable in a application. Having established the level of risk that is acceptable, the risk management system makes an appropriate response. It then monitors and controls itself over a period.

Risk management is primarily concerned with reducing earnings volatility and avoiding large losses. In a proper risk management process, one needs to identify the risk, measure and quantify the risk and develop strategies to manage the risk. The highest concern in risk management are the riskiest products. The prior concern for the risk management are those products that can cause the highest losses: high exposures with high default risk. The next priority are smaller exposures with high risk and large exposures with lower risk. The prioritization of both types is less straightforward. The lowest priorities have low exposures with low risk.

Credit risk can be defined as the potential that a contractual party will fail to meet its obligations in accordance with the agreed terms. Credit risk is also variously referred to as **default risk**, **performance risk** or **counterparty risk**. These all fundamentally refer to the same thing: the impact of credit effects on a firm's transactions.

Default risk is the chance that companies, or individuals will be unable to the required payments on their debt obligations. Lenders and investors are exposed to default risk in virtually all forms of credit extensions. To mitigate the impact of default risk, lenders often charge rates of return that correspond the debtor's level of default risk. A higher level of risk leads to a higher required return.

Performance risk occurs when a party may not perform its obligations under a contract. In particular, the ability and willingness to provide goods and services meeting the contractual quality standards, on time.

Counterparty risk is the risk to each party of a contract that the counterparty will not live up to its contractual obligations. Counterparty risk is a risk to both parties and should be considered when evaluating a contract. In most financial contracts, counterparty risk is also known as default risk.

Taking into consideration **the source**, we have following types of credit risk:

- **External** – macroeconomic and social factors (competitiveness, business cycle, fiscal and monetary policy, inflation, unemployment etc.), political factors (trade deregulation and liberalization), demographic factors (society oldness) and technological factors (IT),
- **Internal** – employees' qualification, agreements' portfolio diversification, kind and level of collateral agreements, accounting standards.

Because of **the scope**, the credit risk could be divided into:

- **Individual risk** – it is a single risk as a function of the level of possible loss and its probability. This risk could be limited by: creditworthiness assessment before granting of the credit line, limited level of credit line, credit collateral, creditworthiness monitoring once the credit line is granted.
- **Portfolio risk** – it's a combined risk, which depends on the individual credit decisions, their probability of default and their interdependence.

Estimating credit risk and measuring credit decisions

There are three characteristics that define credit risk:

1. exposure (to a party that may possibly default or suffer an adverse change in its ability to perform)
2. the likelihood that this party will default (or the default probability) on its obligations
3. the recovery rate (that is, how much can be retrieved if a default takes place)

Note that the larger the first two elements, the greater the exposure. On the other hand, the higher the amount that can be recovered, the lower the risk. Formally, we can express the risk as:

Credit Risk = Exposure x Probability of Default x (1 less Recovery Rate)

Given the above, credit risk management is the process of controlling the potential consequences of credit risk. The process follows a standard risk management framework, namely: identification, evaluation and management. That is, the cause of the risk has to be identified, the extent of the risk has to be evaluated and decisions made as to how this risk is to be managed.

The main “ingredients” of credit risk are therefore:

- **Probability of Default (p, PD)** – the probability that the obligor will default (will not meet the agreed payments) over the next year
- **Exposure at Default (EAD)** – the amount outstanding in the case of default. This amount may exceed the current amount outstanding if the obligor is granted a credit line and they increase the amount borrowed prior to the default
- **Loss Given Default (LGD)** – the proportion that will be lost if default occurs. The LGD may be reduced by collaterals
- **Default Correlation** – from a portfolio perspective, dependencies in defaults probabilities have to be accounted for

Obviously, establishing credit limits for high risk customers must be done with care and by an individual such as the credit manager with the skills and expertise need to make the right decision. That decision must consider many factors, including certain factors outside of the credit department's direct control.

And what are the **main principles for the professional credit risk manager to apply while making the credit decision?**

- Take time to reach a decision – not so long but remember that rush is not a good advisor here.
- Do not be too proud to ask for a second opinion.
- Get full information from the customer and do not make unnecessary assumptions, i.e. do not lend to a business you do not fully understand.
- Do not take a customer’s statements and representations at face value and ask for evidence to support the statements.
- Distinguish between facts, estimates and opinions when forming a judgement.
- Think again when the ‘gut reaction’ suggests caution, even though the factual assessment looks satisfactory.

Two different types of error can arise when evaluating a credit decision:

1. **The type I error** is advancing credit to a lesser quality credit, that is a ‘bad credit’, that has mistakenly been classified as a ‘good credit’ and thereby incurring an unanticipated loss.
2. **The type II error** arises from misclassifying a ‘good credit’ as a ‘bad credit’ and thereby forgoing an opportunity to earn profit.

The different risks can be portrayed in terms of the actual credit quality (here simply called 'good' or 'bad' credit) versus the analyzed credit quality.

In practice, the credit analyst will devote more time to avoiding type I errors, that is, assessing bad credits as good ones. The financial consequences of accepting bad risks that have mistakenly been classified as good ones are greater than if some good risks are mistakenly rejected. This is because the costs of extending credit in a situation where there is a credit event are far greater than the opportunity for profit foregone by refusing credit to the good risk. This is due to the uncertainties in loss recovery rates and the opportunity costs involved. That said a credit evaluation model which habitually rejects high quality 'good' credits as 'bad' means excessive opportunity losses from foregone business. Hence the probability of default of a kind of credit needs to be carefully factored in to any analytic framework.

The credit risk decision facing a firm relates to (1) the gain if no default happens against (2) the potential loss from extending credit based on the likelihood that default takes place and the amount that is lost if default occurs. The probability that the credit defaults is given as (p) . There are only two possible outcomes: the credit performs according to expectations or the credit defaults. If the credit defaults the cost to the credit manager will be the cost or the replacement value for what has not been provided.

For instance, in deciding whether to provide trade credit a firm faces a decision as to which applications to proceed with; what limit to set on the amount of credit extended and whether this needs to be modified over time; what action should be taken if there is a delay in repayment; and, which counterparties should be actively solicited for business.

Although the nature of the credit analysis decision can be readily described, the steps required to effectively manage the process are more complicated. The problem relates to the risk that counterparties will not honor their obligations when the moment comes for them to perform under their contract.

Determining which counterparty may default is the art of credit risk management. Different approaches use judgement, deterministic, or relationship models, or make use of statistical modelling to classify credit quality and predict likely default frequency. Once the credit evaluation process is complete, the amount of risk to be taken can then be determined.

Assessing credit risk requires us to model the probability of a counterparty defaulting in full, or in part, on its obligation. We can picture the credit decision in terms of the basic risk management model. This involves a decision either (A) to extend credit, which provides a reward but entails a risk, or (B) to refuse credit. **The situation facing the credit manager is shown as a decision problem in Figure 1.** The requirement is to balance the gain from taking the credit risk by extending credit against the potential loss. In the decision problem the alternative is to refuse credit and not obtain any reward.

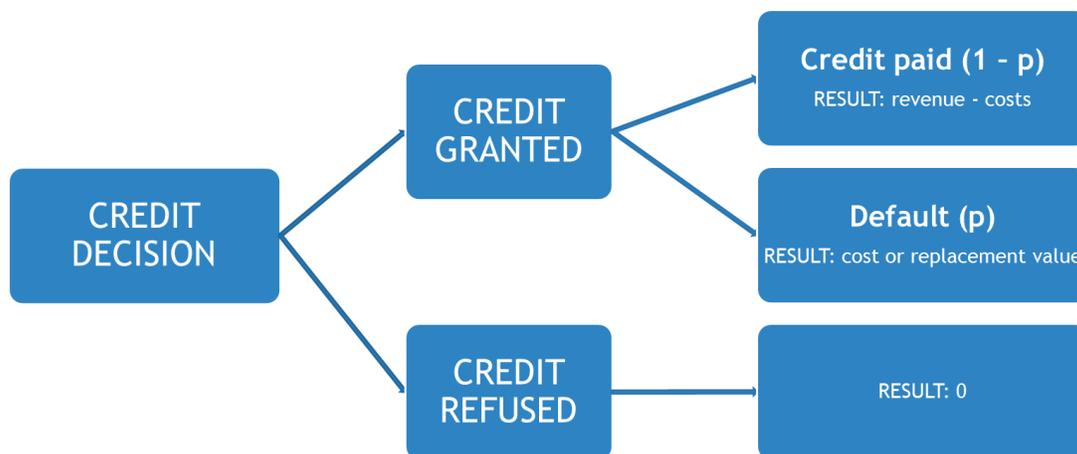


Figure 1. The credit decision as a decision problem; source: *Credit risk management*, Ken Brown, Peter Moles, Edinburgh Business School, 2012

The decision model given in Figure 1 provides a theoretical framework for assessing the risk. One approach to evaluating the risk is to work out the payoffs from the choices facing the firm (or individual). The ex-ante payoff of the two situations are:

Extend credit: $PV (\text{Revenue} - \text{Costs}) \times (1 - p) - PV (\text{Cost}) \times p$

Refuse credit: 0

The reward is the revenue earned less the costs; the risk is the full or partial loss if a default takes place. In evaluating the desirability to taking on credit risk, different situations will have different levels of risk based on (a) the probability of default (p) and (b) the amount of loss that is expected or incurred. Thus lending, for instance, has a higher exposure (the amount at risk) for the same sized contract than entering into an off-balance sheet derivative agreement such as a swap. If a firm goes into liquidation, the loan might be an almost total write-off, but the risk on the swap relates to the difference between the original value and its replacement cost. Part of the evaluation process therefore needs to calculate the exposure that will arise if default takes place and this exposure needs to be controlled by setting overall credit limits per individual counterparty and by industry type and country, if applicable.

Firms gain a reward by accepting the risk that the credit may default. Alternatively, nothing is hazarded if credit is refused. Since most organizations must take risks to earn a return, the decision is slightly more complex than this simple model would suggest. In their day-to-day activities, firms seek to trade-off credit risk against the potential gains and losses. These arise not just from accepting bad credits, but also in rejecting good ones.

At this point it should be noted that modern finance theory suggests that rejecting credit is not necessarily the appropriate response to poor credit quality. The tenets of modern theory about risk postulate that the required return should be adjusted for the risk taken. If the risk has been correctly estimated then, for

large organizations over the medium term and where portfolio diversification effects apply, losses will be compensated by gains elsewhere.

Finance theory would, in addition, suggest that only the systematic risk component need be priced. One aim of the credit modelling process should be to provide estimates of the likely risk. The decision can then be made whether to provide a credit line at an appropriate risk-adjusted price to compensate for the risk or find ways to reduce the degree of exposure but still enter into the transaction. **This is a more sophisticated approach than used in most organizations which tend to adopt a 'yes' or 'no' view to extending credit and seek to control their exposure via limits on the amounts at risk.**

For instance, if the company earns a margin of 20 per cent on sales, then it will break-even, that is, be indifferent between extending credit and refusing credit if:

$$PV (\text{Revenue} - \text{Costs}) \times (1 - p) - PV(\text{Cost}) \times p = 0$$

$$PV (20) \times (1 - p) - PV (100) \times p = 0$$

$$20 - 20p = 100p$$

$$20 = 120p$$

$$\frac{20}{120} = p = 0,167$$

So, with a probability of loss of 0,167, the firm is indifferent between accepting a credit risk and refusing it. Note that if the firm is risk averse then it will need an expected positive payoff to compensate it for risk-taking. The firm can do two things to increase its sales and yet not incur unacceptable credit losses. First, it can be indifferent to a higher level of losses if its margin is higher. If the margin were 30 per cent, then it would be indifferent at a loss probability of 0,23. On the other hand, if it can reduce its loss given default, say to 80 rather than 100, then again, the firm can be indifferent with a loss probability of 0,20.

Financial liquidity and credit risk

The good financial condition of the company, its success, but also its reputation depend largely on financial liquidity. The crisis of business experience in recent years has **increased the interest of managers in ways to provide financial liquidity and reduce the risk of running a business.**

Financial liquidity, understood as the **ability of an enterprise to regulate its current liabilities and necessary expenses**, is an extremely important element in managing the company's finances. In a short period of time, liquidity, not profitability, determines the existence of a company on the market.

The concept of financial liquidity is not unequivocal and can be understood differently. There are many terms in financial literature describing liquidity. The definitions given in economic literature differ from

one another, which does not mean that one of them is wrong. They represent only another point of view, accentuate another aspect of liquidity.

The first group of definitions that can be found in the literature of the subject emphasizes the link between liquidity and assets. So, we talk about **liquidity in the property aspect**. In this sense, liquidity is the ability to convert assets into cash as quickly as possible and without losing value. Assets (properties and movable properties) in an enterprise are characterized by a different degree of liquidity. The balance of assets is based on the financial liquidity criterion. They are ordered from the least liquid to those that represent the most liquid assets.

The most widely used liquidity concept determines liquidity as the ability of an enterprise to timely meet its short-term liabilities. This is an **asset-equity aspect of liquidity** as it relates to the mutual relationship between the asset that secures the repayment of liabilities within the term, the liabilities that finance the asset.

Financial liquidity is largely determined by the rate at which individual assets are converted into cash. The better the situation, **the greater the share of assets with high liquidity**.

Undue delinquency payments by business partners result in payment bottlenecks, which in the longer term contribute to the loss of liquidity by the company.

The risk associated with the credit sale (**credit risk**) is the likelihood that the payee will not pay in time for the goods or service rendered. This means that the company will not have the money to settle its own obligations. Therefore, it is necessary to **examine the financial credibility of business partners**.

The major purpose of credit analysis is to identify risks in lending situations, draw conclusion regarding the likelihood of payment and make recommendations as to the proper type and structure of the loan in the light of the perceived financing needs and risks.

While an essential element of credit evaluation, the use of financial analysis for this purpose is subject to serious limitations. These include:

- the historical character of financial data.
- the difficulty of making reasonably accurate financial projections based upon such data.
- the inevitable gap between financial reporting and financial reality.

Credit analysis is the quantitative and qualitative analysis of a company, which help to determine the company's debt service capacity, or how capable it is to pay back its principal payments to the bank or other creditors. Credit analysis is concerned with identifying, evaluating and mitigating those risks which may result in a company not being able to meet its creditors' claims.

Credit analysis involves the examination of the link between management performance or capacity and the working relationship of a company's assets, liabilities and equity as shown on its balance sheet, the result of its operations as reflected in its income statement and cash flow. The evaluation of the company's financial statements and the ratios that indicate the efficiency of the company's performance will thus provide an indicator of the probability of success of the ability to service its debt in the future.

Payment credibility and creditworthiness

The assessment of the financial credibility of companies is a very complex task. Each company has its own characteristics, because there are no two same companies, so measuring their credibility requires other tools. One of the basic tool is **credit analysis**.

In credit analysis we want to distinguish customers, those who do not want to pay (credibility) from those who cannot, are not able (ability).

Therefore, **creditworthiness is the financial ability to repay** the loan taken with interest at the dates specified in the contract.

Payment credibility, on the other hand, is an enough the debtor's financial resources to repay the debt plus interest, but also his willingness to do so and the occurrence of favorable conditions in the debtor's environment, independent of his will, which will not disrupt the repayment.

In general, creditworthiness is considered based on:

- **ability to repay their obligations (income approach);**
- **the condition and value of the entity's assets (property approach);**
- **the risk of the entity's business.**

In the income approach, factors such as the profitability of a given entity and financial liquidity are considered.

Profitability is generally defined as the efficiency of an enterprise. The most common profitability measures are profitability ratios, also known as margin ratios or return rates. The achieved values should be compared with previous periods, with the plan, with other companies. The causal analysis is necessary here. The good performance alone of the company does not provide guarantees of repayment, although unprofitable undertakings will not be able to repay their liabilities. Financial liquidity is a factor that better reflects the ability to repay its obligations.

Liquidity measurement, similarly, as profitability measurement, is usually based on a set of indicators (liquidity and profitability respectively). The problem here is the selection of indicators so that the results (conclusions from the indicator analysis) are reliable and comprehensive. In addition, this measurement is based on past data, so future-level conclusions must be made with great caution.

The second criterion on which credit is measured is the condition and value of the entity's assets (**property approach**). This criterion is taken into account mainly when the entity has a small financial liquidity but possesses assets which secure him if it is unable to pay his debts. This does not mean, however, that creditworthiness is provided by non-liquidity entities. The condition and value of the assets are only a supplement to the assessment of the ability to repay their obligations. These two criteria are complementary and rarely occur when the subject has been assessed positively despite the lack (or inadequacy of) the property. Talking about the proper condition of the property is about its flexibility.

Liquidity of assets can be defined as the ability to swiftly and easily convert some assets into another without loss of value.

The last component taken into account when assessing creditworthiness is the **risk of the entity's business**. In general, the risk we might define as a situation in which the availability of the individual opportunities and the potential benefits and costs associated with each are known with an estimated probability.

In general, the risk we could divide into:

- **objective risk** - all phenomena whose occurrence is likely to occur,
- **subjective risk** - a subjective feeling of danger, uncertainty and, therefore, a feeling of increased business risk,
- **risk from the inside of an enterprise** - occurs when the enterprise carries out high risk activities,
- **risk from the outside of an enterprise** - when an enterprise operates on an economically or politically unpredictable market,

Risk is subjective and difficult to quantify, although there are some risk measures that can be used to compare the risks of the various entities involved and to take into account them when assessing creditworthiness.

The above elements of creditworthiness assessment can be applied universally to any entity, it does not matter whether the size of that entity. Having a creditworthiness checked allows you to determine the credibility of your partner's solvency and, as a result, enhances confidence in your transactions, which can often be the key to your success.

Quantitative and qualitative credit risk factors

It is clear that the ability to pay liabilities should be measured not only taking into account financial parameters, measurable in the form of financial indicators (quantitative factors).

The business risk associated with non-quantitative parameters (qualitative factors) also has a significant impact on solvency.

The question arises: Which of these factors have a greater, more significant impact on the assessment of the creditworthiness of the company under investigation?

The tasks of Corporate Credit Management

Credit & collection departments – organization, tasks and work allocation

Credit and collection activities refer to the granting of credit to customers so that they can defer payments to the seller, and then collecting those funds at a later date. Ideally, it is vastly easier to collect payment in advance or on delivery from all customers, but competitive pressures rarely allow this to be the case. Instead, if a business refuses to grant credit, then customers take their business elsewhere. Accordingly, it is necessary for a business to evaluate its customers to determine how much credit it is safe to grant, as well as the methods required to collect funds.

The credit department is arguably the most unpopular department in a company. The reason is that customers want unlimited credit in order to delay cash payments, while the credit manager must exercise some prudence in only granting credit where invoices are likely to be paid. The result is two types of risk:

- the risk of granting too much credit to a customer that cannot pay
- the risk of denying credit to a customer who can pay

It is extremely difficult to maneuver between these two risks and grant just the right amount of credit, so the credit manager is likely to be abused from all directions. The sales department believes that the credit manager is stifling sales, while the chief financial officer believes that the extension of too much credit is resulting in outsized bad debt losses.

Further, because of the confidential nature of some of the information used to reach credit decisions, the credit staff may not be able to fully explain the reasons for its decisions to the sales department. The result is ongoing frustration on all sides, which can result in the credit manager losing all power and eventually just “rubber stamping” all requests for credit. This scenario can only be avoided through the ongoing support of senior management, which must understand the key role that the credit department plays.

Organizational Structure

The credit and collection functions may be separately located within different departments. The credit function is essentially issuing short-term loans to customers, which is a financing function, and so it may report to the treasurer or chief financial officer. The collections function is an extension of the billing function, and so is more likely to report to the controller. Since this means the two areas are organized separately, interactions between the two departments can prolong the time required to resolve issues with customers.

To keep this from happening, it's better that the two functions be combined into a single department. In addition, consider folding the order entry function (which normally reports to the sales manager) into this group. By doing so, a large part of customer interactions is combined under common management, which can shorten the time required to resolve customer problems. It is rarely a good idea to have this merged group report to the sales manager, since doing so gives sales too much control over the granting of credit, which will likely be expanded to accommodate all customer orders.

Credit Manager

The credit manager position is responsible for the entire credit granting process, including the consistent application of a credit policy, periodic credit reviews of existing customers, and the assessment of the creditworthiness of potential customers, with the goal of optimizing the mix of company sales and bad debt losses. The position generally reports to the treasurer or chief financial officer. The credit manager should not report to any position in the sales department, since the credit function should act as a counterbalance to that department.

Credit Analyst

The credit analyst is normally responsible for not only reviewing credit applications from new customers, but also monitoring current customers to see if their credit levels should be re-examined.

Collections Manager

The collections manager position is responsible for all collection activities, including all collection interactions with customers and the management of collection agencies and collection attorneys. This manager is also responsible for accumulating information about the reasons for collection problems and passing the information back to the rest of the company for resolution. The position usually reports to the controller.

Collector

The collector position is responsible for collecting the maximum amount of overdue funds from customers, which may include a variety of collection techniques, legal claims, and the selective use of outside collection services. The position is not strictly that of a clerk, since the best collector should operate with a more independent orientation than a procedure-bound clerk, taking those steps needed to collect funds.

Work Allocations

As is the case in any department, the types of work assigned will vary for new hires and more experienced personnel. This is more of an issue in the collections area, where it takes time to develop collection skills. In this area, a new collector has no knowledge of a company's customers, the company billing processes, which collection techniques have been approved for use, or the types of payment problems that customers usually have. To give a new hire the time to acquire the requisite knowledge, there are several ways to allocate work.

Goal Setting

Both the credit function and the collections function are essentially engaged in reactive activities. The credit staff analyzes credit applications as submitted, while the collections team only has collection work if receivables have been generated by the rest of the company. This makes it relatively easy to set goals for certain outcomes.

Interdepartmental Relations

The credit function must coordinate its activities with those of the sales department, since credit requests are likely to be referred to the credit staff through the sales department. This calls for astute management of the sales staff, which will continually demand that full credit be granted to all and sundry. There will be cases where credit is not granted, so relations between the departments must be cordial enough to prevent warfare over these instances.

The collections function has an even greater need for excellent relations with the sales department, since it may call upon the sales staff to assist it in making collection calls to customers. In addition, if collection problems are being caused by issues occurring within the company (such as damaged or flawed goods), the collections manager must be able to pass along this information in an effective manner to the departments causing the problems. The level of interaction could even lead to the collections manager chairing or participating in various meetings to resolve these underlying problems.

Both the credit and collection managers also need to provide regular feedback to other parts of the company regarding the payment habits of customers. It is entirely possible that senior management is pushing the sales department to sell into market niches that are heavily populated with low-rated customers that cannot pay, or that more sales are being made to customers that do not even deserve the amount of credit they are currently being granted. There should be regularly scheduled meetings to address the credit and collections view of these issues so that the entire management team is fully aware of customer payment problems.

Reports

There are a variety of reports that can be used to oversee the operation of the credit and collection functions. In most cases, these reports should be designed to highlight problem areas requiring management attention, rather than simply presenting massive amounts of information that a manager must wade through in order to find those few nuggets of actionable information. In this section, we address a number of these reports, and how they can be configured to best present critical information.

Following reports are used in credit and collection departments:

- credit levels report
- receivables aging report
- bad debt report
- customer profitability report

Credit policy – guideline for Credit Manager

The credit department is essentially in the business of lending funds to customers – albeit on a very short-term basis and without an interest charge. Like a lender, the credit staff should follow specific guidelines

for how this lending function is to be managed. The guidelines are codified in the credit policy, whose contents we discuss in this chapter. We also address how elements of the collections function can be included in the credit policy.

The credit department must deal with a continuing stream of requests from customers for credit terms. Each customer has a different set of characteristics, such as their financial position, years in business, and payment history that must be sorted through and used to make a credit decision. In the absence of any sort of structure to this decision-making process, it is entirely likely that the resulting credit decisions will vary widely, even for customers with relatively similar characteristics.

The credit policy is used to bring a high level of consistency to the credit granting process. To do so, the policy should be constructed with a sufficient level of detail to clarify the following topics:

- the mission of the credit department
- individuals allowed to make the credit decisions
- what rules to use for the derivation of credit
- the terms of sale to be used, other than the amount of credit granted

In addition, the credit policy can be designed to encompass collection activities. Doing so means that certain types of collection activities are allowed, others are not allowed, and the approximate timing and duration of various collection steps are laid out. The intention is not to completely regiment the collections process, but rather to set boundaries around how the function shall be managed.

The credit policy should show how to deal with the most common credit and collection decisions that the staff will encounter. Over time, it is likely that additional scenarios will arise that were not covered by the original credit policy, such as unusual types of payment deductions. Accordingly, the policy can be expected to expand to provide coverage of these unusual situations. If a company expands into multiple lines of business, the credit policy will likely have to expand too, to keep pace with the variety of credit and collection scenarios that are likely to arise in this expanded environment.

The credit policy is also an excellent training tool for new employees, since it sets guidelines for their activities. Not only does it ensure that they are aware of the policy from their first day on the job, it also sends the message that the company is serious about following the policy.

Credit Policy - Mission

The mission of the credit department sets the tone of the entire credit policy, for it describes the overarching reason why the company grants credit. The mission statement can lie anywhere along a continuum, where one end allows cheap and easy credit (therefore focusing on higher revenues) and the other end dwells on credit risk reduction (therefore focusing on fewer bad debts). Where the company positions itself on this continuum depends on senior management's propensity to expand sales or maintain a prudent financial position.

Credit Policy - Goals

There should be a goals section in the credit policy that states the targets against which the credit department will be judged. Examples of possible goals are:

- Processing speed (example: The department will process 95% of all credit applications within one business day of receipt)
- Efficiency (example: The department will operate with one credit full time equivalent per 500 customers)
- Results (example: The company's average days outstanding (DSO) figure will not exceed 50 days at any time)

Credit Policy - Responsibilities

The ultimate responsibility for making credit decisions should be clearly stated. Otherwise, the credit manager may be involved in ongoing quarrels with the sales manager over the amount of credit that will be granted. In addition, the policy should clarify who is entitled to place a customer on credit hold status. Once again, the sales manager will want control over this function, even though the responsibility should lie with the credit manager.

Credit Policy - Required Documentation

The credit policy can state the types of information required before a credit judgment can be made about a new customer or a credit revision for an existing customer.

Attention should be paid to the credit application, which is the form upon which the bulk of smaller credit decisions are made. The policy can state the primary responsibility for having applications completed and note the importance of certain elements of the application.

The policy can address the periodic elimination of customer credit records, if the company is no longer doing business with them.

Credit Policy - Review Frequency

The policy should note the events that can trigger a review of an account by the credit department, or the intervals at which reviews should take place. Indicators of when these reviews might take place were just noted for the accumulation of required documentation.

Credit Policy - Credit Calculation

The policy can clarify the amount of time that the credit staff is allowed in which to make a credit decision. The policy can include the detailed methodology for determining the amount of credit to be granted to customers, including the sources of information to be used and how decisions are to be made. The credit calculation section should also address several common exception conditions that routinely arise in the credit function.

Credit Policy - Terms of Sale

The terms of sale granted to customers are usually kept the same for each business unit, so that each one can provide terms competitive to those found among their competitors. Thus, one business unit may offer net 30-days terms, while another may be compelled to offer 60-day terms.

Within the business unit level, it is best to adopt the same terms of sale for all customers, which makes it easier for the collections department to keep track of when customers are supposed to pay. Otherwise, special dispensations for longer payment terms may mistakenly lead to collection activity before a customer is required to pay. If there is to be an exception to this rule, codify it within the credit policy.

Credit Policy - Collection Methodology

An effective collector knows that several collection tools may be required to obtain funds from a recalcitrant customer, and that the use and timing of those tools should be based on the judgment of the individual collector. Nonetheless, the policy should at least contain a listing of those collection techniques that are specifically authorized for use, as well as any techniques not authorized, or at least not to be used without the authorization of the collections manager.

In addition, the policy could state a recommended collection procedure, where certain collection steps are used for a certain period, after which other methods are used. This approach is more useful for training new collectors, or when there is a large amount of turnover in the collections department.

Miscellaneous Provisions

The following additional topics may sometimes be covered in a credit policy. Their inclusion depends upon the level of detail that the credit manager wants the policy to cover and how the business operates its selling, credit, and collection functions. The miscellaneous provisions are:

1. **Collection agencies.** The credit policy could include a discussion of collection agencies.
2. **Collection attorneys.** The credit policy could include a decision matrix for when accounts are to be shifted to collection attorneys for legal action.
3. **Confidentiality.** The credit policy can state the degree to which the company reveals the information in a customer's credit file.
4. **Credit balances.** There may be situations where a customer has a credit balance with the company, perhaps because a credit memo was issued, and the customer never made use of it.
5. **Credit holds.** If there has been a history of sparking customer ill will by an excessive use of credit holds, specify in the policy the circumstances under which credit holds can be used, and (more importantly) when they cannot be used. The policy can also state that the customer and assigned salesperson must be notified at once of a credit hold, and when a credit hold is removed.
6. **Customer bankruptcy.** The policy could state the process that the company should follow if a customer were to declare bankruptcy, such as arranging for the return of any goods in transit to the customer, advising the sales staff of the situation, holding all orders in process, and the preparation of a creditor claim.
7. **Early payment discounts.** The policy could address how to deal with customers who take early payment discounts, but not within the stated number of days allowed for such a discount.

8. **Final demand letter.** The policy can state that final demand letters be copied to a specific senior management position at the customer, as well as the company's sales manager. The policy could also specify that this letter be sent by certified mail or overnight delivery, so that there is evidence of receipt.
9. **Payment disputes.** If the company deals with a large number of payment disputes, consider writing a set of policies that describe how to deal with these situations. Such policies can describe the resolutions to be offered and the escalation actions to be taken. If these disputes relate to certain types of problems, such as product failures or marketing discounts, consider creating a separate policy that is tailored to the requirements of each specific situation. Also, if there are very large payment disputes, this may call for a separate policy that accelerates the handling of the process.
10. **Sales commissions.** A variation on the granting of credit is to institute a policy offering the sales staff a higher commission percentage if they can obtain cash-in-advance payments from customers. Doing so eliminates all credit risk, especially if the payments are non-refundable. Use this approach with caution, since customers with enough cash to pay in advance are unlikely to be inordinate credit risks.

Revision Frequency

It is a rare industry that is staid enough to have little customer turnover and minimal fluctuation in the ability of customers to pay. More commonly, there are ongoing cyclical changes in the economy that may trigger significant changes in how quickly customers are able to pay (if at all). The credit policy should reflect these changes, which means that it should be reviewed and revised at regular intervals. This could mean a mandatory review on set dates or allowing the credit manager to conduct a review when necessary.

The most common update to the credit policy is a decision to either loosen or tighten the amount of credit issued by the company. It is also possible that changes in the competitive environment may allow (or require) the business to alter its terms of sale, such as lengthening the days over which customers are allowed to pay. However, such changes arise at much longer intervals, since they are triggered by industry trends that tend to become apparent only over long periods of time.

Credit risk monitoring

To engage in the monitoring of customer credit on an ongoing basis, the credit department should collect the following information, which it uses to reach decisions regarding changes in the credit terms it offers to customers:

- **Credit application.** Every customer asking for more than a minimal amount of credit should be required to complete a credit application. This document details the legal form of the customer, its ownership, financial condition, trade references, and other information.

- **Trade references.** Most credit applications require that an applicant for credit supply the names of at least three trade references. The results of any conversations with these trade references should be included in the credit file.
- **Personal guarantees.** If a party has provided a personal guarantee to pay for the debts of a customer, store the signed copy of this document in the company safe, and a photocopy of it in the credit documentation.
- **Credit reports.** If the company purchases credit reports on its customers, keep all of them on file; doing so is useful for develop trend line information for each customer.
- **Balance sheet.** The balance sheet describes the financial condition of a business as of a specific date (which should be listed in the header of this document). The line items in a balance sheet may be excessively aggregated by the issuing customer, so insist on line items describing cash, accounts receivable, inventory, fixed assets, accounts payable, and debt.
- **Income statement.** The income statement describes the financial performance of a business over a specific time period (which should be listed in the header of this document).
- **Statement of cash flows.** The statement of cash flows describes the general types of cash inflows and outflows experienced during a reporting period (which should be listed in the header of this document).

Indicators of Future Payment Delinquency

When conducting ongoing credit monitoring activities, following flags can indicate future payment difficulties with a debtor:

- bankruptcy
- change of the legal form
- credit report results (reported payment delays to other customers)
- days to payment
- adverse changes in the financial standing
- broken payment promises
- missing information in the credit application
- order decline
- changes in the ownership

Ongoing Credit Monitoring Actions

The credit staff should decide upon the frequency and type of monitoring that it wants to impose upon its customers, which will be driven by many of the factors described in the preceding section. The frequency and type of monitoring are two different issues, and can be modified at the individual customer level, based on the circumstances. For example, a new customer that has reported shaky financial results could warrant a full quarterly review as well as a requirement to issue its financial statements to the company as part of these quarterly reviews, on the grounds that the seller is at substantial risk of loss. Conversely,

a cursory annual review may be sufficient for a small but well-established customer with a long history of on-time payments, since the track record is excellent and the number of receivables at risk is small. In addition, it may be necessary to conduct a review whenever new customer orders result in a customer exceeding its allowed credit limit. This issue is dealt with in more detail in the next section, Requests for Credit Increases.

In addition to formal credit reviews, the credit staff's other main form of credit monitoring activity is centered on the accounts receivable aging report. This is a standard report generated by any accounting system, which classifies the age of unpaid accounts receivable by time bucket (such as for invoices that are 0-30 days old, 31-60 days old, and so forth). The credit staff can skim through this report each day to determine which customer receivables are trending longer than usual before being paid, which can trigger a more active and thorough credit investigation. An alternative to the accounts receivable aging report is to review the days sales outstanding (DSO) for each customer, tracked on a trend line. If the DSO suddenly trends or spikes upward, this is a strong indicator of customer payment problems that should trigger a credit review.

Requests for Credit Increases

Customers continually ask for increases in the amount of credit granted to them. There are several ways to deal with these requests, depending upon the perceived duration of the need for credit, and the amount of additional credit requested. Several possible credit-granting scenarios are:

- **One-time small order increase.** A customer may request a small credit increase, perhaps to allow for the acceptance of one incremental order. If so, an option is to grant additional credit just for that order, and then drop the credit level back to its pre-existing level once the order has been paid for by the customer. This approach calls for a small amount of additional monitoring by the credit staff, to reduce the credit level at a later date.
- **Permanent small order increase.** A customer may request a relatively small and permanent increase in its level of credit. If so, this likely result from a gradual, trending increase in the order volume from that customer. This common occurrence calls for a modest review by a credit staff person with a minimal request for additional information by the customer, and probably does not call for an excessive amount of approval escalation within the department.
- **Large increase by old customer.** An existing customer with a lengthy payment history may ask for a large increase in credit. In this case, the credit staff should move the customer to a higher reporting level, such as quarterly financial statements, quarterly credit reports, and oversight by a senior credit employee. Also, the additional amount approved should be escalated to a high level within the organization.
- **Large request by new customer.** The riskiest credit request is a large one from a new customer with which the company has no experience. In this case, the level of investigation is similar to what a lender would impose on a prospective borrower, including financial statements for the past few years, a credit report, an on-site meeting, and approval by the credit manager. Every possible risk mitigation strategy should be considered in this situation (see the Credit Risk Reduction chapter).

The Riskiest Customers

So far, we discussed a number of indicators of payment delinquency, which can be used for ongoing credit monitoring purposes. In addition, there are several types of businesses that are worthy of particularly detailed examination on an ongoing basis. These are:

- **New businesses.** Most new businesses fail within a few years. This is an established fact, so be aware that any new business requesting credit is several times more likely to default on its trade receivables than a more established business.
- **Distributors and retailers with newly-granted credit increases.** Whenever you grant a large increase in credit to a customer, the customer is presumably banking on a ramp-up in its own business in order to sell the goods that you have sold to the customer. However, an increase in business by the distributor or retailer may call for a presumed increase in market share, or extra distribution or marketing efforts that will not be realized. If so, the customer will not sell the goods, and so cannot pay the company.
- **Transitional businesses.** Whenever a customer is transitioning out of one line of business and into another, it is essentially encountering the same conditions that an entirely new business must deal with. In these cases, the risk of default is high. Unfortunately, it can be quite difficult to ascertain when such a change is occurring, since a business may give the appearance of having been in operation for years and give no indication that it is abandoning one line of business and shifting to another.

Key Performance Indicators (KPI)

Days Sales Outstanding (DSO) is a measure of the average number of days a company takes to collect revenue after a sale has been made — in other words, the average collection period. A low DSO means that it takes a company fewer days to collect its accounts receivable (A/R). A high DSO shows that a company is selling its product/service to customers/clients on credit and taking longer to collect related revenues.

$$\frac{\text{Accounts Receivable}}{\text{Total Credit Sales}} \times \text{Number of Days in Measurement Period}$$

As cash drives so much of a business' operations and opportunities, best practices dictate that a company collect outstanding receivables as rapidly as possible. By quickly converting sales into cash, the business can put the cash to use again- ideally, to reinvest and generate sales.

DSO provides a good basic overview of the effectiveness of the account receivable collection policies and staff in charge of executing on these policies. It is also a way for a company to benchmark its own A/R trends, and to compare itself against similar companies and industry-wide DSO results.

Typically, a low DSO indicates that a company collects its outstanding accounts receivables quickly — generally a good business practice. A rising DSO measured over a period may also indicate other business

or operational issues, often including lack of attention on accounts receivables collection efforts or credit policies that may be too generous or lacking in proper analysis before credit is extended.

For some companies, a DSO that trends upward over time can also be an indicator of impending or existing cash flow issues. These issues may require mitigating actions including more aggressive collections activity, re-assessment of credit policies, or an increase in the company's bad debt reserve.

Essentially, there needs to be a "Best Practice" goal, which we can call "Best Possible Days Sales Outstanding." This calculation will look only at current accounts receivable ("current" as defined by your receivables policy). The formula for **Best Possible DSO** is virtually identical to the DSO formula — the only change is to swap out the fraction's numerator from "A/R" to "Current A/R."

$$\frac{\text{Current Accounts Receivable}}{\text{Total Credit Sales}} \times \text{Number of Days in Measurement Period}$$

The Best Possible DSO yields insight into delinquencies as it uses only the current portion of receivables. Therefore, as a measurement, the closer your regular DSO is to your Best Possible DSO, the closer the receivables are to their optimal level.

Notwithstanding this discussion of utilizing DSO as a collections bellwether, we should note that DSO is not the most accurate way to indicate if your company is addressing accounts receivables effectively. DSO can be misleading as it has a key weakness — it fluctuates with revenue. Changes in sales inversely affect DSO. If your overdue receivables balance remains constant, an increase in sales for the month will lower your DSO. If you suddenly experience a dip in sales, your DSO will shoot up. Therefore, it is important to keep in mind that while valuable for benchmarking, DSO alone cannot give you a clear picture of the performance of your A/R. Other measures of collections performance include Average Days Delinquent (ADD) and Collection Effectiveness Index (CEI). These two metrics help complete your A/R picture and together will allow you to gauge the efficacy of your collections efforts.

Most companies measure and compare their DSO to prior periods either quarterly or annually — allowing sometime between measurement dates helps provide a metric that is more reflective of the company's position as the calculation is less susceptible to short-term fluctuations in sales or collections.

Measuring Collections Performance: Average Days Delinquent (ADD)

Average Days Delinquent (ADD), sometimes called Delinquent DSO, calculates the average time from a receivable's due date to its paid date. In other words, it's the average number of days that invoices are past due. It provides a snapshot to evaluate the overall company's collection performance and provides useful information regarding individual customers, customer types, collector segments, etc.

$$\text{Average Days Delinquent (ADD)} = \text{Standard DSO} - \text{Best Possible DSO}$$

Measuring Collections Performance: Collection Effectiveness Index (CEI)

The Collection Effectiveness Index (CEI) is becoming increasingly popular in the credit and collections world. CEI was developed by Dr. Venkat Srinivasan and the Credit Research Foundation. With the Credit Research Foundation collecting statistics, it is also possible to conduct industry benchmarking and comparisons similar to DSO. CEI is a percentage that expresses the effectiveness of collection efforts over time — the closer you are to 100 percent, the more effective your collection effort. CEI is a ratio that measures the quality of collection efforts over time. It is essentially the percentage of receivables closed or paid in a given time period. While “Percent Current” has an implied limit of 100%, this is not the case for CEI.

$$\text{CEI} = \frac{\text{Beginning Receivables} + \text{Month's Invoice Revenue} - \text{End Total Receivables}}{\text{Beginning Receivables} + \text{Month's Invoice Revenue} - \text{End Total Receivables}}$$

CEI is a more appropriate measure of performance over time while DSO is for measuring performance at a single point in time. CEI does not change if a company nets their receivables by removing items they deem disputed and therefore uncollectible. Logically, CEI and DSO should move in opposite directions: if your collections efforts increase, your DSO should decrease. There are certain write-off and revenue conditions, however, under which you might experience DSO and CEI tracking in the same direction.

Tips to Keep in Mind

- DSO data is used with accounts receivable aging reports, which detail outstanding customer debts over four periods (0–30, 30–60, 60–90, and over 90 days). They also show the proportion of total accounts receivable in each period, with figures (derived from the profit and loss account) for potential default and bad debt.
- Cash sales are not included in DSO calculations — only credit sales. Sales of items other than merchandise (like fixtures, equipment and real estate) are also not included.
- For DSO to be meaningful it needs a context, which is usually the company’s own trading terms. Typically, DSO is within reasonable limits if it exceeds terms by no more than one-third to one-half. So, if terms are 30 days, an acceptable DSO might be between 40 and 45 days.
- Like all such calculations, a more accurate picture is obtained if DSO is reviewed regularly — a single analysis may not be representative.

- DSO varies widely between sectors. Some goods are time-limited (such as high-tech products that are quickly superseded by new models) — in which case excessive DSO could indicate problems — while others have a much longer shelf life.

Summary on KPIs

Because DSO alone does not accurately measure performance in credit and collection, we can now arm ourselves with two more indicators for accurately measuring performance; CEI and ADD. When CEI and DSO track the same way because of revenue fluctuations or changes in the company's terms of sale, ADD comes to the rescue and takes both into account.

While DSO has its faults, it is a must-have indicator because it is so well understood and enjoys wide acceptance amongst financial professionals. When combined with the ADD and CEI you can generate a truly complete picture of your accounts receivable performance.

Corporate credit management – strategies and technics

Credit risk is managed in various ways. **The most important techniques to manage credit risk** are:

Selection: A good credit risk management starts with a good selection of the counterparts and products. Good risk assessment models and qualified credit officers are key requirements for a good selection strategy. Important credit decisions are made at credit committees. For counterparts with a higher default risk, more collateral is asked for to reduce recovery risk. Recovery risk is also reduced by requiring more stringent covenants, e.g., on asset sales. A good selection strategy also implies a good pricing of the products in line with the estimated risk.

Limitation: Limitation restricts the exposure of the bank to a given counterpart, it avoids the situation that one loss or a limited number of losses endanger the bank's solvency. The total amount of exposure to riskier counterparts is more restricted by a system of credit limits. The limit setting of the bank determines how much credit a counterpart with a given risk profile can take.

Diversification: The allocation process of banks will provide a good diversification of the risk across various borrowers of different types, industry sectors and geographies. Diversification strategies spread the credit risk in order to avoid a concentration on credit risk problems. Diversification is easier for large and international enterprises.

Credit enhancement: When a bank observes it is too exposed to a certain category of counterparts, it can buy credit protection in the form of guarantees from financial guarantors or via credit derivative products. By the protection, the credit quality of the guaranteed assets is enhanced. This is also known as credit risk mitigation.

The risk management strategy is defined as part of the general strategy. In particular, the credit risk management needs to foster a climate for good business where prices are in line with the risks taken. A strong strategic credit risk management avoids important pitfalls like credit concentrations, lack of credit

discipline, aggressive underwriting to high-risk counterparts and products at inadequate prices. **Four types of credit culture have been identified** in:

1. **Value driven:** The value-driven strategy adheres to long-term and consistent performance and requires a strong credit organization defined by the long-term profit plan. The success of this strategy depends on the balance that needs to be found between credit quality and revenue generation.
2. **Immediate-performance driven:** The immediate-performance-driven strategy defines current earnings to sustain a high stock price as the main priority. Profit generation is defined by the annual profit plan. The credit culture is similar to the value driven, with emphasis on strong credit quality, but for which deviation can be omitted during periods of low credit demand.
3. **Production driven:** For this strategy, market share and volume growth are the highest priority, which is motivated by the ambition to become or to remain a large player on the market. Front office lenders are demanded to produce new loans and may experience difficulties with credit risk loan approvers, because of low credit quality and non-adequate pricing. Loan approvers see their influence limited because of the conflicting interests of value and asset quality. Success depends on the strength of the credit risk management to control the approval process and to keep sufficient asset quality in the growing portfolio.
4. **Unfocused:** In the unfocused strategy, priorities may change frequently to time-varying current priorities. This strategy may result from a reactive management, but also from a lack of a clear long-term vision. It often causes confusion for front-office lenders and risk officers. Portfolio asset quality is only guaranteed when the credit risk department has strong policies and risk systems.

Credit assessment methodology - introduction



Credit analysis is the quantitative and qualitative analysis of a company, which **help to determine the company's debt service capacity**, or how capable it is to pay back its principal payments to the creditors. Credit analysis is concerned with identifying, evaluating and mitigating those risks which may result in a company not being able to meet its creditors' claims.

Credit analysis involves the examination of the link between management performance or capacity and the working relationship of a company's assets, liabilities and equity as shown on its balance sheet, the result of its operations as reflected in its income statement and cash flow. **The evaluation of the company's financial statements and the ratios that indicate the efficiency of the company's performance will thus provide an indicator of the probability of success of the ability to service its debt in the future.**

Credit risk assessment is performed through the development of models usually based on a classification approach, to **distinguish potential defaulters from non-defaulters**. Generally, classification refers to the assignment of a predetermined set of objects into predefined classes (Altman).

In the literature about insolvency prediction, **traditional statistical and econometric techniques like linear discriminant analysis models and multiple logistic regression models** have been widely used to discriminate between failed and non-failed firms on the basis of financial ratios. Altman, Haldeman and Narayanan (1977) were the first to use a statistical model to predict default probabilities of firms, calculating Z-Score using a standard discriminant model. In 1977, Hand and Henley modified the Z-Score by extending the dataset to larger-sized and distressed firms. This model was for many years one of the most prominent models for the calculation of the credit risk evaluation of banks borrowers.

Lately, more accurate ones such as **logistic regression, neural networks, smoothing non-parametric methods and expert systems** have been developed in the field of credit risk measurement by Hand and Henley (1997), Hand and Henley (1997) and Giudici (2003).

First and periodic creditworthiness assessment

The **goal of a first creditworthiness assessment is to determine the level of risk associated with the sale to a new customer** or customer with whom the company has not cooperated for a long time, and to decide on the level of the first trade credit limit. This assessment is meant to answer two questions:

1. Will the customer's **financial situation allow him to repay the debt** within the time limit?
2. Is the customer **trustworthy**?

There are many different systems used to assess creditworthiness. However, all are based on the same principles of enterprise assessment and external factors in its environment.

Following the increase in confidence and deepening of cooperation, it is legitimate to provide larger credit limits to the customers, of course within reasonable boundaries.

It is true, however, that even trusted customers, who pay their debts on a regular basis if they maintain high levels of debt to the company (in other words, maintain a high level of merchant credit), are risking their business from becoming insolvent in the future.

Continuous, periodic credit scoring methods are designed to ensure that the counterparty's financial position does not change in a negative way, threatening its ability to pay its liabilities. In fact, it is not different from the preliminary analysis. Often, however, it is more cursory and focuses mainly on:

- Monitoring of subsequent counterparty financial statements for signs of changes suggesting an imminent loss of solvency,
- Monitoring third party Debt Registers, as a rule, through periodic reports received from the business intelligence,
- Observation of changes in the management and analysis of these changes.

It is good practice to conduct **periodic analysis of each customer** at least once a year. However, this is a relatively expensive and time-consuming undertaking. Many companies use a variable rate strategy, depending on the risk that a potential customer has, e.g.:

- **The largest customers** whose insolvency would cause severe losses are analyzed regularly - every year or every 6 months,
- **Another customer pool** - "medium size" - is evaluated once every 3 years,
- **Other customers** whose insolvency would not be a big deal are assessed randomly - for example, if there are significant changes in their industry or where several customers in the sector are experiencing liquidity problems - in the same sector.

Analysis strategies may vary. A company must choose the one that will be effective for it and will minimize the occurrence of unpaid claims, on the other hand, without generating excessively high costs associated with credit analysis.

Assessment of credit rating system

As with any risk management system, the **customer credit rating system should also be reviewed** once for its effectiveness. A system created at one point, for example during strong economic growth, may become ineffective after a few years - for example, during a recession.

A periodic evaluation of the system will allow the company to see when its performance will begin to weaken and allow for remedies.

It can also be reversed. Evaluation may show that rigorous and time-consuming evaluations are not necessary and can be reduced to cost savings without increasing the level of outstanding payments.

5C/6C, CAMPARI (ICE), 5P, LAPP, FAPE concepts

There are many different models (systems, techniques) used to assess the creditworthiness. However, all are based on the same **principles of enterprise assessment and external factors in its environment**.

A widely used methodology is to evaluate an enterprise based on the **5C/6C** in English banking:

1. Capacity / Cash Flow
2. Capital
3. Collateral
4. Conditions
5. Character
6. Confidence (as a trust – recently added to the analysis)

Capacity to repay is the most critical of the five factors; it is the primary source of repayment – cash inflows and cash generated by the company. The prospective lender will want to know exactly how the borrower intends to repay the loan. The lender will consider the cash flow from the business, the timing of the repayment, and the probability of successful repayment of the loan. Payment history on existing credit relationships - personal or commercial- is considered an indicator of future payment performance. Potential lenders will also want to know about other possible sources of repayment.

Capital is the money personally invested in the business by the shareholder borrower and is an indicator of how much the shareholder has at risk should the business fail. Interested lenders and investors will expect a contribution from borrower's own assets and to have undertaken personal financial risk to establish the business before asking them to commit any funding. The capital investment is seen also as a proof for shareholder's commitment in the business.

Collateral (or guarantees) are additional forms of security the customer can provide the lender. Giving a lender collateral means that an own asset is mortgaged, such as a property, to the lender with the agreement that it will be the repayment source in case the loan is not repaid from the established sources as per terms and conditions agreed for the financing. A guarantee, on the other hand, is just that - someone else signs a guarantee document promising to repay the loan if the initial lender cannot. Some lenders may require such a guarantee in addition to collateral as security for a loan. A collateral is considered „the second way out” by the lender in case the credit goes wrong.

Conditions describe the intended purpose of the loan and the conditions under which the credit is being granted. Will the money be used for working capital, additional equipment, inventory or for a long-term investment? The lender will also consider local and macro-economic conditions and the overall climate, both within the industry and in other industries that could affect the business.

Character is the general impression the customer makes on the prospective lender or investor. The lender will form a subjective opinion as to whether the company is sufficiently trustworthy to repay the loan or generate a return on funds invested in the company. The background and experience in business and in the industry, will be considered. The quality of the references and the background and experience levels of employees will also be reviewed.

A popular judgmental template used in the banking industry is **CAMPARI (ICE)**. This is, a summary of banks' good lending practices. CAMPARI (ICE), which relates to the performance risk in lending, stands for the following:

- C** character (of firm and its managers)
- A** ability (of managers/directors)
- M** means (of repayment based on financial resources of the credit)
- P** purpose (of credit)
- A** amount (in absolute and relative terms)
- R** repayment (how, when, likelihood)
- I** insurance (what will ensure repayment – if anything)

Character refers to the integrity of the business and its management. Honest borrowers of good character are more likely to meet their obligations.

Ability refers to the legality of the contract between the bank and customer. A company's directors must act within the legal authority granted to them in their Articles of Incorporation.

Means refers to the borrower's financial, technical and managerial means.

Purpose refers to the reason for granting credit, which must be unambiguous and acceptable to the lender. For example, an acceptable purpose would be borrowing to fund faster growth of a company.

Amount refers to the quantity of the loan which should be sufficient to cover the purpose of the borrowing.

Repayment relates to the ability of the borrower to repay the loan, by considering the source of repayment. This repayment ability is obviously of critical importance in lending and should be demonstrated not through projected future accounting profits but from projected cash generation. In deciding the form of lending, a credit provider would also need to consider the repayment structure being considered, e.g. bullet (a one-off lump sum repayment of the principal) or amortizing (that is, principal repayment through instalments).

Insurance refers to a safety net that the bank can rely on if the loan is not repaid. This might be collateral, or the security provided in the loan, the conditions under which the loan is granted, or third-party credit-enhancement.

ICE is the lender's rewards for assuming the performance risk and stands for:

- I** interest (paid on borrowing)
- C** commissions (paid to the lender)
- E** extras (cost of granting credit)

Interest refers to a key factor, namely the overall interest cost to the customer. This will comprise two elements, firstly the underlying cost of funds (which could be fixed at the outset or variable) and secondly

the margin. It is usually the case that the higher the risk of a transaction, the greater the interest cost. Note in bank terms this is simply an application of risk pricing.

Commissions these refer to all other fees, such as a commitment fee, payable to the bank for agreeing to provide a facility for a particular time period.

Extras relate to additional hidden costs, such as legal fees, associated with the provision of a loan.

The **5P's** is another method of evaluating credit applications. It was developed by the Federal Reserve Center (Fed 2004) which consists of:

People: Does the borrower have a history of being honest, reputable and timely in honoring his or her financial obligations?

Purpose: There should be a specific explanation of how the borrower is going to use the funds. Don't settle for a simple description such as "working capital."

Payment: Knowing the purpose helps identify sources of repayment and aids in structuring the loan repayment schedule based on the timing of the borrower's receipt of funds (cash flow).

Protection: This is collateral and other secondary sources of loan repayment. Protection is last on the list of P's for good reason.

Prospective (Plan): How will the loan be supervised, and in the case of borrower default, what will the bank do? The plan to supervise should specify how the loan will be monitored, including financial reporting by the borrower, and periodic inspections of the borrower's operations.

LAPP Method developed by Benz (1979) is used more for evaluating corporate credit applications than individual borrowers. LAPP is an abbreviation for the following:

Liquidity: which measures the ability of the firm to repay its short-term obligations? Banks use quick ratio or liquidity ratio to measure the liquidity of the firm.

Activity: which measures the size of the firm and its operations, some percentages are used, such as asset turnover, inventory turnover, average collection period, and average payment period.

Profitability: which measures how profitable the firm is. Some ratio is used such as return on assets (ROA), return on equity (ROE), gross or profit margin.

Potential: this measures the resources and strength the firm has, such as financial resources, human resources, management level, and other strength the firm might have.

Financial Analysis and Previous Experience Methods (FAPE)

This method depends on analyzing the financial records of the applicants and on its past records of credit. The bank analyzes financial statements such as the income statement, Balance sheet, cash flow statement and from these statements computes some ratios, such as the liquidity ratio and profitability ratios such

as: ROA, ROE, and operation ratios such as Asset Turnover ratio, and other ratios such as: EPS, Debt Ratio etc. From these ratios the credit officer can evaluate the firm and decide if it is credit worthy or not. This method is usually used in addition to some of the above methods and banks do not depend on it alone, because some information is lacking, especially about the customer's attitude and past experience (Credit Records).

Credit rating models – concepts and classification

Credit risk analysis of business partners can be based on qualitative, quantitative and mixed methods.

- **Qualitative methods** are based on the observation of phenomena, factors, cases and cause-and-effect relationships that cannot be quantified. The effect of such methods is usually the sequence of recipients ranked according to the increasing or decreasing risk. The solutions obtained by these methods are highly subjective.
- **Quantitative methods** are based on the measurable data. They include a wide range of risk analysis methods from indicator analysis to econometric models. Quantitative methods give objective results but do not consider important (sometimes) qualitative data. The results are also inaccurate in the long run, so the calculations need to be repeated from time to time.
- **Mixed methods** use both measurable and non-measurable data. These types of methods are most commonly used in the business practice.

Here below is another, probably most wide, classification of models (techniques) used to assess the creditworthiness:

Financial models based on financial theory, analysis of cash flows and market prices:

- Financial structure (Merton model, KMV model)
- Cash flow (Gambler's ruin, Cash-flow simulations)
- Market implied (Reduced-form models, Bond, derivative and equity prices)

Financial models provide a theoretical framework to assess the risk of the counterpart. Their theoretical foundation makes structural models intuitively appealing: their functioning can be explained and understood even in the absence of data. While other models rely only on the observed data and statistical analysis, structural models can be defended based on the theoretical framework. Of course, one always needs to assess its functioning in practice to see whether all assumptions in the model derivation are also observed on real data.

Empirical data based models estimate and explain risk parameters based on historical observations identify risk factors from historical data using many statistical techniques, artificial intelligence and machine learning:

- Statistics (Linear regression, Logistic regression, Additive models)

- Artificial intelligence (Neural networks, Support vector machines, Kernel-based learning)
- Machine learning (Nearest neighbors, Decision trees, Graphical models)

A disadvantage of structural (financial) models is that their theoretical background may not always match completely with empirical observations. When one has sufficient data, one estimates empirical statistical models of which the parameters and also the structure is learned from the data. Statistical models determine empirically a valid relation between explanatory variables and the explained variable. Explanatory variables are also called input variables, independent variables or risk drivers. Financial ratios are typical explanatory variables. The explained variable is also known as the dependent or target variable. The target variable is typically a risk measure like LGD. In the case of default risk, it is a binary variable indicating the default status or a default risk measure, like external ratings. A famous example of an empirical statistical model is the Altman Z-score Model.

Expert models that reflect expert knowledge use formal expert models created by experienced analysts or are based on an analysis of individual business cases:

- expert techniques (expert system, expert scorecard)
- expert judgment (expert judgment of probability of bankruptcy, expert judgment)

Expert models have the same structure as statistical models, the difference is that the parameters are determined by financial experts, not by statistical estimation procedures. Expert models formalize the rating process in the case of low data availability and provide a medium to pass knowledge from experienced analysts to junior analysts in the organization. Because the expert models are not empirically determined on the data, they have similar potential weaknesses as expert human judgment. The advantage of expert models is their financial intuition and the definition of an explicit rating framework. The latter allows formal verification of the expert assumptions and the model to be updated when data becomes available. The properties of expert models are partially those of empirical statistical models and partially those of expert human judgment. Expert models are, at least partially, often used in low default portfolios.

Credit risk signals and credit events

A key part of corporate credit risk monitoring is being able to detect signs of customers' distress / failure and can take appropriate actions before it is too late.

The most notable qualitative corporate failure prediction model is **Argenti's A score model**. Argenti suggested that the failure process follows a predictable sequence:

Defects. Companies approaching bankruptcy mostly have some common defects in their performance, which are obvious well ahead of the actual failure.

Mistakes. Because of these mistakes accumulation, the company can make a fatal mistake, which would lead to bankruptcy.

Symptoms. Mistakes made by the company's management reveal some known symptoms of the upcoming insolvency: deterioration of indicators, lack of cash. Usually, these symptoms appear during last two or three years of the process that leads to insolvency, which, in its turn, lasts from five to ten years.

Bankruptcy. The final stage in which the bankruptcy and liquidation of the enterprise takes place.

Internal and external causes of increased credit risk

Understanding why businesses fail can help the corporate credit manager recognize the ominous signs that portend trouble. Roughly 80 percent or more of business failures are traceable to **internal or management-controlled factors**. These factors are many, including:

- **Autocratic management** evidenced by a reluctance to delegate authority or train new management. When managers continue to do the work that should be done by others, management becomes over extended. The problem is further compounded because often this situation produces unclear lines of authority.
- **Ineffective communications** between management and employees. Unnecessary or ineffective meetings, management information or interdepartmental coordination can destroy a business as it grows.
- **Neglect of human resources** indicated by excessive turnover rates. Turnover is a sign of serious problems; ignoring these problems results in low morale, lost wages, lack of production, and lost business.
- **Inefficient compensation and incentive programs** yielding unsatisfactory results. While it seems logical to reward for successful job performance, many companies unwittingly reward employee performance far different from that outlined in the job description.
- **Company goals not achieved.** Failure to meet goals often means goals are not clearly understood. The problems can also indicate failure to get all stakeholders to "buy in."
- **Deteriorating business from established clients and new prospects.** When long-term clients reduce their amount of business, this usually means the company is not meeting the customers'

needs. Failure to secure new business is often a sign that strategies are outdated, and management is out of touch with the marketplace.

- **Inadequate analysis of markets and strategies.** Disciplined analysis is one business strategy that is often overlooked. A company whose products or services are developed before market needs are reviewed often must create their own demand to survive. This will cost a business several times more than a product or service that meets an existing demand.
- **Lack of timely financial information.** Financial and management reports that are late or contain irrelevant or inaccurate information hamper management's ability to understand its true financial performance. Many businesses are managed on profit and loss performance rather than cash flow.
- **History of failed expansion plans.** Expansion plan setbacks not only drain a business' cash, time, and morale, but also create reluctance to embark on future growth and expansion plans. Expansion efforts often fail due to lack of cash, management expertise, or thorough market analysis.
- **Uncontrolled or mismanaged growth.** Many businesses focus solely on one piece of the business (e.g., sales growth, operations, or supporting infrastructure) and neglect the other aspects. As a result, the business functions do not support each other, which severely impedes the firm's ability to support growth.

On the other hand, management may blame the business' misfortunes on **external factors that management believes to be beyond its control**, such as:

- General economy;
- Unfavorable legislation;
- Interest rate fluctuations;
- Labor unrest;
- Labor cost increases;
- Competition;
- Litigation;
- Market decline;
- Raw material cost increases.

Instead, management must be realistic, be held accountable, and correct the situation. This is not to say that management is inept; but to survive, management must maintain a constant vigil over its operations and its objectives. Capitalism breeds both success and failure. Darwin is alive and well in the marketplace: only the fittest survive.

Warning indicators of a business heading toward trouble

Companies susceptible to trouble

All businesses are as vulnerable to trouble as they are to the lure of success. We live in a world of wildly changing technologies. Even with these changes, a properly managed business will continue to prosper. However, some industries are more susceptible to trouble than others.

The fortunes of companies in **cyclical industries** often depend upon uncontrollable external forces such as commodity prices or weather conditions. Those most likely to withstand the effects of these forces are those that either diversify without losing sight of their objectives, or that are able to control fixed costs in the face of unstable conditions. The ability to adapt is critical.

Companies in newly **deregulated industries** must learn to survive in a competitive environment without the legal protections they previously enjoyed. Deregulation generally is accompanied by an anticipated shake out of the weakest businesses as competitive forces take hold in the marketplace.

As the U.S. has evolved from a primarily manufacturing driven economy to increasingly **service oriented industries**, management must recognize that its most irreplaceable assets walk out the door every night. Managing human resources is more important than ever.

Companies lacking a proprietary product, or "me too" companies, are subject to attack from every direction. These companies, such as retail businesses and non-licensed service sector businesses, generally face low entry barriers with respect to both capital and expertise.

Many entrepreneurial companies and startups are limited to a single product or a passing fad. To ultimately succeed, **single product and single customer companies** usually must develop new products or diversify to protect themselves from powerful competitors, customers, and changing currents. Few are able to maintain their start up success as they struggle to compete. Reaching maturity takes years during which a company is vulnerable.

Rapidly growing companies often are driven by entrepreneurial zeal and by an overwhelming emphasis on sales growth, while inadequate attention is given to the effects of growth on the balance sheet. These companies suddenly find themselves in a situation where the balance sheet simply cannot support the growth.

Highly leveraged businesses have so many factors that must converge to be successful that they are often most susceptible to the external uncontrollable causes of business failure, such as interest rate fluctuations or an increase in raw material costs.

Closely-held and family-owned businesses, by their nature, select leadership based not on managerial ability but by virtue of family or close personal relationships with the shareholders. More than in other businesses, owner/managers link their personal psyche to that of their business. Owner/managers often believe that they are irreplaceable or are afraid to admit it. They want to maintain control ad infinitum, failing to either develop a management team or a plan for transition of management. Owner/managers are reluctant to acknowledge the early warning signs of failure and are also apt to ignore them.

Perhaps **declining industries** face the most challenging task of all in preventing failure. Declining industries are those in which total industry wide unit shipments are declining. Maintaining market share involves taking business from competitors. Management that refuses to admit that the industry is declining or bets its future on industry recovery, is the most prone to failure.

Entrepreneurial hazards. Approximately 70 percent of entrepreneurs and start-ups fail within two years. Entrepreneurs do not necessarily have managerial abilities. They have visions of what the future will look like before the rest of us know to invent the better mouse trap. Their modus operandi is to capitalize on their head start as a way to convert their vision to a profitable reality. The same skills that keep an

entrepreneur focused on an idea, regardless of obstacles, can make him oblivious to the competition on his heels or to new changes in the market. Ultimately the market catches up, forcing them to compete in a mature industry rather than in an emerging industry. As entrepreneurs survive the transition to professional management and new technologies gain a stronghold on the economy, emerging industries are born.

How to diagnose a trouble?

What are the warning indicators of a business heading toward trouble? Trouble can come from a variety of circumstances. The obvious signals are rarely the root cause of the problem. Losing money; for example, is not the problem; it is the result of other problems.

The list of warning indicators below is by no means all inclusive, but it may provide both a barometer and some insight as to why the company is facing difficulty. They include:

- Decrease in profit margins
- Decrease in sales
- Continued failure to meet bank loan covenants
- Decrease in available cash

Indicators connected with a company's operational performance include:

- Lack of both short and long-term planning and forecasting
- Quality control problems, such as increased returned goods and customer complaints
- Late or slow delivery
- Increase in fixed costs relative to revenues
- Management and employee turnover
- General employee dissatisfaction and performance
- Employee layoffs
- Declining revenues per employee
- Trade credit difficulties and restrictions
- Failure to take purchase and other cash discounts
- Delay in returning telephone calls
- Delay in submitting financial statements to banks, lenders, and suppliers
- Board of Directors resignations
- Board of Directors failure to diligently exercise its oversight function
- Return of the "retired" founder to a visible management position
- Failure to adapt to new technologies

Symptoms associated with a business' poor utilization of assets include:

- Worsening cash position—reduced working capital
- Decrease in quick asset ratio
- Increase in the debt to equity ratio
- Dwindling capital base

- Declining asset turnover rate
- Declining accounts receivable turnover rate
- Deteriorating account receivable aging
- Declining inventory turnover rate
- Deteriorating account payable aging
- Creeping loan balances
- Reduced R&D expenditures
- Changing accounting principles
- Financing the purchase of fixed assets out of working capital
- Overpaying for assets or business units
- Acquisitions of, or expansion into, non-core related businesses or into businesses which cut into or compete with the core business

Credit events

Credit event is an any sudden and tangible (negative) change in a borrower's credit standing or decline in credit rating. A credit event brings into question the borrower's ability to repay its debt.

The market that has developed in credit risk transfer, known as credit derivatives, has led to the formalization of what constitutes credit events. The following list gives the **principal types as usually defined** in the documentation for these instruments:

Bankruptcy or insolvency under corporate law: In this case the legal entity is dissolved having been declared bankrupt or insolvent by a commercial court.

Credit upon a merger: assets are transferred (with a negative impact on the ability to pay) or the legal entity is consolidated into another company.

Cross acceleration: other obligations of the legal entity become due prior to maturity due to a breach of contract. (In debt contracts, covenants – which are legally binding requirements on the borrower – get breached which leads to repayment being mandated.).

Cross default: obligations of the legal entity have been declared in default. Under debt contracts, failure of one set of obligations to perform leads to the automatic declaration of other obligations to be in default, even if these obligations have not experienced any breach of contract (covenant).

Currency convertibility: foreign exchange controls in a particular country or countries prevent repayments in affected currency or currencies. Note that currency convertibility is usually linked with currency risk. Country risk is the risk associated with lending to a particular country, whereas default risk which is usually company specific.

Downgrade: the situation where an obligor has a downward, hence adverse, change made in the independently and publicly available credit opinion (known as a credit rating) on the obligor. This can include the cancellation of the available rating. A downgrade may lead to holders to have to sell the obligor's debt securities.

Restructuring: the legal entity defers or reschedules outstanding debt(s): reduces the interest payable, postpones payments, changes the obligation's seniority or extends its maturity.

Failure to pay: the legal entity is not able or does not make the contractual payment.

Government action: any action(s) by a government or an agency of government that results in outstanding claims becoming unenforceable against the legal entity.

Market disruption: the situation where the tradable securities of the obligor cease trading.

Moratorium on debts: the legal entity declares a standstill on its existing debts and interest payments.

Obligation acceleration: a contractual obligation becomes payable before its due maturity due to default by the legal entity. This is similar to, but not identical to, cross default since it refers to a direct obligation with an affected party, whereas cross default refers to a third party.

Obligation default: an event of default has occurred in the legal entity's obligations.

Repudiation: the legal entity disaffirms or disclaims its debts.

Cooperation with external entities

One of the important elements of the credit risk management process is the **comparative analysis of potential borrowers**. The next step is to **determine the market** in which the analyzed entity is functioning and comparing the analyzed enterprise with data from other entities of the same industry and against the entire branch in the country.

According to the above, a particularly important determinant of this industry analysis is the appropriate selection of information, its acquisition and accumulation in the computerized database system. The external databases provided by the business intelligence help. The information obtained in this way increases the objectivity of credit analyzes.

[Business intelligence, credit rating agencies and other sources of credit information.](#)

BUSINESS INTELLIGENCE AGENCIES

A valuable source of financial information, apart from the documents presented by the borrower, are reports prepared by external entities based on the publicly available data. A good example are the reports compiled by business intelligence agencies.

Business intelligence is based on open-source intelligence, i.e. the source of their data is always open and public. For instance: National Court Register, Economic Monitors (government press), management interviews, prospectuses, business activity registers, statistical offices, economic chambers, press etc. Under no circumstances will a business intelligence be allowed to break the law when preparing a business report or collecting data. At the special request of the client, the business intelligence proposes a "Verification Report", which combines the features of the trade report as well as the features of the detective report. The report verifies basic registration data of the examined entity, the way of representation of the company. The report contains photographic documentation, provides information on the quality and size of the car fleet, and in addition, it allows you to know the legal and, above all, technical conditions of the company's real estate.

Business intelligence should be distinguished from spying, which is meant to be an attempt to gain access to classified information using legally prohibited means.

Among the variants of the concept of "business intelligence" most often mentioned are:

Competitive Intelligence. The process of collecting and analyzing information about competitors' strengths and weaknesses in a legal and ethical manner to enhance business decision-making. Competitive intelligence activities can be basically grouped into two main types: (1) **Tactical**, which is shorter-term and seeks to provide input into issues such as capturing market share or increasing revenues; and (2) **Strategic**, which focuses on longer-term issues such as key risks and opportunities facing the enterprise.

Business Intelligence (BI), comprises the strategies and technologies used by enterprises for the data analysis of business information. BI technologies provide historical, current and predictive views of business operations. Common functions of business intelligence technologies include reporting, online analytical processing, analytics, data mining, process mining, complex event processing, business performance management, benchmarking, text mining, predictive analytics and prescriptive analytics. BI technologies can handle large amounts of structured and sometimes unstructured data to help identify, develop and otherwise create new strategic business opportunities. They aim to allow for the easy interpretation of these big data. Identifying new opportunities and implementing an effective strategy based on insights can provide businesses with a competitive market advantage and long-term stability.

Economic Intelligence deals with the management of acquired macroeconomic information gained, which means understanding the flow of financial and non-financial resources within a given country or global organization, reinvestment and foreign investment policy, and resources and capacities, as well as other issues that may explain the possibilities for production. assets.

Due Diligence is an investigation of a business or person prior to signing a contract, or an act with a certain standard of care. It can be a legal obligation, but the term will more commonly apply to voluntary investigations. A common example of due diligence in various industries is the process through which a potential acquirer evaluates a target company or its assets for an acquisition. The theory behind due diligence holds that performing this type of investigation contributes significantly to informed decision making by enhancing the amount and quality of information available to decision makers and by ensuring that this information is systematically used to deliberate in a reflexive manner on the decision at hand and all its costs, benefits, and risks.

Commercial Intelligence (CI), is the highest and most comprehensive form of legal, ethical open-source intelligence as practiced by diverse international and localized businesses. Competitive intelligence focuses primarily on competitors and their capabilities within shared market spaces. Business intelligence is a misnomer for data mining and enterprise dashboards that present useful patterns or distillations of internal information to the executive. Commercial Intelligence is the process of defining, gathering, analyzing and distribution accurate and relevant intelligence regarding the products, customers, competitors, business environment and the organization itself. This methodical program affects the organization's tactics, decisions and operations.

According to the above definitions, Business Intelligence, Economic Intelligence and Due Diligence, often translated as economic (business or economic) intelligence, are not strictly Business Intelligence but business, economic, financial and legal analysis. A Competitive Intelligence is a kind of spying which is the easiest way to cross the border between legal and ethical actions and economic espionage.

The credit report prepared by the business intelligence provider includes:

- contact details of the entity
- registration data: composition of the management, representation, composition of the supervisory board
- company history, business object, market share, key customers, key suppliers
- information on subsidiaries, as well as capital and personal relationships

- capital, property, employment
- directions and volume of import and export
- realized or planned investments, mergers or acquisitions
- financial statements of the entity
- solvency, assessment of payments, collection proceedings
- name of banks serving
- creditworthiness assessment
- timely payment of liabilities (so-called payment morality)
- analysis of the financial result of the entity against the background of the sector

CREDIT RATING AGENCIES

Credit ratings provide individual and institutional investors with information that assists them in determining whether issuers of debt obligations and fixed-income securities will be able to meet their obligations with respect to those securities. Credit rating agencies provide investors with objective analyses and independent assessments of companies and countries that issue such securities. Globalization in the investment market, coupled with diversification in the types and quantities of securities issued, presents a challenge to institutional and individual investors who must analyze risks associated with both foreign and domestic investments. Historical information and discussion of three companies will facilitate a greater understanding of the function and evolution of credit rating agencies.

Credit rating is an assessment of the creditworthiness of a borrower in general terms or with respect to a particular debt or financial obligation. A credit rating can be assigned to any entity that seeks to borrow money – an individual, corporation, state or provincial authority, or sovereign government. Credit assessment and evaluation for companies and governments is generally done by a credit rating agency such as Standard & Poor's, Moody's or Fitch. These rating agencies are paid by the entity that is seeking a credit rating for itself or for one of its debt issues.

Credit ratings for borrowers are based on substantial due diligence conducted by the rating agencies. While a borrower will strive to have the highest possible credit rating since it has a major impact on interest rates charged by lenders, the rating agencies must take a balanced and objective view of the borrower's financial situation and capacity to service/repay the debt.

A credit rating not only determines whether or not a borrower will be approved for a loan, but also the interest rate at which the loan will need to be repaid. Since companies depend on loans for many start-up and other expenses, being denied a loan could spell disaster, and a high interest rate is much more difficult to pay back. Credit ratings also play a large role in a potential buyer's determining whether or not to purchase bonds. A poor credit rating is a risky investment; it indicates a larger probability that the company will not pay off its bonds.

It is important for a borrower to remain diligent in maintaining a high credit rating. Credit ratings are never static, in fact, they change all the time based on the newest data, and one negative debt will bring down even the best score. Credit also takes time to build up. If an entity has good credit but a short credit history, that isn't seen as positively as the same quality of credit but with a long history. Debtors want to know a borrower can maintain good credit consistently over time.

Reports and studies supporting credit analysis

The institutions mentioned above, as well as other institutions, publish cyclical reports and analyzes regarding payment morality of business entities, contractual payment dates as well as actually realized payments between contractors. All this can be valuable information for analyzing the risk of trade credit.

Among available analyzes and reports, the following should be mentioned above all:

- Coface: <http://www.coface.pl/AKTUALNOSCI-I-MEDIA/Publikacje>
- Instytut Badań nad Gospodarką Rynkową: <http://www.ibngr.pl/Publikacje/Mapa-Ryzyka-Inwestycyjnego>
- Euler Hermes: <http://www.eulerhermes.pl/analizy-ekonomiczne>
- Korporacja Ubezpieczeń Kredytów Eksportowych: <http://www.kuke.com.pl/serwis-ekonomiczny>
- Industry Performance Forecast published by Atradius: <https://atradius.co.uk/industry-performance-forecast.html#>

An interesting source of information are also data from economic services such as:

- Giełda Papierów Wartościowych w Warszawie: <https://www.gpw.pl/>
- Reuters: <http://www.reuters.com/>
- Bloomberg: <https://www.bloomberg.com>
- Eurostat: <http://ec.europa.eu/eurostat>

Credit risk mitigation – receivables management vs. security instruments

Every time a company grants credit to a customer, it is at full risk of not collecting the entire billed amount from the customer. In some industries, a remarkably high percentage of these receivables are at considerable risk of default, so there is a potentially massive amount of bad debt associated with credit sales that could bankrupt a company.

There are a variety of ways to deal with the prospect of bad debts. Some businesses grant credit only to the most financially stable customers. Other businesses use credit risk as a competitive weapon, scooping up those customers that no one else wants in exchange for bearing a higher risk of default. Both of these strategies can be improved upon through the judicious use of credit risk reduction. By using the tools described in this chapter, an excessively conservative business can grant credit to more customers, while an aggressive company can reduce its bad debts on credit sales to higher-risk customers.

The suggestions in this chapter can generally be aggregated into the following classifications of risk reduction:

- **Find alternate payer.** Someone besides the customer agrees to also be liable for payments, or to pay insurance claims for bad debts.

- **Retain ownership.** There are a variety of ways to retain a legal interest in goods sold, so that the goods can be recovered.
- **Offload ownership.** Once an invoice is issued, transfer ownership of the invoice to a third party in exchange for cash, so that the new owner bears the risk of default.
- **Pay early.** Require the acceleration of payment by customers, so that only smaller payments are at risk of default, and for shorter periods.

By using a mix of these tools, a credit manager can achieve a significant reduction in the amount of bad debt risk that may be incurred, even while extending credit to customers that are not entirely financially sound.

Protecting cash flow vs. protecting margin

The company's credit policy towards counterparties is shaped by specific instruments that are assigned to certain customer groups, identified by credit risk classes. These instruments include payment terms, discount rates and credit limits.

Customers' financing is a necessity that most businesses are facing. In many cases, it is the cause of the tensions and the financial difficulties of the suppliers. In order to eliminate or reduce these difficulties, companies can use factoring, forfaiting, and various customer insolvency instruments.

It is important to keep in mind that all cost money, and insurance is helpful but for the long run. In managing current liquidity, tools like factoring and invoice discounting are helpful.

Factoring and forfaiting

FACTORING

Factoring may broadly be defined as the relationship, created by an agreement, between the seller of goods/services and a financial institution called "factor", whereby the latter purchases the receivables of the former and also controls and administers the receivables of the former.

Factoring may also be defined as a continuous relationship between financial institution (the factor) and a business concern selling goods and/or providing service (the client) to a trade customer on an open account basis, whereby the factor purchases the client's book debts (account receivables) with or without recourse to the client - thereby controlling the credit extended to the customer and also undertaking to administer the sales ledgers relevant to the transaction.

The term "factoring" has been defined in various countries in different ways due to non-availability of any uniform codified law. The study group appointed by International Institute for the Unification of Private Law (UNIDROIT), Rome during 1988 recommended, in simple words, the definition of factoring as under:

Factoring means an arrangement between a factor and his client which includes at least two of the following services to be provided by the factor:

- Finance
- Maintenance of accounts
- Collection of debts
- Protection against credit risks

The above definition, however, applies only to factoring in relation to supply of goods and services in respect of the following:

- To trade or professional debtors
- Across national boundaries
- When notice of assignment has been given to the debtors.

The development of factoring concept in various developed countries of the world has led to some consensus towards defining the term. Factoring can broadly be defined as an arrangement in which receivables arising out of sale of goods/services are sold to the “factor” as a result of which the title to the goods/services represented by the said receivables passes on to the factor. Hence the factor becomes responsible for all credit control, sales accounting and debt collection from the buyer.

Factoring business is generated by credit sales in the normal course business. The main function of factor is realization of sales. Once the transaction takes place, the role of factor steps in to realize the sales/collect receivables. Thus, factor act as an intermediary between the seller and till and sometimes along with the seller’s bank together.

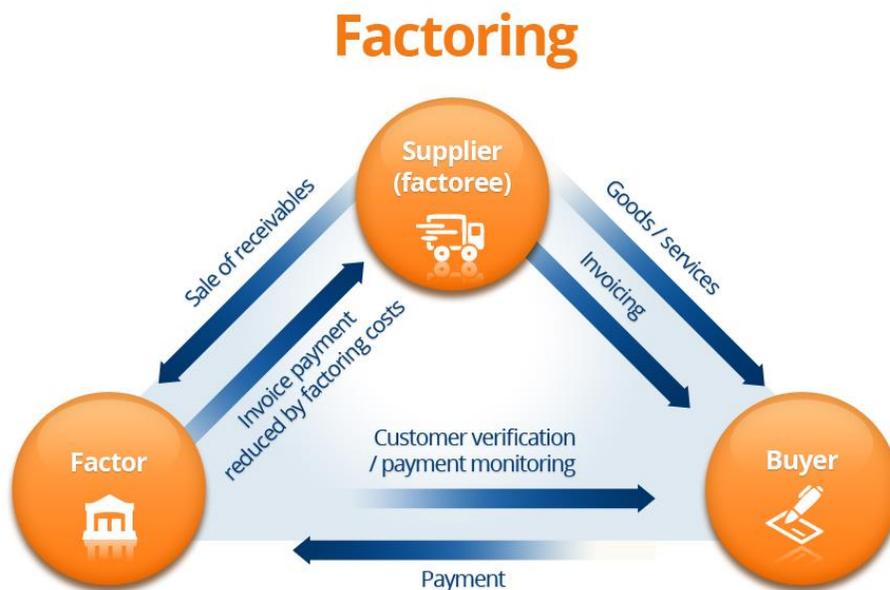


Figure 2. Factoring mechanism; source: Unity Trade Credit Broker (<http://www.unitybroker.pl>)

The mechanism of factoring is summed up as below:

1. An agreement is entered into between the selling firm and the firm. The agreement provides the basis and the scope understanding reached between the two for rendering factor service.
2. The sales documents should contain the instructions to make payment directly to the factor who is assigned the job of collection of receivables.
3. When the payment is received by the factor, the account of the firm is credited by the factor after deducting its fees, charges, interest etc. as agreed.
4. The factor may provide advance finance to the selling firm conditions of the agreement so require.

FORFAITING

Forfaiting is a method of trade finance that allows exporters to obtain cash by selling their medium and long-term foreign accounts receivable at a discount on a “without recourse” basis. A forfaiter is a specialized finance firm or a department in a bank that performs non-recourse export financing through the purchase of medium and long-term trade receivables. “Without recourse” or “non-recourse” means that the forfaiter assumes and accepts the risk of non-payment. Similar to factoring, forfaiting virtually eliminates the risk of non-payment, once the goods have been delivered to the foreign buyer in accordance with the terms of sale. However, unlike factors, forfaiters typically work with exporters who sell capital goods and commodities or engage in large projects and therefore need to offer extended credit periods from 180 days to seven years or more. In forfaiting, receivables are normally guaranteed by the importer’s bank, which allows the exporter to take the transaction off the balance sheet to enhance key financial ratios.

The current minimum transaction size for forfaiting is \$100,000. In the United States, most users of forfaiting are large established corporations, but small and medium-size companies are slowly embracing forfaiting as they become more aggressive in seeking financing solutions for exports to countries considered high risk.

Key Points

- Forfaiting eliminates virtually all risk to the exporter, with 100 percent financing of contract value.
- Exporters can offer medium and long-term financing in markets where the credit risk would otherwise be too high.
- Forfaiting generally works with bills of exchange, promissory notes, or a letter of credit.
- In most cases, the foreign buyers must provide a bank guarantee in the form of an aval, letter of guarantee or letter of credit.
- Financing can be arranged on a one-shot basis in any of the major currencies, usually at a fixed interest rate, but a floating rate option is also available.
- Forfaiting can be used in conjunction with officially supported credits backed by export credit agencies such as the U.S. Export-Import Bank.

How Forfaiting Works?

The exporter approaches a forfaiter before finalizing the transaction’s structure. Once the forfeiter commits to the deal and sets the discount rate, the exporter can incorporate the discount into the selling price. The exporter then accepts a commitment issued by the forfaiter, signs the contract with the importer, and obtains, if required, a guarantee from the importer’s bank that provides the documents

required to complete the forfaiting. The exporter delivers the goods to the importer and delivers the documents to the forfaiter who verifies them and pays for them as agreed in the commitment. Since this payment is without recourse, the exporter has no further interest in the financial aspects of the transaction and it is the forfaiter who must collect the future payments due from the importer.

Guarantees (bank, corporate, individual)

There are several alternative kinds of guarantee that the seller can request from a customer in order to reduce the risk of non-payment. All of the approaches involve an agreement that gives the seller access to assets located outside of the assets owned by the buying entity. The main sources of these guarantees are the owner of a business, a corporate parent or fellow subsidiary, or a third party (e.g. bank). There are two types of guarantee, the guarantee of payment and the guarantee of collection or performance. The guarantee of payment, which is the preferred type from the seller's viewpoint, states that the seller can collect payment from the guarantor without first attempting to collect from the buyer. The guarantee of collection or performance requires the seller to first attempt to collect from the buyer, and then pursue collection from the guarantor.

The owner of a small business may be willing to **personally guarantee** that a payment owed by his or her company will be paid, if necessary out of personal assets. While this approach may initially appear satisfactory to the seller, there are actually several problems with it. First, the owner's net worth may be closely tied to the fortunes of the business, so there will be no personal assets left if the business fails. Also, the owner may have issued personal guarantees to many suppliers, so a failure of the business will lead to a scramble by this group to attach the owner's personal assets. And finally, demanding a personal guarantee is hardly a way to obtain the long-term loyalty of a customer. Given these issues, a common path to follow is a personal guarantee requirement when a customer is a new business, followed by its revocation after several years of reliable payment history have been achieved.

If a business is a subsidiary, it can be of considerable use to obtain a **payment guarantee from the parent company**. Depending on the structure of the organization, the parent entity may have more assets than the subsidiary, and so may be an excellent backup payer. However, some parent companies are essentially shell organizations that contain minimal assets. Accordingly, request the financial statements of the parent company to determine the amount of available assets. If the parent does not appear to be an adequate guarantor, consider demanding a guarantee from another subsidiary that owns more assets.

It is sometimes possible to obtain a **guarantee from a third party**. This may be a related party that has an interest in the operations of the buyer, such as a member of its board of directors, a key supplier, a manager, or a family member. This type of guarantee can be quite valuable, since the assets of the third party may not be so closely tied to the fortunes of the buyer and can survive the demise of the business. When researching the possibility of a third-party guarantee, be sure to request documentation of the net assets of the third party, as well as any guarantees that may take precedence over the guarantee being negotiated.

Bank guarantees are recommended for companies specializing in local or foreign trade or suppliers and recipients of goods or services. Bank guarantee is used as securing various liabilities and receivables of partners in trade transactions.

The most important features of the product are:

- a bank guarantee is granted to ensure that the creditor (beneficiary) will receive a determined amount if the obligor (applicant) fails to perform his obligations;
- payment is made by the bank which has issued the bank guarantee;
- payment is made based on beneficiary's payment demand containing the statement that the applicant has failed to perform his obligations;
- certain additional documents can be attached to the payment demand, e.g. a copy of the unpaid invoice, a copy of the transport document, if they are required under the terms and conditions of the guarantee.

Letter of credit (documentary vs. stand-by)

(Documentary) LETTER OF CREDIT

In simple terms, a letter of credit is a bank undertaking of payment separate from the sales or other contracts on which it is based. It is a way of reducing the payment risks associated with the movement of goods. Expressed more fully, it is a written undertaking by a bank (issuing bank) given to the seller (beneficiary) at the request, and in accordance with the buyer's (applicant) instructions to effect payment — that is by making a payment, or by accepting or negotiating bills of exchange (drafts) — up to a stated amount, against stipulated documents and within a prescribed time limit.

Why use a Letter of Credit?

The need for a letter of credit is a consideration in the course of negotiations between the buyer and seller when the important matter of method of payment is being discussed. Payment can be made in several different ways: by the buyer remitting cash with his order; by open account whereby the buyer remits payment at an agreed time after receiving the goods; or by documentary collection through a bank in which case the buyer pays the collecting bank for account of the seller in exchange for shipping documents which would include, in most cases, the document of title to the goods. In the aforementioned methods of payment, the seller relies entirely on the willingness and ability of the buyer to effect payment.

When the seller has doubts about the credit-worthiness of the buyer and wishes to ensure prompt payment, the seller can insist that the sales contract provides for payment by irrevocable letter of credit. Furthermore, if the bank issuing the letter of credit (issuing bank) is unknown to the seller or if the seller is shipping to a foreign country and is uncertain of the issuing bank's ability to honour its obligation, the seller can, with the approval of the issuing bank, request its own bank — or a bank of international repute such as Scotiabank — to assume the risk of the issuing bank by confirming the letter of credit.

Basic Types of Letters of Credit

There are three basic features of letters of credit, each of which has two options. These are described below. Each letter of credit has a combination of each of the three features.

SIGHT OR TERM/USANCE

Letters of credit can permit the beneficiary to be paid immediately upon presentation of specified documents (sight letter of credit), or at a future date as established in the sales contract (term/usance letter of credit).

REVOCABLE OR IRREVOCABLE

Letters of credit can be revocable. This means that they can be cancelled or amended at any time by the issuing bank without notice to the beneficiary. However, drawings negotiated before notice of cancellation or amendment must be honoured by the issuing bank. An irrevocable letter of credit cannot be cancelled without the consent of the beneficiary.

UNCONFIRMED OR CONFIRMED

An unconfirmed letter of credit carries the obligation of the issuing bank to honour all drawings, provided that the terms and conditions of the letter of credit have been complied with. A confirmed letter of credit also carries the obligation of another bank which is normally located in the beneficiary's country, thereby giving the beneficiary the comfort of dealing with a bank known to him.

Stand-by LETTER OF CREDIT

The letters of credit described thus far cover the movement of goods from one destination to another. There are other types of letters of credit which are not specifically related to the movement of goods. The principal one is Stand-by Letters of Credit.

Stand-by letters of credit may apply in general to transactions which are based on the concept of default by the applicant in performance of a contract or obligation. In the event of default, the beneficiary is permitted to draw under the letter of credit. Stand-by letters of credit may be used as a substitute for performance guarantees or issued to guarantee loans granted by one firm to another, thereby securing payment to the creditor in the event the other party fails to repay its obligation on the due date. Even if the applicant claims to have performed, the bank issuing the letter of credit is obliged to make payment provided the beneficiary produces complying documents, usually a sight draft, and a written demand for payment.

Trade credit insurance

Trade credit insurance (also known as credit insurance, business credit insurance or export credit insurance) is an insurance policy and risk management product that covers the payment risk resulting from the delivery of goods or services. Trade credit insurance usually covers a portfolio of buyers and pays an agreed percentage of an invoice or receivable that remains unpaid as a result of protracted default, insolvency or bankruptcy. Trade credit insurance is purchased by business entities to insure their accounts

receivable from loss due to the non-payment of valid debt by their debtors. It can also be expanded to cover losses resulting from political risks such as currency inconvertibility; war and civil disturbance; confiscation, expropriation and nationalization.

The costs (called a “**premium**”) for this are usually charged monthly and are calculated as a percentage of sales of that month or as a percentage of all outstanding receivables.

Trade credit insurance insures the payment risk of companies, not of private individuals. Policy holders require a credit limit on each of their buyers in order for the sales to that buyer to be insured. The premium rate is usually low and reflects the average credit risk of the insured portfolio of buyers. Additional premium is payable if the cover is expanded to include political risks.

In addition, credit insurance can also cover single transactions with longer payment terms or trade with only one buyer, normally large transactions.

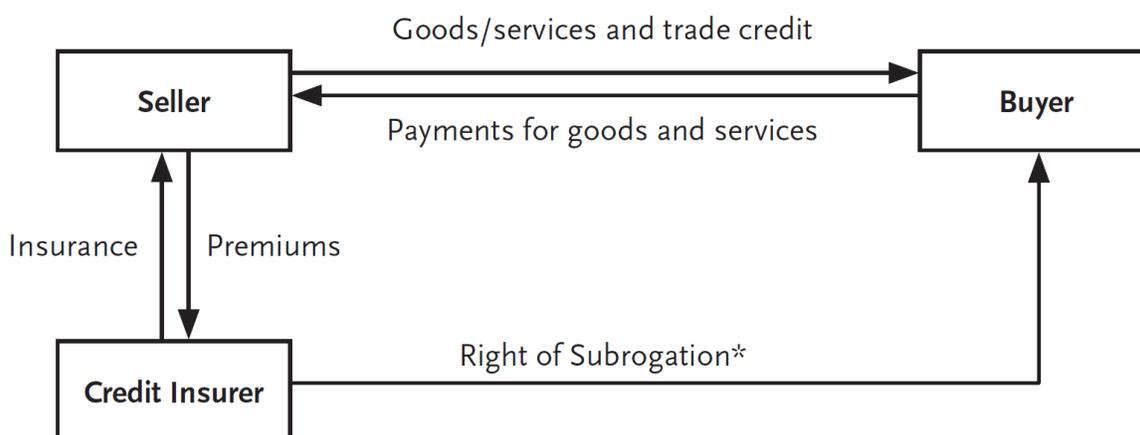


Figure 3. Trade credit insurance mechanism; source: World Bank, Trade credit insurance, Peter M. Jones, February 2010

During the 1990s, a concentration of the trade credit insurance market took place and three groups now account for over 85% of the global credit insurance market. These main players are focused on Western Europe, but have rapidly expanded into Eastern Europe, Asia and the Americas:

- Atradius. A merger between NCM and Gerling Kreditversicherung. Later renamed Atradius after it was demerged from the Gerling insurance group and now majority owned by Grupo Compañía Española de Crédito y Caución, S.L., of Spain.
- Coface. Formerly a French government owned institution established in 1946, this company is now part of the Natixis group.
- Euler Hermes. Comprising of a merger of the two credit insurance companies of the Allianz Group. While trade credit insurance is often mostly known for protecting foreign or export accounts receivable, there has always been a large segment of the market that uses trade credit insurance for domestic accounts receivable protection.

Information – must have for every Credit Manager

The most obvious starting point in increasing your knowledge of your customer portfolio is by obtaining valuable information about your customers. Lots of credit managers use paid external information sources to assess the credit-worthiness of their customers. Rightly so, because this externally sourced information is carefully compiled by experienced analysts and typically gives a good macro-level view of a business's financial health. Many credit management organizations underestimate or simply don't make use of the even more valuable customer information they collect on a daily basis. After all, a customer may show different behavior towards you compared to their other suppliers, depending on the nature of the relationship you have with that customer. Are you getting the most out of the data available to you in your daily credit management practice? And if so, are you balancing what you get externally with what you know internally?

The interpretation of the information overload

Today's world is about information, information and information. You can find anything you want through a couple of mouse clicks. Information on business in general, country GDP performance, cheating banks, bankrupted organizations; there is a chance of an information overload. But the biggest challenge is not the overload but using the bits of this information to your benefit. You can gain a lot by combining this information with what you have available internally. There are solutions which score and interpret the information provided automatically, and present a single numerical score based on all the variables at hand.

There are quite some **information providers** in the field big and small, but best-known providers are Dun & Bradstreet, Experian and Graydon. They provide financial information on customers from an own database. These are mostly based on reports pulled from the Chamber of Commerce. These reports often include ratings, or scores based on an analysis of the company's financials, as well as detailed calculations.

If you are in a high-stake business with large invoices on a single customer, chances are that your organization has **credit insurance**. In short, these insurers offer policies covering the non-payment of invoices by your customer due to numerous reasons. They provide credit limits and additional information, so you know at all times what the maximum exposure is with a customer that is covered by the insurance. This information is of course valuable to credit management. Stories of one or more customers defaulting on their payments and taking down the supplier in their wake are not uncommon. Credit insurance and the information it offers is, therefore, not something to be taken lightly.

Both sources of external information we have mentioned are very useful on a day-to-day basis about credit management. They enrich your image that you have of your customers. They give insight in which customers you can give more space, or the ones on which you need to keep a close eye. Gathering internal information is just as important, or maybe even more important to successfully monitor, segment and score your customers. Having these insights available to you is a big step towards increasing the predictability of your credit management.

Why and how do we monitor credit risk?

As business environment changes, the credit risk profile of your customers could change as well. They do indeed. Each and every organization should therefore monitor not only its own business but the customers' and suppliers' one as well. The appropriate credit monitoring system should be defined in approved credit policy and used as a check list on a recurrent basis.

An effective credit monitoring system will include measures to:

- ensure that the organization understands the current financial condition of the customer or counterparty;
- monitor compliance with existing agreements;
- assess, where applicable, collateral coverage relative to the obligor's current condition;
- identify contractual payment delinquencies and classify potential problem credits on a timely basis;
- direct promptly problems for corrective management.

Credit risk monitoring means the organization and processes in place to mitigate the risk of delayed payment or nonpayment by a customer.

Ideally, **credit risk monitoring system should cover** at least the following pillars:

Organization

- Have a clearly assigned credit control function and defined responsibilities for each main stakeholder
- Implement a credit governance for key decisions (e.g. via credit committee)
- Reinforce sales teams' commitment through training sessions as well as incentives

KPIs

- Define and track a set of credit risk KPIs

Customers' financial health assessment

- Implement a continuous customer health assessment

Credit insurance

- Assess possibility of implementing credit insurance

Credit limits management

- Define customers' credit limits based on risk assessment
- Ensure credit limits are enforced through orders blocking control mechanism

Accounts receivable balance management

- Ensure receivables balances are accurate, through a robust reconciliation process of payments versus invoices

Overdue management

- Frequently review ageing balance to define appropriate action plans
- Establish an overdue management framework (from first reminder to customer, through to receivable write-off)

Sources of micro and macro information

Access to macroeconomic information is much easier and wider than to data on industries and individual markets (microeconomic information). The latter sphere is more specialized knowledge, where the search for relevant content is associated with a significant research effort. For these reasons, microeconomic information is usually payable and fees free of charge are very limited and narrow in information.

The most popular and the most reliable sources of macroeconomic information are the knowledge portals described below. Of course, the standard library of macroeconomic data is statistical offices, along with the Eurostat (<http://ec.europa.eu/eurostat>).

TradingEconomics (<https://tradingeconomics.com/>)



Trading Economics provides its users with accurate information for 196 countries including historical data for more than 20 million economic indicators, exchange rates, stock market indexes, government bond yields and commodity prices. Our data is based on official sources, not third-party data providers, and our facts are regularly checked for inconsistencies. TradingEconomics.com has received more than 380 million page views from more than 200 countries. Trading Economics was founded by Antonio J Fernandes Sousa and Anna Fedec in New York City. Antonio has 10 years of experience performing global economics research and advanced computer programming skills applied to the development of global macro and event driven trading strategies. Antonio holds a MBA in Finance & Investments and a degree in Economics. Previously he was Chief Strategist for one of the world's largest financial trading firms. Anna Fedec is editor-in-chief for Trading Economics. She holds a master's Degree in economics and International Relations. Trading Economics is headquartered in New York, has a team of analysts and developers in Lisbon, another team of analysts in Jakarta and some dedicated staff across the world.

The World Factbook (CIA) <https://www.cia.gov/library/publications/the-world-factbook/>

THE WORLD FACTBOOK

The World Factbook is an annual publication of the Central US Intelligence Agency containing basic information about all countries of the world. Factbook on several pages summarizes the most important information about a given country: its history, geography, demographics, government, economy, telecommunications, transport, army and international issues. The editorial office is in Washington. The first edition in



CENTRAL
INTELLIGENCE
AGENCY

1980 was titled: National Basic Intelligence Factbook, but in the following year the yearbook bore the current title. The guide is issued by two independent (in two editions) of each company: Potomac Books and Skyhorse Publishing.

Because The World Factbook is prepared by the CIA, the style, format, and especially the content meets the specific needs of the US government. The publication is often used and cited as an important source of information. As it is a state publication, it is treated as a public domain.

The Economist Intelligence Unit (EIU) (<http://www.eiu.com/home.aspx>)



The Economist Intelligence Unit (EIU) is a British company operating within the Economist Group, offering forecasting and consulting services through research and analysis, such as monthly reports, five-year economic forecasts of the country, country threat reports and industry reports. EIU provides country, industry and management analyzes around the world and incorporates analyzes previously developed by Business International Corporation, a company in the United Kingdom that was acquired by the Economist Group in 1986. EIU has several offices around the world, including two offices in China and one in Hong Kong. The Economist Intelligence Unit also produces regular reports on the "viability" and cost of living of the largest cities in the world, which are very popular in international media. The Quality of Life Index at the Institute of Economist Intelligence Unit is another popular EIU report.

International Trade Administration (<http://trade.gov/index.asp>)



The International Trade Administration (ITA) is an agency of the US Department of Commerce that promotes the export of non-agricultural services and goods from the United States.

The goals of ITA are:

- Providing practical information to help Americans choose markets and products.
- Ensuring that US companies have access to international markets as required by US trade agreements.
- Securing US companies against unfair competition from dumped and subsidized imports.

SpotData (<http://spotdata.pl/>)



SpotData is a platform for visualization and analysis of economic data. The portal operates at the interface of media and analysis and is part of Bonnier Business Polska - the publisher of Puls Biznesu and Bankier.pl. SpotData gives quick and easy access to the most important trends in the Polish economy. Both at the macroeconomic level and in particular industries. Simple and intuitive menu allows you to quickly navigate through large collections of information. Currently, the portal offers approximately 25,000 time series, which can be visualized in the form of graphs and downloaded in the form of Excel.

Benchmarking – challenge to overcome

Benchmarking is the practice of **comparing actual performance results with a standardized performance goal or number – a benchmark**. Benchmarking is generally used in business for setting budgetary and financial performance goals. A benchmark or base number is used to compare actual results and judge the improvement of the company.

There are a few different kinds of benchmarking. Cost accountants generally use internal benchmarking. In other words, cost accountants look at the company past performance and set standards for future performance. For example, a cost accountant or managerial accountant might analyze the level of fixed and variable costs in a production process for the last three years. Managers can then use the average costs over the past three years as a benchmark. It can then judge the current performance against the benchmark and find new ways to improve.

Another form of benchmarking is **external benchmarking**. Companies often compare themselves to other companies in the industry or industry averages. For instance, a retailer might take an industry sales average and use that as a benchmark to judge how well they are doing for the year. External benchmarking can be used for broad goals like overall sales or more focused goals like debt to equity or gross margin.

Benchmarking is a great way for managers to gauge how well their department or company is performing internally and in the industry as a whole. Benchmarking is also used by external users of the financial statements like investors and creditors to see if a business' performance meets expectations.

The Importance of benchmarking in financial analysis

Analyzing a company's financial performance requires an understanding of various financial statements as well as the ability to interpret important financial ratios. The main financial statements detailing the financial performance of an organization are the balance sheet, statement of cash flows, and the income statement. These statements provide information that can be used to calculate various financial ratios to better understand the financial performance of a company. Some important ratios include the current ratio, profit margin, return on assets, price-earnings ratio, etc. Each of the financial statements and ratios provide important information relevant to the financial aspect that each represents; however, without applying context and comparison, all these numbers mean very little. **Benchmarking is a method of establishing a standard for comparison to add context to the financial information provided in financial statements and ratios to derive meaning from these valuable data.**

The first step to benchmarking is to analyze the financial statements and consider the context in which the company operates to determine appropriate measures and standards to apply for comparison. Financial competitive benchmarking uses financial information, most often in the form of ratios, to perform these comparisons. These financial metrics and ratios show average ranges of financial performance by firms in a given industry or specific context. When we use benchmarks, the main question we are trying to answer is: **what is the average level of performance for a given ratio/metric in a specific industry**. The use of various benchmarking methods allows the application of relevant context to interpret the financial performance accordingly.

The type of context and standards to be applied to a given firm often depends on a variety of factors as well as the type of information that we seek. **One method of benchmarking is to conduct a time trend analysis**, looking at financial performance over time. This method is particularly important to determine if the company's performance is improving or declining. Perhaps comparatively the company seems to be doing poorly based on industry standards, but if we consider the age of the firm and discover consistent improvement year after year, perhaps we can derive that the company is performing very well for its level of maturity. This example highlights the importance of context and considering various factors when conducting financial ratio analysis.

Another method of benchmarking is peer group analysis. To establish this form of benchmark, one must identify firms similar in the sense that they compete in the same markets, have similar assets, and operate in similar ways. This method is obviously problematic, as no two companies are identical. Once the benchmark is established, we can use financial ratios to compare the two companies on various performance attributes.

Challenges in benchmarking

The financial information that is needed for financial benchmarking is available only from large commercial databases or from specialized reports and publications, from where it must be gleaned with difficulty. For the information to be brought closer to the active user, it must be processed, refined, and classified. The pre-processing of the financial benchmarking information "can be used in computerized benchmarking systems and executive support systems, making the task of competitive financial benchmarking easier and more effective." Many companies that sell benchmark data gathered the data from tax return filings. The problem with this is that the data from tax returns provide inaccurate numbers for operating profits. **Another challenge in acquiring good benchmark data is that "private companies are not compelled to publish their financial data," limiting the amount of data that is available for accurate comparison.**

While benchmarking is an incredibly useful tool, **it can be easy to make mistakes that misconstrue the findings of the analysis.** For example, when comparisons become too subjective by focusing on a single business, the number of differences between the two businesses often precludes useful comparisons. It is important to remember that a **benchmark report is not the conclusion of your analysis, but rather the beginning.**

Summary

In conclusion, financial benchmarking is an effective way that organizations can establish standards for comparison. This can be accomplished by viewing the company's performance over time or by comparing the company's performance to industry benchmarks; however, conducting both a time trend analysis and a peer group analysis will likely be most effective. When comparing a company's financial performance with another company or an industry benchmark, it is important to consider context as objectively as possible before drawing any conclusions. The basic problem with financial statement analysis is that there is no underlying theory to help us identify which quantities to look at and to guide us in establishing benchmarks. For this reason, the benchmarking process requires an assessment of a wide variety of circumstances and information to develop relevant insights.

Quantitative factors – first but not most important

The process of credit management begins with accurately assessing the creditworthiness of the customer base and its business viability. This is particularly important if the company chooses to extend some type of credit line or revolving credit to certain customers. Hence, proper credit management is setting specific criteria that a customer must meet before receiving the proposed credit arrangement. As part of the evaluation process, credit management also calls for determining the total credit line that will be extended to a given customer.

Several factors are used as part of the credit management process to evaluate and qualify a customer for the receipt of some form of commercial credit. This includes gathering data on the potential customer's current financial condition, including the current credit track record that discloses the character of a customer in meeting obligations as well as collateral value. The current ratio between income and outstanding financial obligations will also be taken into consideration.

Competent Credit Manager seeks to not only protect its company from possible losses, but also protect the customer from creating more debt obligations that cannot be settled in a timely manner. When the process of credit management functions efficiently, everyone involved benefits from the effort.

Credit analysis is the primary method in reducing the credit risk on a loan request. This includes determining the financial strength of the borrowers, estimating the probability of default and reducing the risk of non-repayment to an acceptable level. In general, credit evaluations are based on the Credit Manager's subjective assessment (or judgmental assessment technique).

Adequate and timely information that enables a satisfactory assessment of the creditworthiness of borrowers applying for a trade credit limit is crucial for making prudent lending decisions. Prudent lending decisions made based on adequate information on the creditworthiness of borrowers are one of the principal factors in ensuring the financial soundness of accounts receivable and company lending money itself.

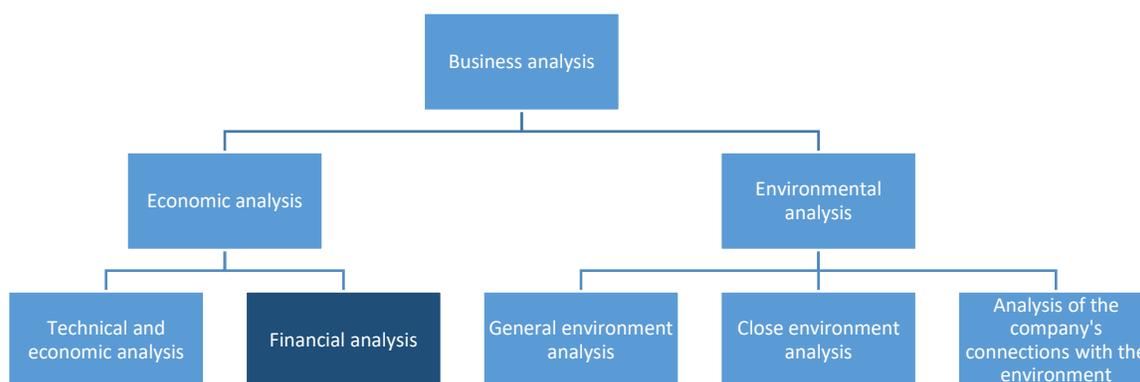
Essence, importance, limitations, sources of information

Financial statement analysis is an integral and important part of the broader field of **business analysis**. Business analysis is the process of evaluating a company's economic prospects and risks. This includes analyzing a company's business environment, its strategies, and its financial position and performance. Business analysis is useful in a wide range of business decisions, such as whether to invest in equity or in debt securities, whether to extend credit through short- or long-term loans, how to value a business in an initial public offering (IPO), and how to evaluate restructurings including mergers, acquisitions, and divestitures.

Financial statement analysis is the application of analytical tools and techniques to general-purpose financial statements and related data to derive estimates and inferences useful in business analysis. Financial statement analysis reduces reliance on hunches, guesses, and intuition for business decisions. It

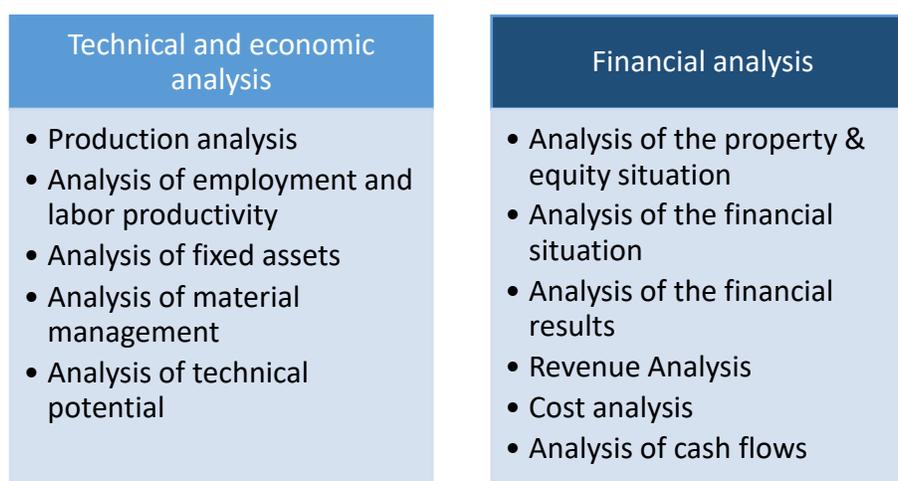
decreases the uncertainty of business analysis. It does not lessen the need for expert judgment but, instead, provides a systematic and effective basis for business analysis.

Financial statement analysis is part of business analysis. Business analysis is the evaluation of a company's prospects and risks for the purpose of making business decisions. These business decisions extend to equity and debt valuation, **credit risk assessment**, earnings predictions, audit testing, compensation negotiations, and countless other decisions. Business analysis aids in making informed decisions by helping structure the decision task through an evaluation of a company's business environment, its strategies, and its financial position and performance.



Picture 1. Breakdown of business analysis; source:W. Gabrusewicz, *Podstawy analizy finansowej*, PWE, Warszawa 2002

Two groups of Economic analysis consist of:



Picture 2. Breakdown of the economic analysis of the company; source:W. Gabrusewicz, *Podstawy analizy finansowej*, PWE, Warszawa 2002

Credit Analysis

Creditors lend funds to a company in return for a promise of repayment with interest. This type of financing is temporary since creditors expect repayment of their funds with interest. Creditors lend funds in many forms and for a variety of purposes. **Trade (or operating) creditors** deliver goods or services to a company and expect payment within a reasonable period, often determined by industry norms. Most trade credit is short term, ranging from 30 to 60 days, with cash discounts often granted for early payment. Trade creditors do not usually receive (explicit) interest for an extension of credit. Instead, trade creditors earn a return from the profit margins on the business transacted. **Nontrade creditors (or debtholders)** provide financing to a company in return for a promise, usually in writing, of repayment with interest (explicit or implicit) on specific future dates. This type of financing can be either short or long term and arises in a variety of transactions.

In pure credit financing, an important element is the fixed nature of benefits to creditors. That is, should a company prosper, creditors' benefits are limited to the debt contract's rate of interest or to the profit margins on goods or services delivered. However, creditors bear the risk of default. This means a creditor's interest and principal are jeopardized when a borrower encounters financial difficulties. This asymmetric relation of a creditor's risk and return has a major impact on the creditor's perspective, including the manner and objectives of credit analysis.

Credit analysis is the evaluation of the creditworthiness of a company. Creditworthiness is the ability of a company to honor its credit obligations. Stated differently, it is the ability of a company to pay its bills. Accordingly, **the main focus of credit analysis is on risk, not profitability**. Variability in profits, especially the sensitivity of profits to downturns in business, is more important than profit levels. Profit levels are important only to the extent they reflect the margin of safety for a company in meeting its obligations.

Credit analysis focuses on downside risk instead of upside potential. This includes **analysis of both liquidity and solvency**. Liquidity is a company's ability to raise cash in the short term to meet its obligations. Liquidity depends on a company's cash flows and the makeup of its current assets and current liabilities. Solvency is a company's long run viability and ability to pay long-term obligations. It depends on both a company's **long-term profitability** and its **capital (financing) structure**.

The tools of credit analysis and their criteria for evaluation vary with the term (maturity), type, and purpose of the debt contract. With short-term credit, creditors are concerned with current financial conditions, cash flows, and the liquidity of current assets. With long-term credit, including bond valuation, creditors require more detailed and forward-looking analysis. Long-term credit analysis includes projections of cash flows and evaluation of extended profitability (also called sustainable earning power). Extended profitability is a main source of assurance of a company's ability to meet long-term interest and principal payments.

Accounting Analysis

Accounting analysis is a process of evaluating the extent to which a company's accounting reflects economic reality. This is done by studying a company's transactions and events, assessing the effects of its accounting policies on financial statements, and adjusting the statements to both better reflect the underlying economics and make them more amenable to analysis. Financial statements are the primary

source of information for financial analysis. This means the **quality of financial analysis depends on the reliability of financial statements that in turn depends on the quality of accounting analysis**. Accounting analysis is especially important for comparative analysis.

Financial analysis

Financial analysis is the use of financial statements to analyze a company's financial position and performance, and to assess future financial performance. Several questions can help focus financial analysis. One set of questions is future oriented. For example, does a company have the resources to succeed and grow? Does it have resources to invest in new projects? What are its sources of profitability? What is the company's future earning power? A second set involves questions that assess a company's track record and its ability to deliver on expected financial performance. For example, how strong is the company's financial position? How profitable is the company? Did earnings meet analyst forecasts? This includes an analysis of why a company might have fallen short of (or exceeded) expectations.

Financial analysis consists of three broad areas—profitability analysis, risk analysis, and analysis of sources and uses of funds.

1. **Profitability analysis** is the evaluation of a company's return on investment. It focuses on a company's sources and levels of profits and involves identifying and measuring the impact of various profitability drivers. It also includes evaluation of the two major sources of profitability—margins (the portion of sales not offset by costs) and turnover (capital utilization). Profitability analysis also focuses on reasons for changes in profitability and the sustainability of earnings.
2. **Risk analysis** is the evaluation of a company's ability to meet its commitments. Risk analysis involves assessing the solvency and liquidity of a company along with its earnings variability. **Because risk is of foremost concern to creditors, risk analysis is often discussed in the context of credit analysis.** Still, risk analysis is important to equity analysis, both to evaluate the reliability and sustainability of company performance and to estimate a company's cost of capital.
3. **Analysis of cash flows is the evaluation of how a company is obtaining and deploying its funds.** This analysis provides insights into a company's future financing implications. For example, a company that funds new projects from internally generated cash (profits) is likely to achieve better future performance than a company that either borrows heavily to finance its projects or, worse, borrows to meet current losses.

Object and scope of the financial analysis

Financial Statements Reflect Business Activities

At the end of a period — typically a quarter or a year — financial statements are prepared to report on financing and investing activities at that point in time, and to summarize operating activities for the preceding period. This is the role of financial statements and the object of analysis. It is important to recognize that financial statements report on financing and investing activities at a point in time, whereas they report on operating activities for a period of time.

Credit management operates within three main tools designed to analyze financial statements:

1. **Comparative financial statement analysis**
2. **Common-size financial statement analysis**
3. **Ratio analysis**

Individuals conduct **comparative financial statement analysis** by reviewing consecutive balance sheets, income statements, or statements of cash flows from period to period. This usually involves a review of changes in individual account balances on a year-to-year or multiyear basis. The most important information often revealed from comparative financial statement analysis is **trend**. A comparison of statements over several periods can reveal the direction, speed, and extent of a trend. Comparative analysis also compares trends in related items. For example, a year-to-year 10% sales increase accompanied by a 20% increase in freight-out costs requires investigation and explanation. Similarly, a 15% increase in accounts receivable along with a sales increase of only 5% calls for investigation. In both cases we look for reasons behind differences in these interrelated rates and any implications for our analysis. Comparative financial statement analysis also is referred to as **horizontal analysis** given the left-right (or right-left) analysis of account balances as we review comparative statements. Two techniques of comparative analysis are especially popular: **year-to-year change analysis** and **index-number trend analysis**.

Financial statement analysis can benefit from knowing what proportion of a group or subgroup is made up of a particular account. Specifically, in analyzing a balance sheet, it is common to express total assets (or liabilities plus equity) as 100%. Then, accounts within these groupings are expressed as a percentage of their respective total. In analyzing an income statement, sales are often set at 100% with the remaining income statement accounts expressed as a percentage of sales. Because the sum of individual accounts within groups is 100%, this analysis is said to yield **common-size financial statements**. This procedure also is called **vertical analysis** given the up-down (or down-up) evaluation of accounts in common-size statements. **Temporal (time) comparisons** of a company's common-size statements are useful in revealing any proportionate changes in accounts within groups of assets, liabilities, expenses, and other categories. Common-size financial statement analysis is useful in understanding the internal makeup of financial statements. For example, in analyzing a balance sheet, a common-size analysis stresses two factors:

1. Sources of financing—including the distribution of financing across current liabilities, noncurrent liabilities, and equity.
2. Composition of assets—including amounts for individual current and noncurrent assets.

Ratio analysis (liquidity ratios, performance indicators, solvency ratios, profitability ratios) – what is important and necessary?

Ratio analysis is among the most popular and widely used tools of financial analysis. Yet its role is often misunderstood and, consequently, its importance often overrated. A ratio expresses a mathematical relation between two quantities. A ratio of 200 to 100 is expressed as 2:1, or simply 2. While computation of a ratio is a simple arithmetic operation, its interpretation is more complex. To be meaningful, a ratio must refer to an economically important relation. For example, there is a direct and crucial relation

between an item's sales price and its cost. Accordingly, the ratio of cost of goods sold to sales is important. In contrast, there is no obvious relation between freight costs and the balance of marketable securities.

Ratios must be interpreted with care because factors affecting the numerator can correlate with those affecting the denominator. For instance, companies can improve the ratio of operating expenses to sales by reducing costs that stimulate sales (such as advertising). However, reducing these types of costs is likely to yield long-term declines in sales or market share. Thus, a seemingly short-term improvement in profitability can damage a company's future prospects. We must interpret such changes appropriately. Many ratios have important variables in common with other ratios. Accordingly, it is not necessary to compute all possible ratios to analyze a situation. Ratios, like most techniques in financial analysis, are not relevant in isolation. Instead, they are **usefully interpreted in comparison with (1) prior ratios, (2) predetermined standards, and (3) ratios of competitors**. Finally, the variability of a ratio across time is often as important as its trend.

LIQUIDITY

First, we focus on liquidity. Liquidity refers to the ability of an enterprise to meet its short-term financial obligations. An important liquidity ratio is the **current ratio**, which measures current assets available to satisfy current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

One of the first ratios that a lender or supplier reviews when examining a company is its current ratio. The current ratio measures the short-term liquidity of a business; that is, it gives an indication of the ability of a business to pay its bills. A ratio of 2:1 is preferred, with a lower proportion indicating a reduced ability to pay in a timely manner. Since the ratio is current assets divided by current liabilities, the ratio essentially implies that current assets can be liquidated to pay for current liabilities.

The current ratio can yield misleading results under the following circumstances:

- **Inventory component.** When the current assets figure includes a large proportion of inventory assets, since these assets can be difficult to liquidate. This can be a particular problem if management is using aggressive accounting techniques to apply an unusually large amount of overhead costs to inventory, which further inflates the recorded amount of inventory.
- **Paying from debt.** When a company is drawing upon its line of credit to pay bills as they come due, it means that the cash balance is near zero. In this case, the current ratio could be fairly low, and yet the presence of a line of credit still allows the business to pay in a timely manner.

The **quick ratio** formula matches the most easily liquidated portions of current assets with current liabilities. The intent of this ratio is to see if a business has sufficient assets that are immediately convertible to cash to pay its bills. The key elements of current assets that are included in the quick ratio are cash, marketable securities, and accounts receivable. Inventory is not included in the quick ratio, since it can be quite difficult to sell off in the short term. Because of the exclusion of inventory from the formula, the quick ratio is a better indicator than the current ratio of the ability of a company to pay its obligations.

To calculate the quick ratio, summarize cash, marketable securities and trade receivables, and divide by current liabilities. Do not include in the numerator any excessively old receivables that are unlikely to be paid. The formula is:

$$\text{Quick ratio (acid test)} = \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$

Despite the absence of inventory from the calculation, the quick ratio may still not yield a good view of immediate liquidity, if current liabilities are payable right now, while receipts from receivables are not expected for several more weeks.

The **cash ratio** is an indicator of a company's liquidity that further refines both the current ratio and the quick ratio by measuring the amount of cash, cash equivalents or invested funds there are in current assets to cover current liabilities.

$$\text{Cash ratio} = \frac{\text{cash \& cash equivalents}}{\text{current liabilities}}$$

ASSET UTILIZATION (OPERATING RATIOS)

There are many types of ratios you can use to measure the efficiency of company's operations. In this section we will look at seven that are commonly used and compared. There may be others which are common to a specific industry or that you will create for a specific purpose. These "efficiency ratios" utilize data from both the Balance Sheet and the Profit & Loss Statement.

The seven ratios we will cover are:

1. Inventory Turnover Ratio
2. Days Inventory Outstanding (**DIO**)
3. Accounts Receivable Turnover Ratio
4. Days Sales Outstanding (**DSO**)
5. Accounts Payable Turnover Ratio
6. Days Payables Outstanding (**DPO**)
7. Cash Conversion Cycle (**CCC**)

The **Inventory Turnover Ratio** measures the number of times inventory "turned over" or was converted to sales during a time period. It may also be called the Cost of Sales to Inventory Ratio. It is a good indication of purchasing and production efficiency.

In general, the higher the ratio, the more frequently the inventory turned over. You might expect a company with a perishable inventory, such as a grocery store, to have a very high Inventory Turnover Ratio. Conversely, a furniture store might have a low Inventory Turnover Ratio.

To calculate the ratio, we use the formula:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average inventory}}$$

Once you have calculated the Inventory Turnover Ratio, you can convert it to the actual number of days of inventory you have on hand, i.e. **Days Inventory Outstanding (DIO)**:

$$\text{DIO} = \frac{365}{\text{Inventory Turnover Ratio}} \text{ or } \frac{\text{Average inventory}}{\text{Cost of sales} / 365}$$

The **Accounts Receivable Turnover Ratio** measures the number of time accounts receivable turned over during a time period. A higher ratio indicates a shorter time between making a sale and collecting the cash.

The ratio is based on Net Sales and Net Accounts Receivable. Remember, Net Sales equals Sales less any allowances for returns or discounts. Net Accounts Receivable equals Accounts Receivable less any adjustments for bad debts.

To calculate the ratio, we use the formula:

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Net Accounts Receivable}}$$

When you have calculated your Accounts Receivable Turnover Ratio, you can convert it to the actual number of days accounts receivable are outstanding. The goal as a business is to keep the number of days your accounts receivables are outstanding as low as possible. After all, you need the cash to build your company, not finance your customers!

To calculate **Days Sales Outstanding (DSO)** we use the formula:

$$\text{DSO} = \frac{365}{\text{Accounts Receivable Turnover Ratio}} \text{ or } \frac{\text{Average net accounts receivable}}{\text{Net Sales} / 365}$$

The **Accounts Payable Turnover Ratio** measures the number of time Accounts Payable turned over during a time period. Much like our previous turnover ratios, you want to understand how long your Accounts Payable are on your books. This is important as Accounts Payable are a “source of cash.” There is a balance between paying your suppliers within the terms they grant you and maximizing the use of the cash in your business.

To calculate the ratio, we use the formula:

$$\text{Accounts Payable Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Accounts Payable}}$$

Days Payables Outstanding (DPO) converts the Accounts Payable Turnover Ratio to the number of days Accounts Payable are outstanding. To calculate **Days Payables Outstanding (DPO)** we use the formula:

$$\text{DPO} = \frac{365}{\text{Accounts Payable Turnover Ratio}} \text{ or } \frac{\text{Average Accounts Payable}}{\text{Cost of Goods Sold} / 365}$$

Once you have calculated the number of days in Accounts Receivable, Inventory and Accounts Payable for investigated company, you can use them to calculate Cash Cycle. The Cash Cycle is sometimes referred to as the Trading Cycle or the **Cash Conversion Cycle (CCC)** and measures the time in days it takes to acquire and sell inventory and convert sales to cash. It measures the effectiveness of this process.

To calculate Cash Conversion Cycle, use the formula:

$$\text{Cash Conversion Cycle} = \text{Days Sales Outstanding} + \text{Days Inventory Outstanding} - \text{Days Payables Outstanding}$$

CAPITAL STRUCTURE and SOLVENCY

Solvency refers to the ability of an enterprise to meet its long-term financial obligations. To assess long-term financing structure and credit risk, we examine company's capital structure and solvency.

First relation we can use is **total debt-to-equity ratio** which indicates relation between equity financing and financing provided by creditors.

$$\text{Total debt to equity} = \frac{\text{Total liabilities}}{\text{Shareholder's equity}}$$

Another interesting relation is **long-term debt-to-equity ratio**, revealing how much of long-term debt financing to each \$1 of equity.

$$\text{Long-term debt to equity} = \frac{\text{Long-term liabilities}}{\text{Shareholder's equity}}$$

Another ratio that also considers profitability in addition to capital structure is the **times interest earned ratio (or interest coverage ratio)**, which is the ratio of a company's earnings before interest to its interest payment.

$$\text{Times interest earned} = \frac{\text{Income before income taxes and interest expense}}{\text{Interest expense}}$$

PROFITABILITY

The objective of profitability relates to a company's ability to earn a satisfactory profit so that the investors and shareholders will continue to provide capital to it. A company's profitability is linked to its liquidity because earnings ultimately produce cash flow.

We could begin by assessing different aspects of return on investment. **Return on assets** implies how much amount of annual earnings generates a \$1 of asset investment, prior to subtracting after-tax interest.

$$\text{Return on assets (ROA)} = \frac{\text{Net income} + \text{interest expense} \times (1 - \text{Tax rate})}{\text{Average total assets}}$$

Equity holders are especially interested in management's performance based on equity financing, so we also look at the **return on equity**.

$$\text{Return on Equity (ROI)} = \frac{\text{Net income}}{\text{Average shareholders' equity}}$$

Another part of profitability analysis is **evaluation of operating performance**. This is done by examining ratios that typically link income statement line items to sales. These ratios are often referred to as **profit margins**, for example, **gross profit margin** (or more concisely **gross margin**). These ratios are comparable to results from common-size income statement analysis.

$$\text{Gross profit margin (Gross margin)} = \frac{\text{Sales} - \text{Cost of sales}}{\text{Sales}}$$

$$\text{Operating profit margin (pre-tax)} = \frac{\text{Income from operations}}{\text{Sales}}$$

$$\text{Net profit margin (Net margin)} = \frac{\text{Net income}}{\text{Sales}}$$

CASH FLOW ANALYSIS

Cash flow analysis is primarily used as a tool to evaluate the sources and uses of funds. Cash flow analysis provides insights into how a company is obtaining its financing and deploying its resources. It also is used in cash flow forecasting and as part of liquidity analysis.

Qualitative factors – ignorance which could cost you money

Not all aspects of a business's economic standing can be reduced to numbers. **Qualitative credit analysis refers to those characteristics that affect the probability of a lack of solvency, but which cannot be directly represented by numbers.** Accordingly, these factors are subject to judgment in the course of the analysis. For example, the competence of the board is important for the company's future performance. The board determines the goals of the company and plans how to achieve it, while limiting the risk to the company, and it is ultimately responsible for the success or failure of the company. **A credit analyst cannot ignore quantitative factors in assessing the true credibility of a business.**

While a business credit analyst usually uses a broad range of quantitative techniques and a financial analyst is comfortable focusing on one sector of the economy, they both face the same problem: the quality of the data in the analyzed financial statements. **By this quality we mean the assessment of financial statements, which is more than just a statement of correctness of accounting records.** Let us consider one example of the quality of financial data: asset quality. For a credit analyst, asset quality usually means the value of a company's inventory or the value of fixed assets. The quality of financial data includes other attributes, including profit (it is real?) As well as capital. If the assets are doubtful, then by definition, capital is also questionable.

Quality factors include:

- macroeconomic environment
- competitiveness
- the risk of substitution
- bargaining power of customers
- bargaining power of suppliers
- sectoral competition
- determinants of entrepreneurship
- the potential of business innovation
- strength of financial statements
- business sector and the perceived strength of the industry
- the nature of the borrower
- the economic strength of the borrower's location
- management competencies
- external risk (e.g. new legislation regulating the industry, etc.)
- quality of financial statements

The qualitative component of the credit analysis is generally tested in two stages:

- Microeconomics (internal analysis of enterprise performance, industry analysis)
- Macroeconomics (geopolitics, law, macroeconomic trends)

Essence, meaning, scope

The existing vast literature on credit risk assessment and default prediction provides models building mostly in quantitative indicators. The quantitative side involves looking at factors that can be measured numerically, such as the company's assets, liabilities, cash flow, revenue and price-to-earnings ratio.

The limitation of quantitative analysis, however, is that it does not capture the company's aspects or risks unmeasurable by a number - things like the value of an executive or the risks a company faces with legal issues.

Although relatively more difficult to analyze, the qualitative factors are an important part of a company. Since they are not measured by a number, they more represent an either negative or positive force affecting the company.

The significance of the qualitative criteria suggests that credit analysis is mainly judgmentally based, depending on the subjective assessment of the analysts. As such, it limits the usage of the most common statistical analysis.

The main concern in using the qualitative factors should therefore be to establish some boundaries (credit assessment methodology) on judgmental subjectivity, focused on the research of value functions that may express a generalized point of view.

Business cycles and government interference

A business cycle is the rise and fall of business activities within an industry that include periods of profitability and periods of loss. Business cycles do not occur at regular intervals. These cycles occur irregularly but repetitively. Typical business cycles include expansion, a peak, contraction and recovery. When dramatic business cycles occur in different industries, it often affects the national economy as a whole and not just the industry experiencing the fluctuation.

Growth (Expansion)

During the expansion phase, businesses are growing and creating more jobs. This causes an increase in employment and decrease in the unemployment rate. If the economy is growing at a relatively fast pace, it puts upward pressure on the general prices of goods and services, resulting in inflation. Inflation is also an indicator of too much currency circulating in the economy, which depreciates the value of the currency. To help slow the rate of inflation and stabilize currency value, a central bank might increase interest rates to discourage borrowing. This helps to decrease the economic money supply and prevent further depreciation of the state currency.

Peak (Boom)

A peak occurs when the expansionary phase of the business cycle is about to end. Certain economic indicators such as a drop in the number of new jobs added to the economy and a rise in the unemployment rate can signify the peak of an expansion cycle. During an economic peak, the economy is no longer

growing, retail sales are declining, and economic output is decreasing. Economic output is the total value of all goods and services produced in an economy. All these factors can lead to further job loss and often signify an oncoming economic contraction.

Recession (Contraction)

The contraction phase of the business cycle is when the economy begins to shrink. Economists also refer to this period as a recession or trough in the business cycle. During this period, economic output decreases. This results in job losses and an increase in the unemployment rate. During periods of economic contraction, there is not enough currency circulating in the economy because consumer spending is down. To encourage borrowing and increase consumer spending, a central bank might decrease interest rates.

Recovery (Expansion)

When economic outputs increase, and businesses begin to expand, it indicates that the business cycle is in the recovery phase. During this phase, the employment rate is rising while the unemployment rate is falling. The economic recovery period of a business cycle can be difficult to forecast because other factors might cause a short-term stimulation in the economy but does not necessarily indicate a permanent recovery. An example of a short-term stimulation is the holiday shopping season. During this period, retail sales and employment might increase but only temporarily.

Leading & lagging economic indicators

Most economists talk about where the economy is headed – it's what they do. But in case you haven't noticed, many of their predictions are wrong. For example, Ben Bernanke (head of the Federal Reserve) made a prediction in 2007 that the United States was not headed into a recession. He further claimed that the stock and housing markets would be as strong as ever. As we know now, he was wrong.

Because the experts' predictions are often unreliable, it is important to develop your own understanding of the economy and the factors shaping it. Paying attention to economic indicators can give you an idea of where the economy is headed so you can plan your finances and even your career accordingly.

There are two types of indicators you need to be aware of:

- **Leading indicators** often change prior to large economic adjustments and, as such, can be used to predict future trends.
- **Lagging indicators**, however, reflect the economy's historical performance and changes to these are only identifiable after an economic trend or pattern has already been established.

Leading Indicators

Because leading indicators have the potential to forecast where an economy is headed, fiscal policymakers and governments make use of them to implement or alter programs in order to ward off a recession or other negative economic events. The top leading indicators follow:

- **Stock Market**

Though the stock market is not the most important indicator, it's the one that most people look to first. Because stock prices are based in part on what companies are expected to earn, the market can indicate the economy's direction if earnings estimates are accurate.

For example, a strong market may suggest that earnings estimates are up and therefore that the overall economy is preparing to thrive. Conversely, a down market may indicate that company earnings are expected to decrease and that the economy is headed toward a recession.

However, there are inherent flaws to relying on the stock market as a leading indicator. First, earnings estimates can be wrong. Second, the stock market is vulnerable to manipulation. For example, the government and Federal Reserve have used quantitative easing, federal stimulus money, and other strategies to keep markets high in order to keep the public from panicking in the event of an economic crisis.

Moreover, traders and corporations can manipulate numbers to inflate stocks via high-volume trades, complex financial derivative strategies, and creative accounting principles (legal and illegal). Since individual stocks and the overall market can be manipulated as such, a stock or index price is not necessarily a reflection of its true underlying strength or value.

Finally, the stock market is also susceptible to the creation of "bubbles," which may give a false positive regarding the market's direction. Market bubbles are created when investors ignore underlying economic indicators, and mere exuberance leads to unsupported increases in price levels. This can create a "perfect storm" for a market correction, which we saw when the market crashed in 2008 as a result of overvalued subprime loans and credit default swaps.

- **Manufacturing Activity**

Manufacturing activity is another indicator of the state of the economy. This influences the GDP (gross domestic product) strongly; an increase in which suggests more demand for consumer goods and, in turn, a healthy economy. Moreover, since workers are required to manufacture new goods, increases in manufacturing activity also boost employment and possibly wages as well.

However, increases in manufacturing activity can also be misleading. For example, sometimes the goods produced do not make it to the end consumer. They may sit in wholesale or retailer inventory for a while, which increases the cost of holding the assets. Therefore, when looking at manufacturing data, it is also important to look at retail sales data. If both are on the rise, it indicates there is heightened demand for consumer goods. However, it's also important to look at inventory levels, which we'll discuss next.

- **Inventory Levels**

High inventory levels can reflect two very different things: either that demand for inventory is expected to increase or that there is a current lack of demand.

In the first scenario, businesses purposely bulk up inventory to prepare for increased consumption in the coming months. If consumer activity increases as expected, businesses with high inventory can meet the demand and thereby increase their profit. Both are good things for the economy.

In the second scenario, however, high inventories reflect that company supplies exceed demand. Not only does this cost companies money, but it indicates that retail sales and consumer confidence are both down, which further suggests that tough times are ahead.

- **Retail Sales**

Retail sales are particularly important metrics and function hand in hand with inventory levels and manufacturing activity. Most importantly, strong retail sales directly increase GDP, which also strengthens the home currency. When sales improve, companies can hire more employees to sell and manufacture more product, which in turn puts more money back in the pockets of consumers.

One downside to this metric, though, is that it doesn't account for how people pay for their purchases. For example, if consumers go into debt to acquire goods, it could signal an impending recession if the debt becomes too steep to pay off. However, in general, an increase in retail sales indicates an improving economy.

- **Building Permits, Housing Market, Level of New Business Startups etc.**

Lagging Indicators

Unlike leading indicators, lagging indicators shift after the economy changes. Although they do not typically tell us where the economy is headed, they indicate how the economy changes over time and can help identify long-term trends.

- **Changes in the Gross Domestic Product (GDP)**

GDP is typically considered by economists to be the most important measure of the economy's current health. When GDP increases, it's a sign the economy is strong. In fact, businesses will adjust their expenditures on inventory, payroll, and other investments based on GDP output.

However, GDP is also not a flawless indicator. Like the stock market, GDP can be misleading because of programs such as quantitative easing and excessive government spending. For example, the government has increased GDP by 4% as a result of stimulus spending and the Federal Reserve has pumped approximately \$2 trillion into the economy. Both of these attempts to correct recession fallout are at least partially responsible for GDP growth.

Moreover, as a lagging indicator, some question the true value of the GDP metric. After all, it simply tells us what has already happened, not what is going to happen. Nonetheless, GDP is a key determinant as to whether or not the United States is entering a recession. The rule of thumb is that when the GDP drops for more than two quarters, a recession is at hand.

- **Income and Wages**

If the economy is operating efficiently, earnings should increase regularly to keep up with the average cost of living. When incomes decline, however, it is a sign that employers are either cutting pay rates, laying workers off, or reducing their hours. Declining incomes can also reflect an environment where investments are not performing as well.

Incomes are broken down by different demographics, such as gender, age, ethnicity, and level of education, and these demographics give insight into how wages change for various groups. This is important because a trend affecting a few outliers may suggest an income problem for the entire country, rather than just the groups it affects.

- **Unemployment Rate**

The unemployment rate is very important and measures the number of people looking for work as a percentage of the total labor force. In a healthy economy, the unemployment rate will be anywhere from 3% to 5%.

When unemployment rates are high, however, consumers have less money to spend, which negatively affects retail stores, GDP, housing markets, and stocks, to name a few. Government debt can also increase via stimulus spending and assistance programs, such as unemployment benefits and food stamps.

However, like most other indicators, the unemployment rate can be misleading. It only reflects the portion of unemployed who have sought work within the past four weeks and it considers those with part-time work to be fully employed. Therefore, the official unemployment rate may actually be significantly understated.

One alternative metric is to include as unemployed workers those who are marginally attached to the workforce (i.e. those who stopped looking but would take a job again if the economy improved) and those who can only find part-time work.

- **Consumer Price Index (Inflation)**

The consumer price index (CPI) reflects the increased cost of living, or inflation. The CPI is calculated by measuring the costs of essential goods and services, including vehicles, medical care, professional services, shelter, clothing, transportation, and electronics. Inflation is then determined by the average increased cost of the total basket of goods over a period of time.

A high rate of inflation may erode the value of the dollar more quickly than the average consumer's income can compensate. This, thereby, decreases consumer purchasing power, and the average standard of living declines. Moreover, inflation can affect other factors, such as job growth, and can lead to decreases in the employment rate and GDP.

However, inflation is not entirely a bad thing, especially if it is in line with changes in the average consumer's income. Some key benefits to moderate levels of inflation include:

It encourages spending and investing, which can help grow an economy. Otherwise, the value of money held in cash would be simply corroded by inflation.

It keeps interest rates at a moderately high level, which encourages people to invest their money and provide loans to small businesses and entrepreneurs.

It's not deflation, which can lead to an economic depression.

Deflation is a condition in which the cost of living decreases. Although this sounds like a good thing, it is an indicator that the economy is in very poor shape. Deflation occurs when consumers decide to cut back on spending and is often caused by a reduction in the supply of money. This forces retailers to lower their

prices to meet a lower demand. But as retailers lower their prices, their profits contract considerably. Since they don't have as much money to pay their employees, creditors, and suppliers, they have to cut wages, lay off employees, or default on their loans.

These issues cause the supply of money to contract even further, which leads to higher levels of deflation and creates a vicious cycle that may result in an economic depression.

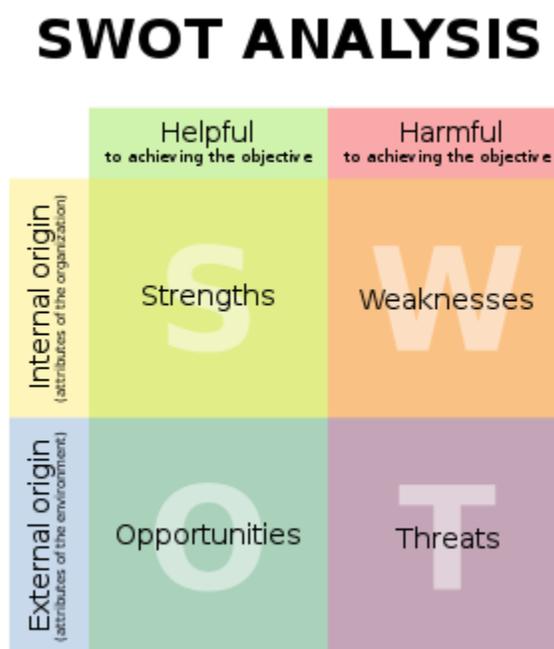
- **Currency Strength, Interest Rates, Corporate Profits, Balance of Trade, Value of Commodity Substitutes to U.S. Dollar etc.**

Macroeconomics and microeconomics – analysis technics (PESTLE, Porter's 5 forces)

The most popular **techniques in qualitative analysis** are:

- SWOT (TOWS)
- Porter's 5 forces
- PESTLE

SWOT analysis can be identified as one of the important strategic planning tools that can be used in evaluating a company's micro and macro environment. SWOT stands for Strengths, Weaknesses, Opportunities and Threats as indicated in the below diagram.



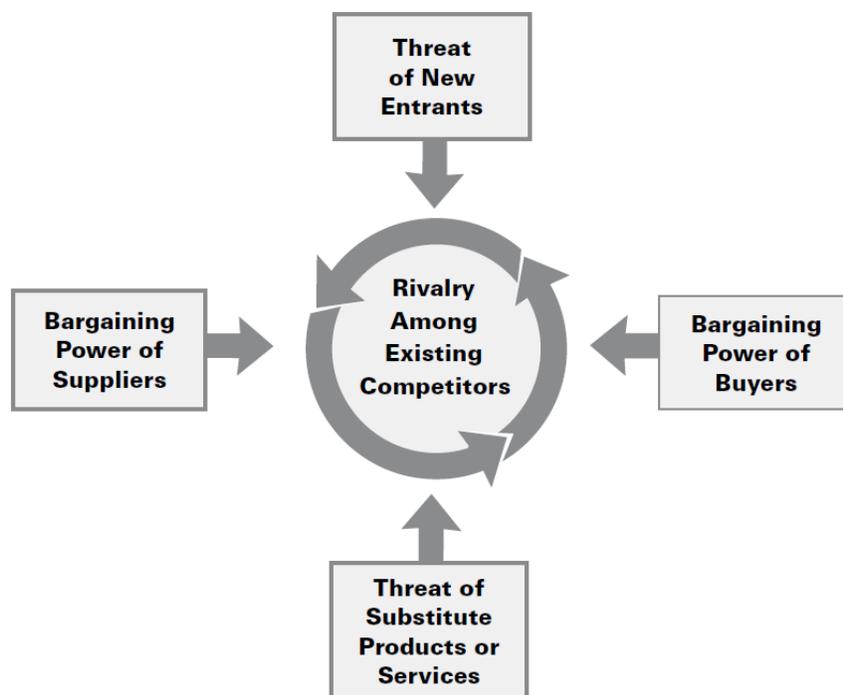
Picture 3. SWOT analysis; source: Wikipedia

A **TOWS analysis** is almost similar to SWOT analysis, but in TOWS analysis the threats and the opportunities are initially analyzed, and the weaknesses and strengths are analyzed at last. TOWS analysis may lead towards productive managerial discussions about the things that happen in the external environment rather than considering about the company's internal strengths and weaknesses.

After analyzing all the factors related to threats, opportunities, weaknesses and strengths, managers can make plans for the company to take the advantages of opportunities and strengths by minimizing the negative impact of weaknesses and threats.

In 1979, Harvard Business Review published "How Competitive Forces Shape Strategy" by a young economist and associate professor, Michael E. Porter. It was his first HBR article, and it started a revolution in the strategy field. In subsequent decades, Porter has brought his signature economic rigor to the study of competitive strategy for corporations, regions, nations, and, more recently, health care and philanthropy. "**Porter's five forces**" have shaped a generation of academic research and business practice.

In essence, the job of the strategist is to understand and cope with competition. Often, however, managers define competition too narrowly, as if it occurred only among today's direct competitors. Yet competition for profits goes beyond established industry rivals to include four other competitive forces as well: **customers, suppliers, potential entrants, and substitute products**. The extended **rivalry that results from all five forces defines an industry's structure and shapes the nature of competitive interaction within an industry**.



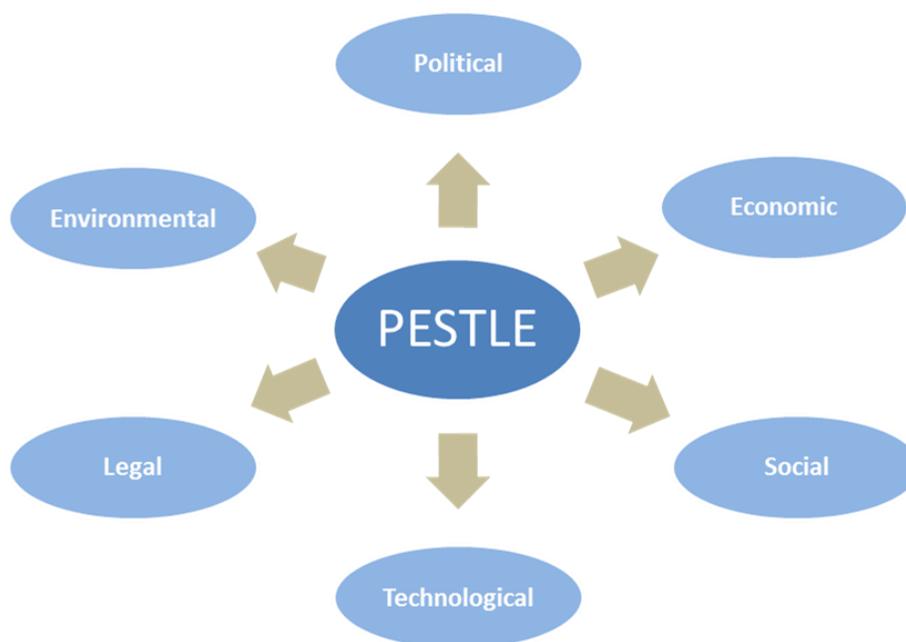
Picture 4. The Five Competitive Forces That Shape Strategy; source: Harvard Business Review, January 2008

The point of industry analysis is not to declare the industry attractive or unattractive but to understand the underpinnings of competition and the root causes of profitability.

As much as possible, analysts should look at industry structure quantitatively, rather than be satisfied with lists of qualitative factors. Many elements of the five forces can be quantified: the percentage of the buyer's total cost accounted for by the industry's product (to understand buyer price sensitivity); the percentage of industry sales required to fill a plant or operate a logistical network of efficient scale (to help assess barriers to entry); the buyer's switching cost (determining the inducement an entrant or rival must offer customers).

The strength of the competitive forces affects prices, costs, and the investment required to compete; thus, the forces are directly tied to the income statements and balance sheets of industry participants. Industry structure defines the gap between revenues and costs. Finally, good industry analysis does not just list pluses and minuses but sees an industry in overall, systemic terms.

PESTLE (Political, Economic, Social, Technological, Legal and Environmental) analysis is a business measurement tool that is used to assess the position and market growth of any organization. It is also known as PEST or PESTEL analysis and helps in understanding the relevant opportunities and risks of business expansion. It helps in reducing the risks associated with an unfamiliar environment while working on organizational plans.



Picture 5. PESTLE analysis; source: Free Management eBooks

Creditworthiness modeling

The global economy is characterized by uncertainty and risk, which implies the need to control the financial position of the entity. Assessing the financial condition of an entity as an element of economic analysis is an important tool for business management, as the information obtained from it is the basis for investment and financial decisions.

Due to the imperfections of traditional indicator analysis, a synthetic gauge has been sought for many years to allow the subject to be judged with the greatest accuracy. Very popular recently are the **discriminatory models**. They were created by combining traditional indicator analysis with discriminatory methods and, as the experts say, are highly effective methods of synthesizing the financial situation of economic entities.

Discriminant models

A classical indicator analysis can be used with the use of well-defined normative values of indicators. However, a **forecast based solely on the comparison of actual values with standards is not always clear**, primarily because some indicators may meet the criteria, and some may differ significantly from the standards. **This problem does not occur in the case of a discriminatory analysis method that assigns a unit to one of two groups, for example, firms in good or bad financial condition.** The discriminatory analysis is therefore used to determine which variables and how they distinguish (discriminate) those groups.

The underlying idea behind discriminatory analysis is to decide whether groups differ by the average of a variable and then use that variable to predict group membership (e.g. new cases). In fact, we are dealing with several variables to determine which are best for discriminating against groups. Discriminatory analysis is a statistical technique that allows you to examine the differences between two or more groups by analyzing several variables at once. The variables used to distinguish groups are called **discriminant variables**.



Linear discriminant analysis is a special case of linear regression, where the dependent variable (explained) is a qualitative variable (good or bad financial condition of an enterprise). Variables independent (explanatory, discriminatory) are the indicators characterizing the economic standing of the enterprise.

In discriminant analysis, we strive to create a linear combination of independent variables that best discriminate (i.e. "divide") two or more groups defined *a priori*. A classification system is a linear combination of features, called a linear discriminant function, which can be written using the formula:

$$\text{LFD} = \lambda_0 + \lambda^T * x$$

where:

LFD – linear discriminatory function

x – is a feature vector

λ_0 and λ^T – are the coefficients of the discriminative function

Another, more comprehensible and more common, LFD presentation is:

$$\text{LFD} = a_0 + a_1X_1 + a_2X_2 + \dots + a_kX_k$$

where:

a_i – discriminative coefficients ($i = 1, 2, \dots, k$)

a_0 – constant

X_i – explanatory variables ($i = 1, 2, \dots, k$)

The model builds on the **estimation of the coefficients λ_0 and λ^T** so that the LFD values for the selected object allow to determine the class to which it belongs. The function of the function is also to determine the **limit value of the discriminative function**.

The advantages of classical discriminant analysis include the ease of understanding and simplicity of use, the inclusion of multiple variables through the use of scales, multivariate analysis by transforming one dimension, evaluation of the situation on the basis of the selected measure, the ability to determine the impact of individual explanatory variables on the explanatory variable, high accuracy in the field of bankruptcy risk analysis.

Disadvantage of the discriminatory models is their rapid outdated as a result of changes in the economic conditions. The applicability of these models is limited territorially, i.e. Polish models work in Polish conditions, German models in Germany. Another disadvantage of discriminatory analysis models is that they do not account for the so-called “extraordinary”.

Models based on the Altman Z-score

Altman Model

The use of discriminant analysis in business failure prediction has been widely accepted since 1968 when Edward Altman published the results of his researches. Altman developed a model for predicting the likelihood that a firm would go bankrupt. This model uses five financial ratios which are derived from the financial statements as reported by bankrupt (prior to bankruptcy) and nonbankrupt companies. The ratios are then combined in a specific way to produce a single number. This number, called z-score is a general measure of corporate financial health.

Within the American business environment, Professor Edward Altman used those five indicators that have enabled the prediction of 72% of the firms' bankruptcies with two years prior their occurrence. He used a sample of 66 firms of which 33 had financial difficulties and 33 were financially relaxed (analysis was performed from 1946 - 1965). The studies conducted by William H. Beaver and Edward I. Altman, revealed

the fact that a synthetic indicator consisting of a battery of ratios allows an early detection of a company's difficulties and, consequently, facilitate the search of prevention measures at the first sign of vulnerability. The better the economic and financial situation of a company is the higher risks taken with an increasing probability for company of obtaining great results (earnings); but there are necessary cover-resources in case of failure.

The score function developed by Altman has got the following formula:

$$Z = 1.2 x_1 + 1.4 x_2 + 3.3 x_3 + 0.6 x_4 + 0.999 x_5$$

where:

x_1 = Working capital / Total assets;

x_2 = Retained earnings / Total assets;

x_3 = Gross outcome of exploitation/Total assets;

x_4 = Market value equity / Book value of total debt;

x_5 = Turnover / Total assets

The discriminant coefficients (the constants) express the share of economic and financial indicators in assessing the bankruptcy risk, the level of an indicator being the best as the highest absolute values.

The overall value of z-score indicates as follows:

$Z < 1.81$ = Zone I – Distress Zone - High probability of bankruptcy for the firm;

$1.81 < Z < 2.99$ = Grey area – uncertain zone;

$Z > 2.99$ = Zone II – Safe zone - Low probability of bankruptcy for the firm.

Since 1968, Edward Altman has tested the Z-score model for several companies and during the time he tried to improve the Z-score. In 1976 he developed another model called „zeta”. Though, as he says the Z-score original model has retained its reported high accuracy and is still robust despite its development over 30 years ago.

The original **Z-score model was applicable only to publicly traded entities** (for which the stock price data is required when calculating x_4 variable), that for Altman tried to find a solution to apply the model to **firms in the private sector**. So, he revised the Z-score, substituting the book value of equity for the market value. The result consisted in the following Z'-score:

$$Z' = 0.717 x_1 + 0.847 x_2 + 3.107 x_3 + 0.420 x_4 + 0.998 x_5$$

The single variable that changed is x_4 which became:

x_4 = Book value of equity / Book value of total debt.

The overall value of Z'-score indicates as follows:

$Z' < 1.23$ = Zone I - Distress Zone - High probability of bankruptcy for the firm;

$1.23 < Z' < 2.90$ = Grey area – uncertain zone;

$Z' > 2.90$ = Zone II - Safe zone - Low probability of bankruptcy for the firm.

The other ratio that restricts the usefulness of the original Z-Score is x_5 , Assets' Turnover (Turnover / Total assets), as it varies significantly by industry. Hence, this ratio is excluded from the modified Z'' -Score model. Altman did this in order to minimize the sensitivity of the industry effect, which makes the model useful for a wider range of non-manufacturing companies.

$$Z'' = 6.560 \cdot X_1 + 3.260 \cdot X_2 + 6.720 \cdot X_3 + 1.050 \cdot X_4$$

The overall value of Z'' -score indicates as follows:

$Z' < 1.1$ = Zone I - Distress Zone - High probability of bankruptcy for the firm;

$1.1 < Z' < 2.6$ = Grey area – uncertain zone;

$Z' > 2.6$ = Zone II - Safe zone - Low probability of bankruptcy for the firm.

Conan et Holder Model

The model has been elaborated in France by Joel Conan and Michel Holder using the discriminant analysis. Through this model, the probability that a company can reach a bankruptcy status can be determined. Conan and Holder observed 31 ratios in a sample of 190 small and middle enterprises (within 10-500 employees), 50% of which got bankruptcy between 1970-1975 years. The two authors concluded that five ratios among the 31 are most significant thus for the score function has got the following formula for industrial enterprises.

$$z = 0.24 x_1 + 0.22 x_2 + 0.16 x_3 - 0.87 x_4 - 0.10 x_5$$

where:

x_1 = Gross operating surplus / Total debts (Gross operating surplus = operating income – operating expenses);

x_2 = Permanent capital / Total assets (Permanent capital = equity + debts > 1 year);

x_3 = Quick assets / Current liabilities (Circulating assets – Inventory / Current liabilities);

x_4 = Financial expenses / Turnover;

x_5 = Staff expenses / Turnover.

Score values	Probability of bankruptcy
- 0.21	100
- 0.05	90
0.002	80
0.03	70
0.05	60
0.07	50
0.09	40
0.11	30
0.13	20
0.16	10

The bankruptcy probability is established according to the value of the z - score function as the data shown in table. Unlike Altman model, Conan et Holder model does not distinguish between listed and unlisted companies on the stock exchange. We may notice that the higher value of z decreases, the more increases the vulnerability of the company.

Springate model

A strong alternative to Altman's research was introduced by Springate (1978). The author also used a multiple discriminate analysis that relied on four financial ratios in order to derive a score that could distinguish between efficient and distressed firms. The study was conducted on 40 firms and had a 92.5% accuracy rate. Companies with a Springate score lower than 0.862 are classified as "failed".

$$Z = 1.03 A + 3.07 B + 0.66 C + 0.4 D$$

where:

A = Working Capital / Total Assets; B = EBIT / Total Assets; C = EBT / Current Liabilities; D = Sales / Total Assets

Fulmer model

Fulmer (1984) brought forward an extensive model composed of nine variables which came to be known in the scientific literature as the H score. Fulmer's model had 98% accuracy in classifying firms one year prior to default, and an 81% accuracy rate for a longer time horizon. The general form of the Fulmer model is the following:

$$H = 5.528 X1 + 0.212 X2 + 0.73 X3 + 1.27 X4 - 0.12 X5 + 2.335 X6 + 0.575 X7 + 1.083 X8 + 0.894 X9 - 6.075$$

Where:

X1 = Average Retained Earnings / Average Total Assets

X2 = Revenues / Average Total Assets

X3 = EBIT / Total Equity*

X4 = Cash Flows from Operations / Average Total Debt**

X5 = Average Total Debt / Total Equity*

X6 = Total Current Liabilities / Average Total Assets

X7 = log (Average Tangible Assets)

X8 = Average Working Capital / Average Total Debt**

X9 = log(EBIT) / Interest Expense***

* Total Equity = (Market Cap + Preferred Stock Equity + Noncontrolling Interests)

** If Average Total Debt is Zero, this quantity is assumed to be zero.

*** If Interest Expense is Zero, this quantity is assumed to be zero.

According to the model, a firm should be classified as bankrupt if the score is below zero and should be classified as not bankrupt if the score is above zero.

Credit scoring models and credit scorecards



The most important steps in the credit risk management process are the segmentation of borrowers to systematize, describe and control the credit risk. Financial institutions use different methods of segmenting credit risk, usually classified into two types of methods, i.e. logical-deductive and empirical-inductive.

Logical-deductive methods are based on the assessment of the current economic and financial condition of the borrower. The assessment is made on the basis of quantitative and qualitative criteria, which indirectly characterize the bank's credit risk assessment model and bank credit strategy. These methods include descriptive methods, scoring methods (scoring, rating) and mixed methods.

Empirical-inductive methods, also referred to as empirical and empirical methods, are based on the assessment of future customer solvency on the basis of statistical material on other industries, sectors and types of business. These methods include, but are not limited to, discriminatory models (Altman models).

The commercial banks mainly use logical and deductive methods. It is now assumed that the dominant banking segmentation standard used in banks is the point method that forms the basis of **credit scoring systems**.

Assumptions of the credit scoring concept

The basic concept of credit scoring is based on the assumption that **credit risk can be identified and measured using data about the characteristics of the borrower applying for a loan.** Credit data and information included in the loan application and appendices are quantified, i.e. **imported into digital values, which identifying the type and level of credit risk**, streamline the credit assessment process, and facilitate a credit decision.

The method of credit scoring in the general formula has been used for years in financial institutions. On the other hand, in spite of the invariability of the general formula, in detail the method by which banks try to successively improve and adapt to changing market determinants. The process of this improvement was usually carried out in banks with many years of experience in the credit business.

According to the general credit scoring formula, **based on data on existing borrowers, the bank describes the individual values of credit risk in quantitative terms, which correspond to the characteristics of the**

borrower. The scale of measurable, identified and quantified credit risk is used to assess the creditworthiness of a potential borrower.

The methodology for transforming the descriptive characteristics of a borrower into digitally expressed values of a certain level of credit risk consists in **attributing positive characters to the appropriate number of points and possibly subtracting points for negative characters.** Finally, the number of points is the primary determinant of the decision to grant or refuse a loan. It informs about the level of credit risk associated with granting the loan. This element of the lending procedure applies both to a single credit transaction and to a portfolio.

Credit scoring in the assessment of business entities

The applied model of automation of the consumer lending process is attempting to transfer to business loans by applying analogous formulas of integration of IT techniques with banking operations. However, **due to the significantly higher level of complexity of the process of granting business loans and preceding the process of analyzing creditworthiness of a borrower's enterprise, full automation is usually practically impossible in this situation.** Consumer loans, on the other hand, are ideally suited to the automation, primarily due to:

- relatively high operating costs of the traditional form of their provision, related to low amounts of consumer loans granted,
- relatively low level of unit credit risk, mainly due to the amount of credit,
- the client's assessment procedure based on a low-level scoring method,
- limited customer information required, mainly related to its fixed income.

Nowadays, it is assumed that, using a certain formal division of activity into repetitive and a typical business assessment, **credit scoring could be applied to business credit, where the analysis of a credit application is, in principle, a more complex process** and requires more information about the client and credit institution.

The development and application of IT has created new opportunities that have significantly improved, shortened and objectified the procedures in place compared to the "traditional" analysis process, i.e. without the use of advanced IT programs written specifically for the credit scoring department. One of the areas that are currently being improved in the field of computerized scoring is the comparative analysis of enterprises as a separate module of the process of analyzing unit credit risk. Due to the high level of complexity of the risk analysis process for commercial loan transactions, developing and applying the credit scoring method for this process is not an easy undertaking.

The benefits of scoring for a lender are:

- streamlining the decision-making process - automation
- reduce the subjectivity of your credit decision
- a drop in "bad" loans
- increased acceptability of applications
- Include in customer's assessment more elements than before
- accurate risk measurement

- the transparency of the risk management policy
- reduced operating costs
- more segmentation capability
- generation of shares adequate to the level of risk
- the starting point for introducing an internal risk management model

The scoring system, using the set of attributes (predictors) and the weight assigned to it, assigns the probability of the occurrence of the highlighted event (risk). On this basis it is possible to predict the occurrence of a specific event in individual units and in the whole population. The object of the models is their objectivity, flexibility and simplicity.

A scoring system involves assigning a certain number of points quantified to the size describing the borrower's functioning and financing. The total number of points indicates the level of credit risk resulting from the borrower's business. The table below shows an example of a scoring system in credit scoring.

ASSESSMENT'S ELEMENTS (1)	ASSESSMENT SCALE (2)	WEIGHT (3)	INDEX (4)	ILLUMINATION (3) x (4)
Financial information	1 – 10	3,0	6	18
Company profile	1 – 10	1,5	5	7,5
Payment history	1 – 10	1,0	4	4,0
Company environment	1 – 10	2,0	7	14
TOTAL				43,5

In scoring models, both quantitative (non-measurable) and non-measurable (qualitative) variables can be used as explanatory variables.

- The differences in the methodologies used in analyzing the creditworthiness of enterprises are mainly due to a different approach to:
 - maximum number of points of the synthetic score,
 - the relative distribution of the total number of points between objective and subjective factors,
 - minimum number of points guaranteeing the granting of credit,
 - the selection and importance of individual financial ratios of measurable corporate borrower ratings, such as profitability ratios, liquidity, equity or debt,
 - the number of points awarded for certain economic indicators, mainly the profitability and liquidity ratios and their relative weight,
 - terminology used in the methodology of credit rating analysis of financial indicators,
 - Include or exclude the legal forms of credit security for the scoring formula.

Learning from the best – credit rating agencies

Moody's Investors Service

The methodology of Moody's Investors Services is based on the analysis of five groups of factors, called 'grid factors', which can be further subdivided into sub-factors:

1. **Business Profile**
2. **Scale**
3. **Profitability**
4. **Leverage and Coverage**
5. **Financial policy (capital structure strategy)**

Broad Rating Factors	Factor Weighting	Rating Sub-Factors	Sub-Factor Weighting
Business Profile	20%	Business Profile	20%
Scale	20%	Revenue	20%
Profitability	10%	EBITA Margin	10%
Leverage and Coverage	40%	EBITA / Interest Expense	10%
		Debt / EBITDA	10%
		Retained Cash Flow / Net Debt	10%
Financial Policy	10%	Free Cash Flow / Debt	10%
		Financial Policy	10%
Total	100%	Total	100%

Figure 4. Risk factors for manufacturing companies (Global Manufacturing Companies); source: Moody's Investors Service

In addition to the above, the agency also takes into account other factors, but in most cases the understanding of the 5 most important allows a good approximate estimate of the rating awarded. These other criteria include **quality of management, quality of corporate governance, financial management, liquidity management, risk of credit events and seasonality**. The analysis of these additional factors remains an integral part of the Moody's Investors Service evaluation process.

All main evaluation criteria have a defined, immediate scale with a detailed description. Below is an example graph presenting the criteria for granting a partial rating due to the company's business profile.

Factor 1: Business Profile (20%)									
Sub-Factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Business profile	20%	Expected volatility in results is almost non-existent. Supported by a commanding market position, entrenched cost effectiveness, technology advantages and a well-balanced global reach.	Very low expected volatility in results. Supported by a deeply entrenched and leading market position that is highly defensible through cost effectiveness and technology leadership with global exposure.	Low expected volatility in results. Supported by a strong market position in its relevant market, demonstrated and sustainable competitive advantages, insulation from raw material cost fluctuations, and solid diversity characteristics.	Moderate expected volatility in results. Supported by a solid market position in its most important geographic or product markets. Is vertically integrated or can pass-through the majority of its costs. Good diversity characteristics provide a buffer against sudden/unexpected shifts in demand.	Products are largely undifferentiated and the marketplace highly competitive, exposing company to periods of heightened volatility. Such exposure is tempered by an established market position, favorable costs, an ability to pass-through raw material costs, and fair diversity characteristics including modest operational concentration.	Products are undifferentiated, competition is intense and customers price sensitive, making results highly volatile. Company does not have advantageous cost profile or other competitive advantage to mitigate. High operational concentration.	Results are expected to be extremely volatile. Company has modest market presence, few competitive advantages and may have above-average costs. Very high operational concentration (1 or 2 locations).	Expected to have highly volatile cash flow generation, a single product line sold to few customers for a single use, an insignificant market position with many large competitors, concentrated exposure to a small cyclical market and uncertain demand, no pricing power, and a single operating site that has an uncompetitive cost structure. Permanent structural and technological disadvantages.

Figure 5. Detailed criteria for the assessment of the business profile according to Moody's Investors Service; source: Moody's Investors Service

Standard & Poor's Ratings Services

The first step in the Standard & Poor's Ratings Services methodology is to **analyze the business risk profile of a given company**, and then to **assess the financial risk profile**. The ratings are combined to determine the **subject's base assessment**.

Next, the company investigates further analytical factors using a **forward-looking analysis and analytical assessment** to prepare final rating applications aimed at ensuring transparency and comparability of assessments.

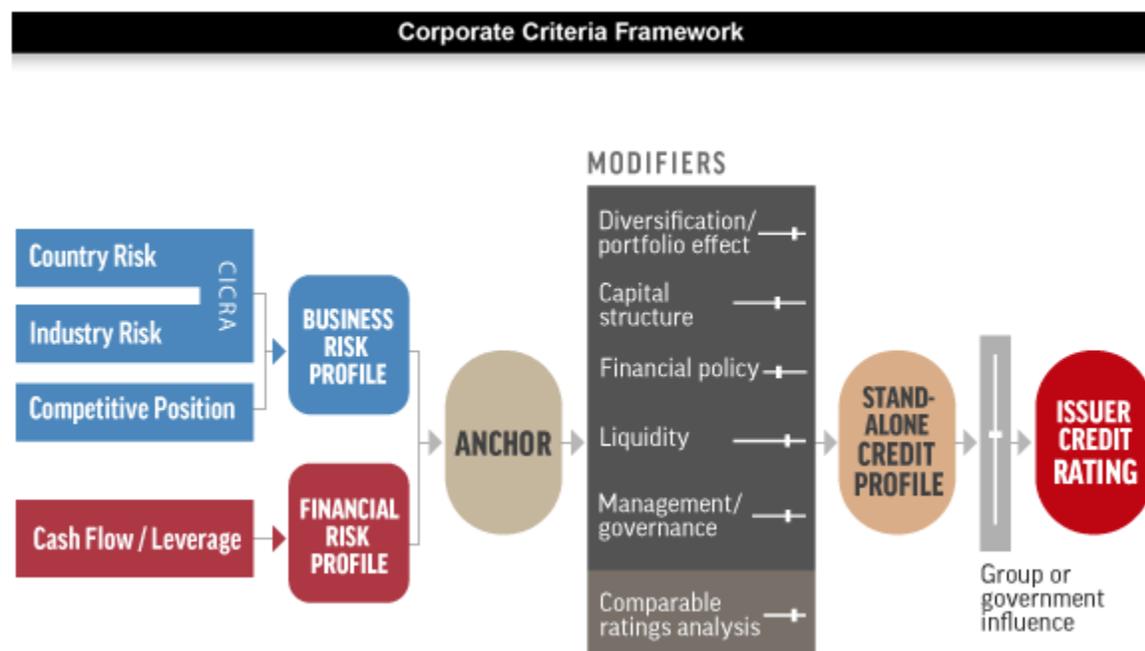


Figure 6. Corporate Criteria Framework; source: S&P Global Ratings

The whole process is based on a financial analysis including a **review of historical financial statements**, a review of analytical adjustments and cash flow forecasts.

Customers' portfolio – approach for better efficiency

Generally, credit risk management is divided into two areas:

1. **examination of the creditworthiness of individual borrowers and borrowers** - survey methods are adapted to the nature of entities;
2. **portfolio management (various types of concentration)** - breakdown by various criteria and examination of the degree of diversification (diversification).

Individual credit risk is the risk associated with granting a single loan. Total risk is not a sum of all risks for the bank, as many risks are correlated. Thus, **the total portfolio risk depends on the size of individual threats, the likelihood of their occurrence and the degree of correlation between them.**

The most frequent factor contributing to the growth of total portfolio risk is excessive credit exposure to an individual customer or entities operating in the same sector or industry, or excessive concentration in a given geographical region. Trying to estimate the risk resulting from the granting of a single loan, **credit analysts try to classify a potential borrower into a specific risk class.** Most often in practice there are two models classifying borrowers: one- and two-dimensional.

The one-dimensional model assesses the total impact of the factors adopted in a given procedure on the level of credit risk. **Two-dimensional models** separately qualify a particular transaction to a risk class based on two criteria, e.g. the economic and financial situation of the entity and the collateral accepted. Then, on the basis of both designated classes, the total risk class for a given credit transaction is estimated.

The analysis of credit risk is primarily a **consideration of the structure and quality of the loan portfolio**. It consists in determining the share of individual types of loans and identifying the place of their granting (the area of the company's activity) and determining the limits of permissible concentration - both with respect to loans and borrowers. It is also important to determine the quality of all claims that arose as a result of the implementation of loan agreements.

The basic methods of limiting aggregate credit risk include limiting the concentration of receivables, diversification and transfer of risk.

The total portfolio risk is a key factor in assessing the company's resilience to credit risk. This risk depends on the probability of non-payment of individual, individual transactions and interdependencies between individual loans. The credit exposures are less correlated (the loan portfolio is more diversified), the lower the credit risk. It is important to apply appropriate risk estimation methods to construct **the most effective loan portfolio**.

Large enterprises are granted thousands of trade credits for relatively small amounts. Risk analysis comes down to only a few selected parameters. In addition, counterparties are quite anonymous for those making credit decisions. It is assumed that **with such a large number of loans, it is possible to estimate the probability of non-payment of the loan by an entity with selected features**, and then determine the statistical distribution of potential losses generated by difficult debts. On this basis, you can calculate the expected loss on the portfolio. Part of this loss is compensated by cost savings, which is related to the simplification of the risk analysis of individual borrowers.

With respect to a **single credit risk**, the following control instruments are distinguished:

- assessment of the borrower's creditworthiness, i.e. examination of his creditworthiness both before granting the loan, i.e. at the stage of credit application evaluation and throughout the duration of the loan agreement, i.e. at the stage of monitoring receivables,
- assessment of collateral in the aspect of the company's risk, that is, the feasibility of the valuation of collateral, and their possible enforceability in the case of difficult loans, and thus the degree of liquidity of collateral,
- limiting the amount of credit granted if the borrower fails to meet the terms of the loan granted or if the borrower loses the creditworthiness.

With regard to **the loan portfolio**, an enterprise may use the following credit risk management instruments:

- diversification, i.e. quantitative and qualitative spread of credit risk, the less correlated loans in the loan portfolio, the smaller the total credit risk,
- monitoring of the loan portfolio,
- loan portfolio modeling,

- risk transfer.

In recent years, there has been an **expansion in the world of applications of quantitative methods in finance**. Making investment decisions becomes more and more complex and is based more and more on the use of mathematical methods. These changes result, on the one hand, from the growing diversity of instruments traded on the financial markets, and on the other hand from the development of new, better methods for risk description and management by scientists. The concept of financial risk has been mathematically precisely quantified, which allowed the construction of models for solving problems that are extremely important from a practical point of view. It can be said that in the development of the theory of finance there were three crucial moments, without which this theory would not take on the present shape.

The first breakthrough was the creation of a portfolio analysis, called the portfolio theory, created by Markowitz (1952). It made it possible to reduce the investment risk while maintaining a fixed income by **skillfully selecting the composition of the portfolio, i.e. by diversifying it**. This theory is based on basic knowledge of probability, statistics and optimization. **The second breakthrough** moment was the **creation of the option pricing model** according to the methodologies proposed by Black, Scholes and Merton (1973) and by Cox, Ross and Rubinstein (1979). These methodologies are based on the assumption that, at equilibrium, the market is free from arbitrage and through the appropriate construction of a portfolio consisting of a derivative and a basic instrument, we obtain a risk-free investment. To describe the behavior of the above instruments, a rather advanced apparatus of mathematical theory of random processes, i.e. stochastic processes, is used. **The third moment** is related to the **technological breakthrough** that occurred in the field of data processing and transmission and enabled the practical use of complex mathematical models.

Credit portfolio risk management requires capturing the dependencies that exist between the various components of the portfolio. These issues have become the subject of research only in the last few years and are intensively developed.

The main thesis of portfolio theory is the need to consider each asset item as part of the entire investment plan or strategy. According to this view, **the risk of a single item of assets can be considered and estimated only in connection with another type of asset that is in the same portfolio**. This means that the risk of the portfolio depends not only on the risk of individual assets considered separately, but also on the extent to which they react similarly to the changing conditions of the economy.

There are **four factors that can influence the portfolio's risk**:

1. profitability (expected return) of an individual asset possible to achieve in various variants of future economic situations,
2. the probability of occurrence of a given variant of the economic situation,
3. the share of a single asset in the portfolio,
4. strength of the relationship between the rates of return on individual assets.

Diversification in the theory of aggregated risk management plays a special role. It allows not only to limit the risk, but also to detect weak elements of the asset portfolio. By identifying key factors affecting the risk of the loan portfolio, and above all by determining the degree of mutual correlation of the portfolio

components, it is possible to determine the directions of the credit department to create a safer, ie less risky, loan portfolio.

Among the methods of loan portfolio analysis, the **Bennett model** deserves attention. It allows you to indicate which of the loan agreements in the portfolio are profitable from the point of view of profitability and the risk incurred, and which should be removed from the portfolio. Another interesting approach is the **Chirinko and Guilla models**. It is an econometric attempt to capture relations between macroeconomic variables and losses from loans granted to various sectors of the economy.

The aforementioned models were created due to the growing interest in the problem of credit risk and its minimization.

Specific factors in credit worthiness assessment (branch, size and region)

Corporate bankruptcy is an immanent feature of the developed market economy. The risk of this phenomenon (credit risk) is of interest to a wide range of business stakeholders: its owners, employees, executives, creditors and suppliers. The painful consequences of bankruptcy were the reason for trying to predict it. Starting from the twenties and thirties of the twentieth century, as the "fruit of" the economic crisis at that time, interest in the problem of bankruptcy intensified. Since then, both academics and business practitioners have sought to find increasingly effective tools for predicting corporate insolvency.

Reading the available literature, it can be said that the interest in the problem is reflected primarily in the application of increasingly **advanced statistical methods**. This is the consequence of both the development of the methods themselves and of the information technology enabling them to be implemented in order to forecast the company's insolvency. As a consequence, statistically popular methods are becoming increasingly popular in the case of methods developed on the basis of artificial intelligence and machine learning.

Another area of interest in predicting insolvency is an attempt to **expand the set of explanatory variables used for this purpose**. Typical predictive models of bankruptcies are based on financial ratios calculated on the basis of the company's financial statements, i.e. Balance Sheet, Profit and Loss Statement and Cash Flow Statement. Despite the wide range of these indicators, other predictive variables in models are attempted. We are talking about irreducible variables whose forces of influence, unlike quantitative variables, cannot be quantified. You can only specify the direction of their impact (positive, negative). Another example of the extension of the set of explanatory variables is the use of business performance indicators in business prediction models, i.e. Management Skills.

Finally, in addition to advanced statistical tools and new forecast variables, the direction of business insolvency research is to design models that take into account **the industry specificity** of the surveyed companies. This is the most advanced approach in bankruptcy prediction, and most sophisticated.

Economy sector definition and meaning

The sector is part of an industry that groups companies that produce goods or services of similar nature and sell them on the same geographic market. The criterion for separating a particular sector is that its participants use the same sources of supply and meet the needs of the same customers. The founder of the most common discriminatory model, **Altman**, emphasized that **one should strive for estimating bankruptcy prediction models, based on the financial data of enterprises, conducting as much as possible homogeneous business activity**. In the Polish literature, due to the difficulty of assembling a sufficiently large sample of research, still attempts are made to design industrial models.

The specificity does not concern only the industry. Perhaps more important is the specificity of a given region or country. This is especially true for legal regulations on credit collateral and reimbursement.

Specificity in non-financial terms

The specificity of enterprises in terms of non-financial impact directly affects the financial characteristics of the company. From the assets, their sources of financing, sales dynamics, profitability and cash flow. Let's try to isolate and define those elements specifically for companies that are not directly related to its financial statements.

Non-financial specifics could include:

- Seasonality of sales
- Technological advancement
- Human capital and related difficulties in the appropriate selection of personnel
- Regulatory and legal environment
- Production process and types of goods and services produced
- Entry and exit barriers
- Specificity of the proximal and distal environment
- Different image depending on the industry
- The life cycle of the product and the companies themselves
- Development prospects of the industry

Specificity in financial terms

The company's specificity in financial terms is closely related to the nature of production, the sensitivity of the sector to fluctuations in the business environment, proximity to the environment, the product life cycle, and many other factors. All this affects the financial position specific to the profit and loss account, the balance sheet and the cash flow of the enterprise.

Taking into consideration the financial characteristics of the specificity, focus should be on:

- Comparative analysis of financial indicators
- Various business financing strategies
- The structure of current assets
- Cost and structure of capital
- Cash conversion cycle
- Customer financing strategies and payments to suppliers
- Available sources of financing activities
- Payment morality depending on the industry

The following **tools may be used for industry-specific analysis**:

- Strategic groups' map
- Evaluation of sector's attractiveness
- Analysis of the strategic gap
- Strategic Benchmarking

Knowledge, Networking, On-going information and Work (KNOW) – no bankruptcy is unexpected

Not everything could be avoided, including giving a credit line to the customer which went into a financial liquidity trouble. Nevertheless, the empirical and academical studies shows that bankruptcy is a process which could be anticipated. To forecast the problems of your customer, you need a set of tools and habits which you must implement in your daily credit management process.

KNOWLEDGE

The training you are having now is the base and necessary knowledge of corporate credit management. As you can see, not only the fluency in the financial analysis is crucial, but broad understanding of close and further environment of the customer.

So, you need to know how to gather the data, which data are important, how to compare the information, which facts are important and what tools to use to analyze them. It is important to possess the knowledge about at least the basic models of predicting the company's insolvency. You can build later your own modeling which will include the specific factors of your debtors.

NETWORKING

You can not stop at knowledge and your own education. Networking is the tool for you to go beyond that, to collect others' experiences, learn faster from credit professionals practices you would never experience alone. This is the power of networking. There are many ways to network, either through your company's business meetings with various departments and on different symposiums, either by using specific gatherings designed for corporate credit practitioners.

ON-GOING INFORMATION

No, even very sophisticated, tools will be useful without on-going source of valid information. You need to follow the news on economy developments, your customers' financials and business performance and even on political changes around the world. All this is, sometimes seems very far from your clients' business, have very strong influence on the risk map causing potential bankruptcies.

WORK

Work means continuous improvement in the way you do the credit management. Never be satisfied with what you have. Economy is changing rapidly, and you must keep up with assessing the creditworthiness too. The culture of constant innovation will help you to do the right job.

Most common reasons for failing the bankruptcy

The short answer is, regardless of the industry, **failure is the result of either the lack of management skills or lack of proper capitalization or both**. Here are some most common reasons for bankruptcy filing:

Choosing a business that isn't very profitable. Even though business generates lots of activity, the profits never materialize to the extent necessary to sustain an on-going company.

Inadequate cash reserves. The company should not be fully dependent on the inflows from the external sources (borrowings or customers' receivables). There should be always an efficient cash reserve build on business peaks and protecting liquidity at bad times.

Failure to clearly define and understand market, customers, and customers' buying habits. Who are the customers? The company should be able to clearly identify them in one or two sentences. How they are reached? Is the product or service seasonal?

Failure to price product or service correctly. The pricing strategy have to be clearly defined. One can be the cheapest or can be the best, but trying to do both, will end up with failure.

Failure to adequately anticipate cash flow. When selling products on credit, the time between making the sale and getting paid can be months. This two-way tug at cash can pull down if fail to plan for it.

Failure to anticipate or react to competition, technology, or other changes in the marketplace. It is dangerous to assume that what's done in the past will always work. The company should challenge the factors which led it to the success in the past.

Overgeneralization. Trying to do everything for everyone is a sure road to ruin. Spreading itself too thin diminishes quality. The market pays excellent rewards for excellent results, average rewards for average results, and below average rewards for below average results.

Overdependence on a single customer. At first, it looks great. But then the company realizes that is at their mercy. Whenever your client has one customer so big that losing them would mean closing up shop, watch out. Having a large base of small customers is much preferred.

Uncontrolled growth. Slow and steady wins every time. Dependable, predictable growth is vastly superior to spurts and jumps in volume. It's hard to believe that too much business can be destructive, but the textbooks are full of case studies like that. Going after all the business company can get drains cash and actually reduces overall profitability.

Putting up with inadequate management. A common problem faced by successful companies is growing beyond management resources or skills.

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