

UNIVERSITY OF LJUBLJANA  
FACULTY OF ECONOMICS

MASTER'S DEGREE THESIS

**ENTERPRISE RISK MANAGEMENT ANALYSIS WITH  
SUGGESTIONS FOR IMPROVEMENTS FOR THE SELECTED  
COMPANY**

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## **STATEMENT**

I Alja Ferkolj hereby certify that I am the author of this Master's thesis that was written under the mentorship of Prof. Katja Zajc Kejžar and in compliance with the Copyright and Related Rights Act – Para. 1, Article 21. I herewith allow this thesis to be published on the website pages of the Faculty of Economics.

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# INTRODUCTION

## **Problem identification**

The process of globalization leads to the emergence of multinational firms which are spreading production, communication, technology and knowledge across the world. The complexity and the size of inter relationships in multinational firms can be linked to risks that are specific to multinational firms.

Globalization, the advance in technology, increasing financial sophistication and the uncertainty of irrational terrorist activity contribute to the growing number and complexity of risks. Organizations are facing an increasing number and a greater variety of risks and there is growing recognition that risk must be managed with the total organization in mind. All organizations are required to have a more practical approach to dealing with risk that goes beyond the statistical and analytical to future scenarios and planning (Jolly, 2003).

Identifying and treating risk by transfer, through insurance or other financial product, has been standard management activity. What has changed, beginning at the close of the 20th century, is treating the vast variety of risks in a holistic manner, and elevating risk management to a senior management responsibility (CAS, 2003).

Organizations have recognized the importance of managing all risks and their interactions. Furthermore, publicly traded companies are well aware of the desire of their shareholders for stable and predictable earnings, which is one of the key objectives of Enterprise Risk Management.

Enterprise Risk Management (ERM) emphasizes a comprehensive view of risk and risk management meaning that different risks within an organization should not be managed separately. Rather than focusing solely on hazard or financial forms of risk, enterprise risk management seeks to address all events that might adversely or positively impact the performance of an organization. Vast variety of risks should be treated in a holistic manner and the correlation of the various risks should be analysed.

Companies that understand their risks better than their competitors are in a very powerful position to leverage risk to a competitive advantage. Greater knowledge of risks delivers the ability to deal with risk that intimidates competitors, to project adversity better than competitors, and to manage risk at the lowest costs (Davenport and Bradley, 2000).

In the thesis a theoretical framework is used to evaluate the ERM concepts on the ERM process in the selected multinational company dealing with production, sale and distribution of non-alcoholic beverages. The company operates in 28 different countries and there is a strong need for increased governance and risk control. The selected company has in the year

2009 initiated a project for improvement of ERM process in the company's subsidiaries. The main goal of the project was to involve senior management teams in subsidiaries in risk assessment.

I was nominated as Risk advisor for Slovene subsidiary of the selected company, responsible for improvement of ERM process. In the thesis I will analyze ERM process and its performance in Slovene subsidiary and compare it with competent literature and suggest improvements.

### **Purpose and goals of the thesis**

The purpose of this master's thesis is to encourage managers to use an integrated approach to risk management and elevate risk management to a senior management team. Companies should not analyse each risk separately, but should also analyse the correlation of various risk. I want to encourage the senior management team in the selected company to actively participate in risk identification and assessment as I believe that understanding risk better than competition can be a source of competitive advantage of the firm.

Furthermore, the purpose of the master's thesis is to introduce the concept of the Enterprise Risk Management to the wider society, interested in this topic.

Goals of the master's thesis:

- introduce the concept of Enterprise Risk Management
- define current situation of the ERM process in the selected company compared to competent literature
- suggest improvements for the selected company in order to improve the existing ERM process

### **Methods of the thesis**

The first method used is a review of relevant literature and theoretical findings on Enterprise Risk Management as well as the most common barriers that companies are facing when implementing the ERM process. This is followed by a review of the ERM implementation practise on the case of the selected company. The next method used in the thesis is an evaluation of the current ERM performance in the Slovene subsidiary of the selected company compared to initial targets. Based on the analysis of the theoretical findings on ERM and on the case of the selected company I will suggest improvements for the selected company.



## **Structure of the thesis**

Following the introduction of the problem, purpose, goals and the method of the thesis, the chapters are organized as follows. The first chapter summarizes the most common definitions in the field of risk and the main categories of risk facing multinational firms. The second chapter describes the Enterprise Risk Management and the main drivers for its evolution. ERM framework is conceptualized by defining the risk types and the various process steps. Enterprise Risk Measurements and models are introduced in the third chapter. The fourth chapter summarizes the most common challenges in the phase of the ERM implementation.

In the fifth chapter the selected multinational company is introduced. Risk management in the selected company is introduced in general with the emphasis on changes leading towards the implementation of ERM process in the company's subsidiaries. The implementation of the ERM process and its current performance in the Slovene subsidiary of the selected company is described in the sixth chapter. The ERM process steps common for all the subsidiaries of the selected company will be presented with the concrete data for the Slovene subsidiary. The last chapter will analyse the improvements of the ERM process in the Slovene subsidiary of the selected company in year 2010 and suggest further improvements.

## **1 RISK**

### **1.1 Risk definition**

There are several definitions of risk as risk management is constantly developing as an essential tool for the effective manager. Even though there is no unique definition of risk, the common feature of many risk definitions is that risk deals with uncertainty. In the past risk was more often associated with events which could have negative impacts, while recently the term risk is used also for uncertainties with positive impacts.

One of the most general definitions of risk was defined by the International Organization for Standardization in the ISO 31000 standard. According to this standard Risk is defined as the effect of uncertainty on objectives (ISO, 2009).

In Strategic Management the term risk is used in reference to unanticipated variation or negative variation in business outcome variables such as revenues, costs, profit, market share, and so forth. Managers generally associate risk with negative outcomes (March and Shapira, 1987).

In finance, one measure of risk is the probability that the actual return on an investment will diverge from its expected value. How risky an investment is depends on how much the actual return is likely to diverge from its expected value. The most commonly used statistical measure of how much a variable is likely to diverge from its expected value is standard

deviation. Standard deviation is the square root of the variance which is calculated according to the following formula (Clark & Mairos, 1996, p. 35):

$$\sigma^2 = \sum_{j=1}^n (R_j - E(R))^2 \cdot p_j \quad (1)$$

*R<sub>j</sub> is possible outcome j, E (R) denotes the expected return and P<sub>j</sub> is the probability of possible outcome j*

Managing risk in a consistent, efficient, sustainable manner has become a critical boardroom priority as all members of the senior leadership team face unprecedented levels of business complexity, changing geopolitical threats, new regulations and legislation, and increasing shareholder demands (Paisley, 2010).

## **1.2 Risk in multinational firms**

International business offers companies new markets. Since the 1950s, the growth of international trade and investment has been substantially larger than the growth of domestic activities. Technology continues to increase the reach and the ease of conducting international business, pointing to even larger growth potential in the future (Czinkota & Ronkainen & Moffett, 2005, p. 5).

Changes that have taken in international markets are of great importance. Many markets have recently become deregulated with reductions in barriers to trade, and this has enhanced trading opportunities. New patterns of organization and business location have emerged, including using foreign suppliers, foreign direct investments, joint ventures, and international co-operation (Brooks, Weatherston & Wilkinson, 2004, p. 121).

Multinational companies operate in many different countries with different political, financial and economic systems. The heterogeneity of the environment in which multinationals operate has a strong influence on their risk exposure.

While multinational companies are opening subsidiaries in many different countries, they are also transferring their main resources, such as capital and knowledge. Although multinational companies have control of their subsidiaries, this control is not absolute. In fact, subsidiaries have some autonomy at their disposal to manage their activities. Many important decisions such as launching a new product, the choices about prices or technologies, and the employment level are generally made by subsidiaries (Hilmi, 2007).

Overseas investments of multinational firms are not only a huge opportunity, but also an enormous risk. To assess and manage this risk, multinational firms have to understand the

volatility of the global marketplace. This puts pressure on local cultures and identities, on established political boundaries and social constituencies and on traditional market arrangements (Boczko, 2005).

The three main categories of risk facing multinational firms are:

- Country-specific
- Firm-specific
- Global/systematic risk

### **1.2.1 Country-specific risk**

Country-specific risk refers to the volatility of returns on international business transactions caused by events associated with a particular country as opposed to events associated with a particular economic or financial agent (Clark & Marois, 1996, p. 44).

Country risk is defined using a wide range of political, economic and socio-cultural criteria. Broadly, it is the exposure that a company faces as a consequence of a change in a national government's policy and the effect this change could have on the value of an investment, a project or cash receipts. Country risk often arises when a government seeks to expropriate assets or profits, impose discriminatory pricing intervention policies, enforce restrictive foreign exchange currency controls or impose discriminatory tax laws. It can also occur if a government attempts to impose social or work related regulations that favour domestic companies, limit the movement of assets or restrict access to local resources (Boczko, 2005).

Country-specific risk is usually broken down into four main components: economic, financial, currency and political risk. The economic, financial and currency components are market based, while political risk is broader and refers to the probability that decisions that are unfavourable to the firm's interests will be taken at the political level. All four components of risk are interactive meaning that economic, currency and financial situations will have consequences on the political climate as well as on each other.

#### **1.2.1.1 Country economic risk**

Country economic risk refers to the volatility of macroeconomic performance which is often measured by real gross national product or real gross domestic product. To include information on the economy's overall assets and liabilities, country's economic risk is rather measured as the volatility of macroeconomic rate of return. Country's macroeconomic performance plays an important role in determining the outcome of certain business transactions. A volatile macroeconomic environment is likely to generate volatility in the profits of resident firms and financial institutions (Clark & Marois, 1996, p. 45).

Nations that face a shortage of foreign currency will sometimes impose controls on the movement of capital into and out of the country. Such controls may make it difficult for a firm to remove its profits or investments from the host country. Sometimes exchange controls are also levied selectively against certain products or companies in an effort to reduce the importation of parts, components, or supplies that are vital to production operations in the country (Czinkota et al., 2004).

#### 1.2.1.2 Country financial risk

Country financial risk refers to the ability of the national economy to generate enough foreign exchange to meet payments of interest and principal on foreign debt. The ability to meet payments of interest and principal on foreign debt depends on the extent to which the country's assets are financed with foreign loans. It depends on three parameters:

- Total amount of a country's external debt
- Its maturity structure
- Country's economic risk

#### 1.2.1.3 Country currency risk

Country currency risk is defined as the volatility of exchange rates. The exchange rate has major consequences on a country's level and composition of output and consumption, as well as on its overall economic well-being. Apparently profitable transactions can suddenly turn sour if the exchange rates move in the wrong direction (Clark & Marois, 1996).

Different exchange rate regimes affect business behaviour. A fixed exchange rate fixes the value of one country's currency against another. The two key advantages of a fixed exchange rate system are (Brooks et al., 2004):

- The stability that it provides for businesses encourages long-term contractual arrangements between businesses.
- Since the exchange rate cannot be altered to restore a country's competitiveness, if it runs a balance of payments deficit, it imposes a disciplined fiscal and monetary policy, which means a tight grip on inflation.

Floating exchange rate responds to the market demand for and supply of the domestic currency. If there are differences between the demand for and supply of the domestic currency, the exchange rate should automatically adjust. One of the great advantages of this type of exchange rate is that it does not require any government intervention; market forces undertake the adjustment. The problems with floating exchange rate are:

- Increased uncertainties for traders which may lead to a greater proportion of short-term contracts.
- Import prices rise then the balance of payments deteriorates, leading to depreciation in the value of currency. This restores the competitiveness of exports but further raises the price of imports, and these increased import costs can feed through into domestic inflation levels.

Fluctuations in the exchange rate are more likely to have harmful effects on business investment. That is, both international investment and domestic investment may be reduced, with concomitant effects on exports, in general, and output in particular.

Any move to a fixed exchange rate reduces uncertainty and improves business expectations. The decision, to adopt one exchange rate system in preference to another may not be taken purely on economic grounds, but may be the result of the need for closer political ties (Brooks et al., 2004).

#### 1.2.1.4 Country political risk

Politics and laws of a host country affect international business operations in a variety of ways. Politics influences the way markets operate. Often the most unpredictable economic events are political in origin, the result of flagging political willingness or capacity to maintain a consistent and predictable economic environment. Political risk relates to the preferences of political leaders, parties, and factions, as well as their capacity to execute their stated policies when confronted with internal and external challenges. Changes in the regulatory environment, local attitudes to corporate governance, reaction to international competition, labour laws, and withholding and other taxes may all be influenced by hard to discern shifts in the political landscape (PriceWaterhouseCoopers, 2010).

There is political risk in every nation, but the range of risks varies widely from country to country. In general, political risk is lowest in countries that have a history of stability and consistency. Three major types of risks can be encountered (Czinkota et al., 2005, p.112):

- Ownership risk, which exposes property and life
- Operating risk, which refers to interference with the ongoing operations of a firm
- Transfer risk, which is mainly encountered when attempts are made to shift funds between countries.

Hard political risk includes expropriation, nationalization, the destruction of assets and forced local shareholding. Expropriation is the transfer of ownership by the host government to a domestic entity with payment of compensation. Some industries are more vulnerable than others to expropriation because of their importance to the host country's economy and their

lack of ability to shift operations. Sectors as mining, energy, public utilities, and banking have frequently been targets of such government actions (Czinkota et al., 2005).

Many countries are turning from expropriation to more subtle forms of control, such as domestication. Through domestication, the government demands transfer of ownership and management responsibility. It can impose local content regulations to ensure that a large share of product is locally produced or demand that a larger share of the profit is retained in the country. Changes in labour laws, patent protection, and tax regulations are also used for purposes of domestication.

Political decisions at all levels, such as those on economic policy, social policy, the control of pollution and support for technology all have an impact on business activities. The business environment is liable to change as the result of radical political shock, gradual shift, or a combination of the two (Brooks et al., 2004).

**1.2.2 Firm specific risk**

A global firm is, besides being exposed to the mentioned four categories of country-specific risk, exposed to risks which are specific to its business. The primary categories of firm-specific uncertainties are operating, liability, research and development, credit, and behavioural uncertainties. Table 1 presents an overview of firm-specific uncertainties.

*Table 1: Firm-specific uncertainties*

<b>Operating uncertainties</b>	<p><b>Labour uncertainties:</b></p> <ul style="list-style-type: none"> <li>- Labour unrest</li> <li>- Employee safety</li> </ul> <p><b>Input supply uncertainties:</b></p> <ul style="list-style-type: none"> <li>- Raw materials shortages</li> <li>- Quality changes</li> <li>- Spare parts restrictions</li> </ul> <p><b>Production uncertainties:</b></p> <ul style="list-style-type: none"> <li>Machine failure</li> <li>Other random production factors</li> </ul>
<b>Liability uncertainties</b>	<ul style="list-style-type: none"> <li>Product liability</li> <li>Emission of pollutants</li> </ul>
<b>R &amp; D uncertainty</b>	Uncertain results from research and development activities
<b>Credit uncertainty</b>	Problems with collectibles
<b>Behavioural uncertainty</b>	Managerial or employee self-interested behaviour

Source: Miller, D. Kent, *A Framework for Integrated Risk Management in International Business*, 1992, p. 319.

Operational risk includes three subcategories of uncertainties: labour uncertainty, firm-specific input supply uncertainty, and production uncertainty. Uncertainty regarding specialized labour or other inputs is often firm-specific rather than having an effect on the industry in general. Labour uncertainties include changes in employee productivity due, for example, to labour unrest or strikes. Providing employees with a safe atmosphere in which to work reduces the personal risk to workers as well as the threat of injury-related lawsuits directed at the firm.

Raw materials shortages, quality changes in inputs, and spare parts restrictions are all examples of firm-operating uncertainties in the input supply category. Input supply uncertainties are likely to be the greatest when a single supplier or organized group provides critical inputs to the firm.

Production uncertainty is the third type of operating uncertainty. Production uncertainty includes variations in output due to machine failure. Also included in production uncertainty are other random factors, such as accidents, that disturb the production process.

Liability uncertainties are associated with unanticipated harmful effects due to the production or consumption of a company's product. Product liability uncertainty relates to unanticipated negative effects associated with the use of a product that can result in legal actions against the producer. Firms may also be held legally responsible for certain external effects such as emissions of contaminants into the environment. In addition to technological uncertainty at the industry level which was discussed earlier, individual firms investing in research and development encounter uncertainty about the relations between their R&D investments and new product or process outputs. The R&D uncertainty is the lack of perfect foresight as to the connections among a firm's own R&D expenditures.

Credit uncertainty involves problems with collectibles. Defaults by clients on their debts to a firm can be a direct cause of variation in the firm's income stream. The high levels of uncollectible loans accumulated by private banks lending to developing countries are an obvious case of adverse performance resulting from credit uncertainty. Problems associated with the management of collectibles are not, however, limited to the financial sector. The final category of firm-specific uncertainties is associated with the agency relationships within a firm. Jensen and Meckling (1976) define an agency relationship as "a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (p. 308). One such relationship is that between a firm's owners and the managers they employ. Jensen and Meckling (1976) show that managers often face incentives to increase their personal welfare at the expense of the firm's owners. This tendency toward personally beneficial behaviour decreasing the overall value of the firm, is not limited to top management. Rather, opportunistic behaviour by agents can occur at any level of the organizational hierarchy.

### **1.2.3 Systematic risk**

Systematic risk is the total risk that a multinational company is facing when conducting business in different markets. In the international finance literature, the major factor that is associated with the reduction in systematic risk for the MNC is the idea that the MNC's operations are in multiple countries, which increases the diversity of its cash flows (Shapiro, 1978). As an MNC is more diversified relative to a similar domestic firm, the returns of the firm will be less correlated with the market and its systematic risk may increase.

However, the additional risk such as foreign exchange risk and political risk that the international firm may face, could actually increase the firm's level of systematic risk. It is posited that the additional risk that the international firm may face could actually increase the firm's level of systematic risk if the increase in additional risk is higher than the decrease in coefficient of correlation between returns from different markets.

## **2 ENTERPRISE RISK MANAGEMENT**

### **2.1 Definition of Enterprise Risk Management (ERM)**

According to the definition from the Casualty Actuarial Society, 2003, Enterprise Risk Management is the discipline, by which an organization in any industry assesses, controls, exploits, finances, and monitors risk from all sources for the purpose of increasing the organization's short and long-term value to its stakeholders.

The underlying premise of Enterprise Risk Management is that every entity exists to provide value for its stakeholders. All entities face uncertainty and the challenge for the management is to determine how much uncertainty to accept as it strives to increase the stakeholder value.

Uncertainty presents both risk and opportunity, with the potential to erode or enhance value. Enterprise Risk Management enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value. Value is maximized when management sets the strategy and objectives to strike an optimal balance between growth and return goals and related risks, and efficiently and effectively deploys resources in pursuit of the entity's objectives (Committee of Sponsoring Organizations of the Treadway Commission, 2004).

Enterprise Risk Management encompasses:

- Aligning risk appetite and strategy: the management considers the entity's risk appetite in evaluating strategic alternatives, setting related objectives, and developing mechanisms to manage related risks.



- Enhancing risk-response decisions: ERM provides the rigor to identify and select among alternative risk responses – risk avoidance, reduction, sharing, and acceptance.
- Reducing operational surprises and losses: entities gain enhanced capability to identify potential events and establish responses, reducing surprises and associated costs or losses.
- Identifying and managing multiple and cross-enterprise risks: every enterprise faces a myriad of risks affecting different parts of the organization, and Enterprise Risk Management facilitates effective response to the interrelated impacts, and integrated responses to multiple risks.
- Seizing opportunities: by considering a full range of potential events, management is positioned to identify and proactively realize opportunities.
- Improving deployment of capital: obtaining robust risk information allows management to effectively assess overall capital needs and enhance capital allocation.

Enterprise Risk Management emphasizes a comprehensive view of risk and risk management, meaning that different risks within an organization should not be managed separately. Rather than focusing solely on hazard or financial forms of risk, Enterprise Risk Management seeks to address all events that might adversely or positively impact the performance of an organization. Vast variety of risks should be treated in a holistic manner and the correlation of various risks should be analysed.

Companies that understand their risks better than their competitors are in a very powerful position to leverage risk to a competitive advantage. Greater knowledge of risks delivers the ability to deal with risk that intimidates competitors, to project adversity better than competitors, and to manage risk at the lowest costs. (Davenport & Bradley, 2000).

Enterprise Risk Management should be a pattern of an enterprise's behaviour with the full support of the enterprise's management and should influence corporate decision making. The intention of Enterprise Risk Management is to be value creating as well as risk mitigating. It should improve decision making at all levels of the organization (CAS, 2003).

### **2.1.1 Forces for ERM evolution**

Identifying and prioritizing risk, either with foresight or following a disaster, has long been a standard management activity. Treating risk by transfer, through insurance or other financial products, has also been a common practise.

What has changed, is treating the vast variety of risks in a holistic manner, and elevating risk management to a senior management responsibility.

Main driving forces toward ERM are:

- The increasing number and the interaction of risks facing organizations

- External pressures
- Portfolio point of view
- Quantification of risks
- Boundary less benchmarking
- Risk as opportunity

### ***The increasing number and the interaction of risks facing organizations***

New risks emerge with the changing business environment. The advances in technology, globalization, increasing financial sophistication and the uncertainty of irrational terrorist activity contribute to the growing number and complexity of risks. Organizations have recognized the importance of managing all risks and their interactions. Even seemingly insignificant risks on their own have the potential, as they interact with other events and conditions, to cause great damage.

#### ***External pressures***

There is an increasing desire of publicly traded companies' shareholders for stable and predictable earnings. Motivated by the well-publicized catastrophic failures of corporate risk management, rating agencies, stock exchanges and institutional investors insist that company senior management take greater responsibility for managing risks on an enterprise-wide scale.

#### ***Portfolio point of view***

To understand its portfolio risk, an organization must understand the risks of the individual elements plus their interactions. Portfolio risk is not the simple sum of the individual risk elements. For example, certain risks can represent »natural hedges« against each other if they are sufficiently negatively correlated.

#### ***Quantification of risks***

Advances in technology and expertise have made risk quantification easier, even for the infrequent, unpredictable risks that have been historically difficult to quantify.

Similar to the continuing effort to quantify individual risks better is a growing effort to quantify portfolio risk. This can be extremely complex and challenging, because in addition to individual risks, interactions between individual risk elements should be explained.

Risk quantification gives organizations the ability to estimate the magnitude of risk or degree of dependency with other risks sufficiently as to make informed decisions. Further, the act of simply going through the quantification process gives people a better qualitative perspective of the risk.

### ***Boundary less benchmarking***

Common ERM practices and tools are shared across a wide variety of organizations and across the globe. The ERM process, tools, and procedures are common to many organizations. Organizations have become quite willing to share practises and efficiency gains with others with whom they are not direct competitors (Casualty Actuarial Society, 2003).

### ***Risk as opportunity***

In the past, organizations tended to take a defensive posture towards risks, viewing them as situations to be minimized or avoided. Increasingly, organizations have come to recognize the opportunistic side, the value-creating potential of risk. There is the opportunity to swap, keep, and actively pursue certain risks because of the confidence in the organization's special ability to exploit those risks. In essence, there is realization that risk is not completely avoidable and that informed risk taking is a means of competitive advantage.

### **2.1.2 ERM framework**

ERM can be conceptualized by defining the types of risk included and the various risk-management process steps as shown in the figure below:

*Table 2: ERM Framework*

<b>ERM Framework</b>				
	<b>Types of Risk</b>			
<b>Process steps</b>	Hazard	Financial	Operational	Strategic
Establish Context				
Identify Risks				
Analyze/Quantify Risks				
Integrate Risks				
Assess/Prioritize Risks				
Treat/Exploit Risks				
Monitor and Review				

*Source: Casualty Actuarial Society, 2003, p. 9.*

#### **2.1.2.1 Types of enterprise's risk**

Enterprise's risk should be categorized in a way that all sources of enterprise's risk are included. In the literature, there are more categorizations of enterprise's risks. General categorization of risk, which is also the basis for risk categorization in the selected company, includes the following risk types:

- Hazard risk
- Financial risk
- Operational risk
- Strategic risk

The precise slotting of individual risk factors under each of these four categories is less important than the recognition that ERM covers all categories and all material risk factors that can influence the organization's value.

Hazard risks include risk from:

- Fire and other property damage
- Windstorm and other natural perils
- Theft and other crime, personal injury
- Business interruption
- Disease and disability (including work related injuries and diseases)
- Liability claims

Financial risks include risks from:

- Price changes (influencing asset value, interest rate, foreign exchange, commodity prices)
- Liquidity (cash flow)
- Credit (default)
- Inflation/purchasing power

Operational risk includes risks from:

- Business operations (human resources, product development, product/service failure, supply chain management, business cyclicality)
- Empowerment (leadership, change readiness)
- Information technology (availability, relevance)
- Business reporting (budgeting and planning, accounting information, taxation)

Strategic risk includes risks from:

- Reputation damage
- Competition
- Customer wants
- Demographic and social/cultural trends
- Capital availability
- Regulatory and political trends

### 2.1.2.2 ERM process steps

Based on the Australian/New Zealand Standard in Risk Management (AS/NZS), the risk management process consists of the following seven steps:

1. Establish Context
2. Identify Risk
3. Analyze/Quantify Risks
4. Integrate Risks
5. Assess/Prioritize Risks
6. Treat/ Exploit Risks
7. Monitor and Review

#### ***Establish Context***

This step includes External, Internal and Risk Management Contexts. The External Context defines the relationship of an enterprise with its environment, including the enterprise's strengths, weaknesses, opportunities and threats (SWOT analysis). It also identifies the various stakeholders (shareholders, employees, customers, community), as well as communication policies with these stakeholders.

The Internal Context starts with an understanding of the overall objectives of an enterprise, its strategies to achieve those objectives and its key performance indicators.

The Risk Management Context identifies which risk categories are relevant for a certain enterprise and the degree of coordination throughout the organization, including the adoption of common risk metrics.

#### ***Identify risk***

This step involves documenting the conditions and events that represent material threats to an enterprise's achievement of its objectives or represent areas to be exploited for a competitive advantage.

Since ERM expresses risk in terms of its impact on corporate performance measures, the evaluation of corporate performance measures has a specific application in the identification of risks. Most common measures for the evaluation of corporate performance are:

- Return On Equity (ROE) – net income divided by net worth
- Operating earnings – net income from continuing operations, excluding realized investment gains
- Earnings Before Interests, Taxes, Depreciation and Amortization (EBITDA)

- Cash flow return on investments – EBITDA divided by tangible assets
- Weighted Average Cost of Capital (WACC)
- Economic Value Added (EVA)

Techniques for identifying the various events that create risk include:

- Review of prior internal audit reports
- Brainstorming
- Risk questionnaires
- Review of financial statements, Exchange Commission reports, and management letter comments
- Business studies
- Industry benchmarking
- Scenario analysis
- Risk assessment workshops
- Incident investigation
- Auditing and inspections
- Hazard and operability studies

### ***Analyze/Quantify risks***

This step involves calibrating and, wherever possible, creating probability distributions of outcomes for each material risk. This step provides necessary input for subsequent steps, such as integrating and prioritizing risks. Analysis techniques range along a spectrum from qualitative to quantitative, with sensitivity analysis, scenario analysis and simulation analysis.

### ***Integrate risks***

The risk integration that takes place in ERM allows management to assess interdependencies between its various risk exposures and take this information into account when developing risk mitigation strategies.

This step involves aggregating all risk distributions, reflecting correlations and portfolio effects, and expressing the results in terms of the impact on an enterprise's key performance indicators.

### ***Assess/Prioritize risks***

This step involves determining the contribution of each risk to the aggregate risk profile, and prioritizing accordingly. Risk mapping is frequently used for risk prioritization. It involves the visual representation of identified risks in a way that easily allows ranking them. This

representation takes the form of a two-dimensional grid with frequency (or likelihood of occurrence) on one axis, and severity (or degree of financial impact) on the other axis. The risks that fall in the high-frequency/high-severity quadrant are typically given the highest priority risk management attention.

### ***Treat/Exploit risks***

In this step the appropriate response to identified risks should be defined. An enterprise's management should perform a cost-benefit analysis so that an appropriate treatment can be selected for each risk.

The risk treatment options are:

- Accept the risk (take no further action and accept the implications of certain risk)
- Avoid the risk (eliminate the activity which is causing certain risk)
- Transfer the risk (this option can involve the use of derivatives, hedging or insurance on financial risk, as well as the use of third parties to perform manufacturing or other back-office work on operational risk).

A cost-benefit analysis should be performed so that an appropriate treatment can be selected for each risk. Experts such as actuaries may sometimes be needed.

### ***Monitor and review***

This step involves continual gauging of the risk environment and the performance of the risk management strategies. Effective monitoring needs to ensure that the agreed-upon risk response is actually implemented and working.

It is important to clarify monitoring responsibilities among internal auditing, individual business managers, and the board. Software based on key performance metrics may be used to design an effective continuous monitoring process.

## **3 ENTERPRISE RISK MEASURES AND MODELS**

### **3.1 Risk measures**

ERM should represent the entire portfolio of risks that constitute an enterprise. Many companies represent their portfolio of risks in terms of cumulative probability distribution (e.g. of cumulative earnings) and use it as a base from which they determine the incremental impact (e.g. on required capital) of alternative strategies or decisions (CAS, 2003).

Risk measures relevant for determination of the volatility around expected results are:

- Variance: the average squared difference between random value and its mean.
- Standard deviation: the square root of variance.
- Semi variance and downside standard deviation: modifications of variance and standard deviation in which only unfavourable deviations from a specified target level are considered in the calculation.
- Below target risk: the expected value of unfavourable deviations of a random variable from a specified target level.

Risk measure which concentrates on the adverse tail of the probability distribution is Value at Risk (VaR). It considers only negative deviations from expected results. It calculates the maximum loss expected (or worst case scenario) on an investment, over a given time period and given a specified degree of confidence. VaR has three standard elements: a relatively high level of confidence (typically either 95% or 99%), a time period (a day, a month or a year) and an estimate of an investment loss (expressed either in dollar or percentage terms). There are three methods of calculating VaR: the historical method, the variance-covariance method and the Monte Carlo simulation. The historical method simply re-organizes actual historical returns, putting them in order from worst to best. It then assumes that history will repeat itself, from a risk perspective. The Variance-Covariance method assumes that stock returns are normally distributed. It requires that we estimate only two factors - an expected (or average) return and a standard deviation - which allow us to plot a normal distribution curve. Monte Carlo Simulation runs multiple hypothetical trials through the model. It refers to any method that randomly generates trials (Harper, 2010).

### **3.2 Risk modelling**

Risk modeling refers to the models and methods used to evaluate risk and performance measures. Most organizations usually possess a simple financial model of their operations that describes how various inputs (i.e. risk factors, conditions, strategies and tactics) will influence the key performance indicators, which are used to manage the organization (Decisioncraft, 2005).

The major models used in the ERM process are:

- Structural financial models
- Stochastic (probabilistic) risk models

Structural financial models explicitly capture the structure of the cause/effect relationship, linking inputs to outcomes. These structural models are deterministic models because they describe the expected outcomes from a given set of inputs without regard to the probabilities of the outcomes above or below the expected values.



Stochastic or probabilistic risk models include probabilities of the outcomes above or below the expected values. The two general classes of stochastic risk models are statistical analytical risk models and structural simulation models.

Analytical risk models require a restrictive set of assumptions and mathematically tractable probability distributions. Their principal advantage over simulation models is in the ease and speed of calculation.

Simulation models (often called Monte Carlo) require a large number of computer-generated trials to approximate an answer. These models are relatively robust and flexible, can accommodate complex relationships and depend less on simplifying assumptions and standardized probability distributions. Their principal advantage over analytical models is the ability to model virtually any real-world situation to a desired degree of precision.

Statistical and structural methods differ because of the relationship among random variables represented in the model. Models using statistical methods are based on observed statistical qualities of random variables without regard to cause/effect relationship. Statistical methods enable easier model parameterization from the available (often public) data. Models using structural methods are based on an explicit cause/effect relationship. These cause/effect linkages are typically derived from both data and expert opinion. The principal advantage over statistical methods is the ability to examine the causes driving certain outcomes, and the ability to directly model the effect of different decisions on the outcome.

Since the choice of modelling approach is typically between statistical analytical models and structural simulation models, the contrast between these modelling approaches is summarized in the table below.

*Table 3: The contrast between statistical analytical and structural simulations methods*

<b>Representation of Relationship among random variables in the model</b>	<b>Calculation Technique</b>	<b>Relative Advantage</b>
Statistical (based on observed statistical qualities)	Analytic (closed form - formula solutions)	Speed, ease of replication, use of publicly available data
Structural (based on specified cause/effect linkages)	Simulations (solutions derived from repeated draws from the distribution)	Flexibility, treatment of flexible relationships, ability to examine scenario drivers

*Source: Casualty Actuarial Society, 2003, p. 20.*

## **4 ERM IMPLEMENTATION**

There is a significant need for ERM if organizations are to improve governance, risk/return, and revenue growth, as well as realize the myriad of other benefits. Many rating agencies have reinforced the importance of ERM by assessing non-financial firms on their ERM implementation (Schanfield & Helming, 2008).

Internal auditors should play an active role in the ERM implementation process because an organization's failure to achieve solid ratings could result in increased financing costs. Therefore, internal auditing should consider providing training in risk and control to board members. As part of special projects in their internal audit plan, auditors can also perform an independent review in which they should evaluate how their organization could meet the main ERM implementation challenges.

### **4.1 The ERM implementation challenges**

#### **4.1.1 Defining risk terminology**

A risk glossary should be developed at the start of the ERM implementation process to ensure that risk definitions are properly understood by everyone in an organization. It is important to define what risk means for the entire organization at the outset of the ERM implementation, as there are several different interpretations. A consistent use of key concepts will save time and effort. At the very least, an organization needs to agree on definitions for terms such as risk, risk assessment, risk management, ERM, significance, likelihood, inherent risk, and residual risk.

#### **4.1.2 Selecting the ERM framework**

Many ERM frameworks developed and used around the world include:

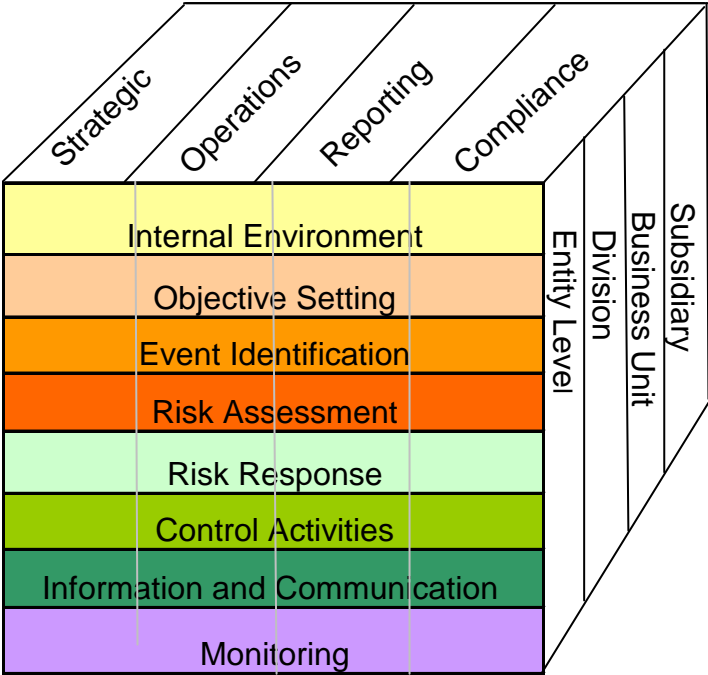
- Association of Insurance and Risk Managers (AIRMIC)
- The National Forum for Risk Management in the Public Sector (ALARM in UK)
- Australia/New Zealand Risk standard (AS/NZ 4360:2004)
- British Standard 31100
- Federation of European Risk Management Associations (FERMA)
- Internal Control (Hong Kong)
- Institute of Risk Management (IRM)
- International Organization for Standardization (ISO 31000)
- The Committee of Sponsoring Organizations of the Treadway Commission's (COSO)

The most commonly used risk framework in many organizations was released in 2004 by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). This framework defines the essential components, suggests a common language, and provides clear direction and guidance for enterprise risk management. It views an entity’s objectives in the context of four categories: strategic, operations, reporting and compliance and considers activities at all levels of the organization: the entity level, division level, business unit and subsidiary level.

A direct relationship between objectives, which an entity strives to achieve, and enterprise risk management components, which represent what is needed to achieve them, is depicted in a three-dimensional matrix in the form of a cube. The four objectives or categories – strategic, operations, reporting, and compliance, are represented by the vertical columns, the eight components by horizontal rows, and an entity’s units by the third dimension. This depiction portrays the ability to focus on the entirety of an entity’s enterprise risk management, or by objectives category, component, entity unit, or any subset thereof (COSO, 2004).

Figure 2 represents a three-dimensional matrix showing the relationship between ERM objectives, components and entity’s units.

Figure 1: COSO’s ERM Framework



Source: Committee of Sponsoring Organizations of the Treadway Commission (2004). *Enterprise Risk Management – Integrated Framework. Executive Summary, p. 11.*

COSO’s framework is particularly convenient for multinational companies since it links together business unit and entity level and portfolio view of risks is developed from two perspectives: business unit level and entity level (COSO, 2004).

It is important for an organization implementing ERM to understand at least some of the vast body of knowledge related to ERM so that management can make intelligent decisions about how best to implement it. Such decisions include selecting an appropriate risk framework and adapting it to the organization. Some of the different frameworks have advantages, such as workbook materials and display slides that may help the implementation process. By learning more details about the various ERM frameworks, internal auditors can help management evaluate which are best suited to the organization's needs.

#### **4.1.3 Articulating ERM benefits/impacts**

It is important to identify the benefits/impacts that the organization expects to achieve from implementing ERM. The key benefits/impacts of ERM include:

- Improved decision-making, especially in setting corporate strategy
- Reduced risk exposure in key areas
- Improved corporate governance
- Improved compliance
- Greater efficiency of operations and profitability
- More effective business processes
- Enhanced capital allocation
- Increased stock price

The ERM project team, as directed by executive management, should articulate the anticipated benefits/impacts throughout the organization and create a measurement process to determine to what extent these objectives will be achieved. For example, the organization may meet the milestone improved corporate governance through delivery of risk assurance if its audit committee has improved by including at least one external member and if members have received formal training in risk and control (Schanfield & Helming, 2008).

#### **4.1.4 Integrating strategy and human resources into ERM successfully**

It is important to integrate both strategy and human resources into the ERM process. From the human resource perspective, specific goal-setting tied to the success of ERM must be part of an individual's performance management plan; without this, the implementation exercise may fail. Likewise, the business strategy should be defined at the outset of the exercise along with the organization's mission and vision. The ERM process will flow forward from this strategy, and events will be identified that may impact achievement of the organization's strategies and objectives (Schanfield & Helming, 2008).

For successful ERM implementation it is paramount that the board drive the implementation exercise. Everyone in the organization must be responsible for managing some aspect of risk. All individuals must be trained in basic risk management skills, a risk framework must be

adapted to the organization's needs, and risk tolerances must be set by the board. Internal auditors can help the implementation effort by learning all they can about ERM as well as by networking with risk professionals. They also need to challenge the external auditors to get appropriate support for this initiative. Finally, auditors must do more to educate their board about ERM to ensure the right outcomes (Schanfield & Helming, 2008).

#### **4.1.5 Fixing boundaries between ERM and Sarbanes Oxley Act of 2002**

The Sarbanes-Oxley Act was signed into law on 30th July 2002, and introduced highly significant legislative changes to financial practice and corporate governance regulation. It introduced stringent new rules with the objective to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws (Sarbanes Oxley, 2002).

Companies that have completed their U.S. Sarbanes-Oxley Act of 2002 implementations in the last few years might find their compliance efforts towards Sarbanes-Oxley Act sufficient also for the ERM implementation. However, because Sarbanes-Oxley is a rules-based initiative following a bottom-up approach, it is not easily leveraged for ERM.

Sarbanes-Oxley focuses on controls over transactions, whereas ERM is a top-down, holistic, principles-based approach focusing on risks associated with events. Sarbanes-Oxley also does not specifically address operational, strategic, and compliance risks not related to financial reporting. Organizations that choose to combine their ERM and Sarbanes-Oxley efforts should start with a clean sheet of paper and identify all those events that create risk, including those that create financial risk. The assessment of those events from the top down may then facilitate the Sarbanes-Oxley effort that was generated from the bottom up.

## **5 RISK MANAGEMENT IN THE SELECTED COMPANY**

### **5.1 Introduction of the company**

The selected company is licensed to produce, sell and distribute a range of non-alcoholic beverages. It was formed in the year 2000 as a result of the merger of the Athens-based Hellenic Bottling Company and the London-based Coca-Cola Beverages. Company's two major shareholders are the Kar-Tess Holding S.A., a private holding company, and The Coca-Cola Company. For most of the beverages the owner of the trademarks is The Coca Cola Company, which supplies the concentrates and is largely responsible for consumer marketing.

The company is headquartered in Athens and is conducting operations across 28 countries, which can be divided into:

- Established markets (Austria, Cyprus, Greece, Italy, Northern Ireland, Republic of Ireland, Switzerland)
- Developing markets (Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia)
- Emerging markets (Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, FYROM, Moldova, Montenegro, Nigeria, Romania, Russia, Serbia, and Ukraine)

In 2009 the company's Earnings Before Interest and Tax (EBIT) were 651 million Euros. EBIT split between three markets segments is shown in the table 4.

*Table 4: EBIT split of the selected company in 2009*

	<b>EBIT share</b>	<b>EBIT (million €)</b>
Established markets	50%	326
Developing markets	15%	98
Emerging markets	35%	228

*Source: Internal sources of the selected company, 2009.*

The company had over 44.000 employees in 2009 and its net revenues amounted to 6.544 million Euros.

The executive management group of the company is the Operating Committee. It sets strategy and direction and it ensures effective coordination and decision making across the organization. The roles of the committee include:

- Developing Group Strategy
- Approving annual targets for countries and corporate functions
- Challenging and approving strategic business plans
- Reviewing operating performance of countries and agreeing on corrective action
- Reviewing operating performance of corporate functions and agreeing on corrective action
- Spreading best practices from peer companies and other industries

The corporate office in Athens is designed to group together the key staff and processes. Corporate functions manage projects, processes, and shared services. Each function has a country-level and a group-level structure. This structure brings functional operations as close as possible to the customer, while allowing the company to obtain substantial scale benefits in procurement savings, knowledge sharing, investment planning and best practices from its operations in the 28 countries.

## **5.2 Risk Management in selected company**

The corporate finance office is responsible for overall risk management which includes safeguarding the assets of the company to minimize the risk of financial loss and developing risk management capabilities to enhance decision making.

The Risk and Insurance department and the Treasury department within the corporate finance office are mainly dealing with risk.

### **5.2.1 Corporate Risk and Insurance department**

Corporate Risk and insurance department is covering three main areas:

- Group insurance and risk financing
- Property loss prevention
- Integrated risk management

#### ***Group insurance and risk financing***

Group insurance and risk financing objectives are:

- a) To ensure that the Group is properly protected against insurable risk either by purchase of insurance or by appropriate self-funding arrangements.
- b) To arrange cost-effective Group global insurance policies where possible.
- c) To assist local operations in arranging cost-effective local protection where global insurance is not available or appropriate.
- d) To establish, maintain and develop efficient and effective insurance relationships with a core group of international and local insurers.

The following Group insurance policies are arranged centrally:

- Property damage
- Product recall
- Terrorism
- Directors and officers liability
- Personal accident and travel
- Special contingency (kidnap, extortion)
- Crime (theft)

The terms and conditions of these policies have been agreed centrally, with the level of deductible for each contract arranged at the most cost-effective level for the Group. Local

insurance to cover the various deductibles should not be purchased without reference to the Corporate Risk and insurance management.

### ***Property Loss Prevention (PLP)***

Property loss prevention covers:

- The development of loss prevention culture within the company and ensure that loss prevention is an integral part of key business decisions.
- Ensuring that the company assets are protected as far as reasonably possible by setting PLP guidelines.
- Reviewing the exposures at each of the main manufacturing sites with reference to PLP guidelines and other best practice standards.
- Assisting operations in minimising arising risks by identifying hazards and making recommendations for risk improvement where appropriate.
- Monitoring risk improvement and risk quality.
- Providing guidance and training in PLP to all operations.

### ***Integrated Risk Management***

The selected company recognized the need to implement the ERM process meaning that all subsidiaries should regularly identify, assess, control and monitor all risks arising from their business activities. The implementation started in the year 2005 but the frequency of risk assessment was insufficient and it considered mainly financial sources of risk.

In 2009 Corporate Risk and Insurance department initiated a project to improve involvement of local subsidiaries in risk assessment. Every subsidiary had to nominate a Risk advisor who was responsible for the ERM implementation in his/her subsidiary.

I was nominated as the Risk advisor for the Slovene subsidiary and in the sixth chapter of this master's thesis I will focus on ERM implementation and process steps in the Slovene subsidiary of the selected company.

#### **5.2.2 Corporate Treasury department**

The Board of Directors has the ultimate responsibility to ensure that the company has adequate systems of financial control. The Board of Directors has adopted a Chart of Authority for the Group, defining financial and other authorisation limits and setting procedures for approving capital and investment expenditure.

The Board of Directors also approves three-year strategic and financial plans and detailed annual budgets. It subsequently reviews monthly performance against targets set forth in such



plans and budgets. The key focus of the financial management strategy is the protection of the earnings stream and the management of cash flow.

Financial risks faced by the company arise from adverse fluctuations in interest rates, foreign exchange rates and commodity prices.

The treasury function managed from the corporate Finance office in Athens is responsible for managing the financial risk of the company and its subsidiaries in a controlled manner, consistent with the Board of Directors' approved policies. The treasury policy and the Chart of Authority together provide the control framework for all treasury and treasury related transactions.

The treasury policies include:

- Hedging transactional exposures (particularly raw material purchases) to reduce risk and limit volatility. Derivates are used if they qualify as hedging activities, meaning that they reduce risk or convert one type of risk to another.
- An investment policy to minimise counterparty risks and ensure an acceptable return is being made on excess cash positions. Counterparty limits are approved by the Board of Directors to ensure that risks are controlled effectively and transactions are undertaken with approved counterparties.

### ***Interest rate risk management***

Interest rate costs are managed primarily with interest rates swaps and options. Some of the companies' fixed rate bonds have been swapped from fixed rate obligations into six-month floating obligations and all non-euro issues underwent a full currency swapp into euro.

### ***Foreign exchange rate risk management***

The company's foreign exchange exposure arises from adverse changes in exchange rates between the euro, the US dollar and the currencies in the non-euro countries. This exposure affects the company's result in the following way:

- Raw material purchased in a currency such as the US dollar can lead to higher cost of sales which, if not recovered in local price or cost reductions, will lead to reduced profit margins.
- Devaluations of weaker currencies that are accompanied by high inflation and declining purchasing power can adversely affect sales and unit case volume.
- Operations which have functional currencies other than euro, any change in the functional currency against euro impacts the company's income statement and balance sheets when results are translated to euro.

The company's Treasury policy requires hedging of 12-month forecasted transactional exposures within defined coverage levels (minimum 25% and maximum 80%). Hedging beyond a 12-month period may occur provided the forecasted transactions are highly probable.

Fluctuations in market prices for raw materials are hedged by using various risk management products such as Commodity Futures, Option contracts and Supplier Agreements. The hedge horizon for such instruments can be up to a maximum of three years.

Currency forward and option contracts are used to hedge forecasted transaction exposures. Transaction exposures arising from adverse movements in assets and liabilities denominated in another currency than the reporting currency are hedged only for items like inter company loans and intra group dividends using mainly forward contracts.

## **6 ENTERPRISE RISK MANAGEMENT IN THE SELECTED COMPANY**

Implementation of the ERM process was initiated by the corporate Risk department and started in the year 2005. The primary aim of this framework was to minimise the company's exposure to unforeseen events and to provide certainty to the management of identified risks in order to create a stable environment within which the company can deliver its operational and strategic objectives.

There were two principal ERM objectives:

- The compilation and maintenance of an up-to-date risk portfolio detailing the risks to the achievement of the Group's operational and strategic objectives; and
- Consistent and replicable risk identification, management and escalation of identified risks across the Group.

These objectives should be achieved by:

1. Regular monthly risk reviews with the country senior management teams to chart and verify the progress of the management of the identified risk exposure.
2. Escalation of significant operational risks together with progress on agreed management actions to the regional directors on a quarterly basis.
3. Twice yearly communication of cumulative regional risk exposure to the Operating Committee and Audit Committee.

In 2005 local management teams in subsidiaries started with annual risk assessments and delivered risk assessment outputs with yearly business plans. However, frequency of risk assessment was insufficient and it considered mainly financial sources of risks.

In order to improve the enterprise risk management process, in 2009 all the subsidiaries were requested to nominate risk advisor responsible for the replicable risk management process.

As the Risk advisor for Slovenia, I was trained to implement the ERM process in the Slovene subsidiary. After the training, I introduced the ERM concept to the senior management team. I assured that the senior management team regularly participated in risk identification and assessment and that risk response plans were initiated. Furthermore, I was responsible for the escalation of significant operational risks together with the progress on agreed management actions to the Risk Director in the corporate office.

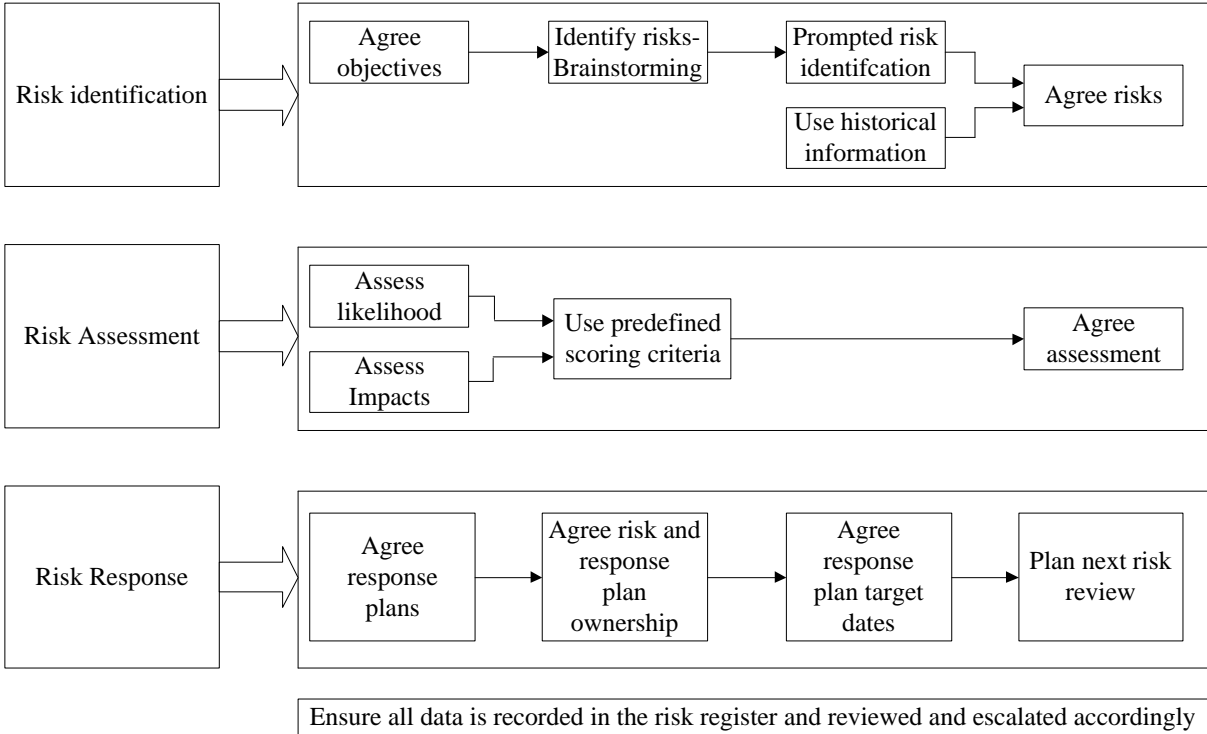
In the continuation of the thesis the ERM process in the Slovene subsidiary of the selected company with the analysis and suggestions for improvements will be presented.

### 6.1 ERM process steps in selected company

The ERM process in the selected company has three standard steps:

- Risk identification
- Risk assessment (qualitative and quantitative)
- Risk response

Figure 2: The ERM process steps in the selected company



Source: Internal sources of the selected company, 2010.

**6.1.1 Risk identification**

Selected company has defined a range of relevant risks for its business which should be considered when subsidiaries are identifying risks. These risks are divided into five areas:

- People Assets
- Product And Market Assets
- Infrastructure Assets
- Information Assets
- Finance Assets

The selected company defined its risk universe by identification of risk types which are the most relevant for its business. Every subsidiary of the selected company should consider these risks in the phase of risk identification. Risk types common for all subsidiaries are shown in table 5.

*Table 5: Risk universe of the selected company*

<b>RISK AREA</b>	<b>RISK TYPE</b>
<b>PEOPLE ASSETS</b>	Availability of talented people
	Inappropriate employee behaviour
	Safe and Healthy Workplace
	Security
<b>PRODUCT AND MARKET ASSETS</b>	Consumer/marketplace trends
	Malicious Product Attacks
	Manufacturing Process/Quality
	Trademark erosion
	Relationship Management
	Marketing and Promotions
	New Product Commercialisation
<b>INFRASTRUCTURE ASSETS</b>	Business Disruption
	Government Actions
	Legal Liability issues
	Security Environment
	Supply Chain
<b>INFORMATION ASSETS</b>	Lack of information for decision making
	Loss of Access to information
	Unauthorised Access to information
<b>FINANCE ASSETS</b>	Currency/Interest rates
	Financial Controls
	Financial Misstatements
	Forecasting/Budgeting

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<b>RISK AREA</b>	<b>RISK TYPE</b>
	Commodity Pricing
	Counterparty Default
	Inventory theft/fraud

*Source: Internal sources of the selected company.*

The risk advisor and the senior management team in the selected company monthly gather and identify risks considering defined risk universe and subsidiaries' objectives agreed by the senior management team. Any event that would prevent subsidiary to fulfil its objectives is treated as risk. Risks are mainly defined through brainstorming, interviews and by analysing historical data. When risks are agreed on, they are registered in the Risk register.

### ***Risk register***

The risk register is designed to be a live management document to be reviewed and updated on a regular basis and is the backbone of any risk management study. The purpose of the risk register is to capture all of the risks that may impact on the delivery of the particular undertaking in question, to capture their qualitative assessment and record the detailed management information such as risk owners, response plans and management target dates.

The risk register also includes the risk model which is populated with the quantitative information. The methodology that the risk register follows is recognised as common to all best practice risk management processes, regardless of industry or task.

## **6.1.2 Risk assessment in the selected company**

Once the risks have been identified and recorded in the risk register they are assessed by canvassing opinion from those who have identified them.

### **6.1.2.1 Qualitative risk assessment in the selected company**

The qualitative Risk assessment involves the determination of two key assessment factors:

- The likelihood that an identified risk event will occur
- The impact or consequences to the business if the risk event occurs

In the selected company the probability scale, common across the Group, is defined within the current business planning period. Therefore the risks are assessed given their likelihood of occurrence within the timeframe for delivering the current undertaking.

Table 6: *Qualitative probability assessment of identified risks in the selected company*

<b>Probability of occurrence</b>	<b>Probability assessment</b>
Highly unlikely (1-10%)	1
Remote (10-25%)	2
Possible (25-50%)	3
Probable (50-85%)	4
Highly probable (>85%)	5

Source: *Internal sources of the selected company, 2010.*

The next part of the assessment is the agreement on risks' potential impact. To do this only two of the following impact categories should be chosen:

- EBIT
- Company reputation or perception
- Health, Safety and Environment
- Management effort
- Quality

If the risk impacts more than two categories, the two highest impacting categories should be chosen.

In table 7 the impact assessment criteria common for all subsidiaries of the selected company are presented.

Table 7: *Impact assessment of identified risks in the selected company*

<b>Risk impact area</b>	<b>Impact description</b>	<b>Impact assessment</b>
<b>EBIT</b>	<3% of EBIT	1
	Aprox 3% of EBIT	2
	3-7% of EBIT	3
	7-10% of EBIT	4
	>10% of EBIT	5
<b>Company reputation</b>	Insignificant damage to reputation Unlikely to attract regional media attention No brand impact expected	1
	Minor damage to reputation Unlikely to attract regional media attention No brand impact expected	2
	Moderate damage to reputation Regional media attention lasting 1-2 weeks Brand recovery expected in 1-2 weeks	3

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<b>Risk impact area</b>	<b>Impact description</b>	<b>Impact assessment</b>
	Severe damage to reputation Adverse national media coverage Brand recovery expected in 2-8 weeks	4
	Critical damage to reputation Adverse multi-national media coverage Brand recovery expected in 8-24 weeks	5
<b>Health, Safety and Environment</b>	Internally reportable incident managed locally leading to < 3 days absence	1
	Internally reportable incident managed locally leading to 3-5 days absence	2
	Internally reportable incident managed locally leading to 5-10 days absence	3
	Incident managed locally leading to major injury/loss of limb or sight	4
	Fatality	5
<b>Management effort</b>	No management involvement required	1
	Management input required to limit impact	2
	Dedicated management effort required	3
<b>Management effort</b>	External management report required for less than 28 weeks	4
	External management report required for more than 28 weeks	5
<b>Quality</b>	Isolated single event in breach of quality standards	1
	Multiple complaints in breach of quality standards	2
	Multiple incident in breach of local regulatory quality standards	3
	Silent recall of product line	4
	Public recall of product line Closure of production facility	5

*Source: Internal sources of the selected company.*

In the table below risks which were identified by the management team of the Slovene subsidiary of the selected company in March 2010 are presented. For each identified risk likelihood and impact were assessed according to the above described assessment criteria.

Table 8: Qualitative risk assessment of the Slovene subsidiary of the selected company performed in March 2010

ID	Risk Description	Consequence	Likelihood (1 -5)	Impact (1 - 5)					Priority
				EBIT	Reputation/Perception	H,S & E	Management Effort	Quality	
1	Direct sales Distribution disruption	Goods not delivered	4	4	0	0	3	0	28
2	GDP below forecast	Lower consumption	3	5	0	0	3	0	24
3	Increased competition - PLG will increase activities in AFB	Decreased market share	4	3	0	0	3	0	24
4	Introduction of PET deposit	Lower sales	4	3	0	0	3	0	24
5	Increased outstanding debts	Loss	4	4	0	0	2	0	24
6	People retention SAP	Business disruption	3	4	0	0	4	0	24
7	Product quality issues still drinks-Nestea	Unsatisfied consumers	3	0	0	0	3	4	21
8	Traffic risk of sales personell	Absentisem, bad company reputation	4	0	0	3	2	0	20
9	Knowledge transfer SAP	Employees not trained properly	4	1	0	0	4	0	20
10	Relationship with main Key account (Mercator)	Decrease in sales	3	3	0	0	3	0	18
11	Waste Packaging regulation change	Increase of packaging fee	3	4	0	0	2	0	18
12	Slovenian Customers buying from foreign CCH countries	Lower sales	3	3	0	0	3	0	18
13	External supply point dependancy	Lost sales	2	2	0	0	3	0	10
14	Promotional mechanics	Penalty or recall	3	1	0	0	2	0	9
15	Employee strike	Work disruption	1	0	3	0	3	0	6
16	Changed labelling from GDA to traffic light system	Sales decrease	1	3	3	0	0	0	6

Source: Risk register of the selected company, March 2010.

Once the risks have been scored, they are automatically ranked as follows:



Probability score X (Impact A score + Impact B score) = Total impact

The primary reason for risk ranking is focusing the attention of management efforts on those risks that exhibit the greatest potential to have a negative impact.

In the Slovene subsidiary of the selected company the top ranked risks were:

- Direct Sales distribution disruption (one of the company's major distributors to the direct customers was having liquidity problems in the beginning of 2010, therefore there was a high risk that company's products will not be delivered on time).
- Slovene gross domestic product will be below forecast (this risk was expected due to the effects of the global economic crisis influencing lower consumption in 2010).
- Increased competition by Pivovarna Laško group (PLG) which acquired the company's major competitor Fructal.
- Plastic deposit (the government attempted to accept a regulative by which the fee for plastic deposit would be included in the consumer price. That would increase the consumer prices and could potentially decrease the company's sales of beverages in plastic packaging).
- Increased outstanding debts (expected due to bad economic situation).
- People retention due to implementation of enterprise resource system SAP (in the year 2010 the company was implementing the SAP system. Throughout the year 2010 SAP trainings were held in Bolgaria. Since many people were employed temporarily and were dedicated mainly to the SAP project, there was a high risk that these people would leave the company before the SAP implementation).

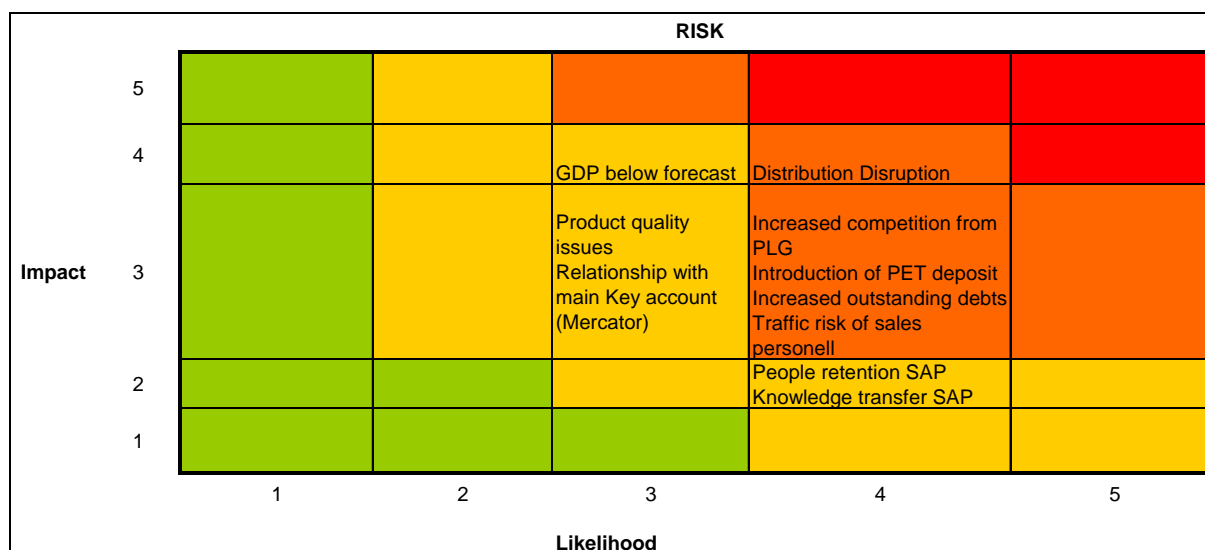
The 10 highest ranked risks are automatically displayed on the Top 10 Heat map page which is a part of the Business Register.

The heat map is graded in four colours, dark red, red, amber and green, from top right to bottom left. The most significant area of the heat map is the top right hand corner, in dark red, where the risks have the highest probability and the highest potential impact. The risks plotted in dark red are deemed to be critical and are considered to be in need of the most urgent attention.

Those in the red area are significant risks that will also need constant management effort to manage them to acceptable levels whilst those in the amber area are worthy of regular review and management updates.

The risks in the green area need to be monitored and assessed to ascertain if too much resource is being expended on managing them to such a low level. Such an assessment is always completed in a critical manner.

Figure 3: Top 10 risks heat map of the Slovene subsidiary of the selected company



Source: Risk Heat map of the Slovene subsidiary of the selected company.

All risks in the critical zone of the Top 10 Heat map need to be reported and accentuated to the Group's Risk director.

According to the risk assessment of the Slovene subsidiary in March 2010 no risks fell in the critical zone.

### 6.1.3 Risk response

In the last step attention should shift to the risk response plans. There are three options for risk response planning:

- Reduce the likelihood of the risk occurring, or
- Reduce the impact if the risk does occur, or
- Reduce both the likelihood and the impact of the risk

For each identified risk a person responsible must be recorded in the Risk Register. This person should assure that the risk response plans are delivered in time.

In table 9 risk response plans for the Slovene subsidiary of the selected company are listed.

Table 9: Risk response plans for the identified risks in the Slovene subsidiary of the selected company in March 2010

<b>ID</b>	<b>Risk Description</b>	<b>Risk Response Plans</b>	<b>Risk Owner</b>	<b>Response Plan to be Completed by</b>
1	Direct sales Distribution disruption	Identify alternative services providers	Supply Chain manager	April 2010
2	GDP below forecast	Marketing mix adjustment	Commercial manager	ongoing
3	Increased competition -PLG will increase activities in alcohol free beverages	Marketing mix adjustment	Commercial manager	ongoing
4	Introduction of PET deposit	Negotiations with government	Public Affairs manager	June 2010
5	Increased outstanding debts	Update of Accounts Receivables policy, weekly monitoring	Finance manager	April 2010
6	People retention SAP	following SAP recruitment policy	Public Affairs manager	April 2010
7	Product quality issues still drinks-Nestea	Increased visual incoming goods inspections on critical SKUs	Supply Chain manager	April 2010
8	Traffic risk of sales personell	Training on safety driving	Supply Chain manager	June 2010
9	Knowledge transfer SAP	Close monitoring of SAP implementation process	Public Affairs manager	ongoing
10	Relationship with main Key account (Mercator)	Extensive monitoring of Mercators's performance Improved relationship with other Key Accounts	Commercial manager	April 2010
11	Waste Packaging regulation change	Negotiations with government	Public Affairs manager	ongoing
12	Slovenian Customers buying from foreign subsidiaries	Review of commercial policy	Commercial manager	June 2010
13	External supply point dependancy	Prepare proper contingency plans	Supply Chain manager	April 2010

»continued«

ID	Risk Description	Risk Response Plans	Risk Owner	Response Plan to be Completed by
14	Promotional mechanics	Legal check of promotional practice, Use of legal services	Commercial manager	April 2010
15	Employee strike	Negotiations with union	HR manager	April 2010
16	Changed labelling from GDA to traffic light system	not able to influence		

*Source: Risk register of the Slovene subsidiary of the selected company, March 2010.*

## 6.2 Quantitative risk analysis in the selected company

The quantitative risk analysis attempts to assign numeric values to risks, either by using empirical data or by quantifying qualitative assessments. Quantitative risk analysis can be performed by using a Monte Carlo simulation.

In a Monte Carlo simulation, uncertain inputs in a model are represented using ranges of possible values known as probability distributions. By using probability distributions, variables can have different probabilities of different outcomes occurring. Probability distributions are a much more realistic way of describing uncertainty in variables of a risk analysis. Common probability distributions include:

- Normal: the user simply defines the mean or the expected value and a standard deviation to describe the variation about the mean. Values in the middle near the mean are most likely to occur. It is symmetric and describes many natural phenomena such as people's heights. Examples of variables described by normal distributions include inflation rates and energy prices.
- Lognormal: values are positively skewed, not symmetrically like a normal distribution. It is used to represent values that do not go below zero but have unlimited positive potential. Examples of variables described by lognormal distributions include real estate property values, stock prices, and oil reserves.
- Uniform: all values have an equal chance of occurring, and the user simply defines the minimum and maximum. Examples of variables that could be uniformly distributed include manufacturing costs or future sales revenues for a new product.

- Triangular: the user defines the minimum, most likely, and maximum values. Values around the most likely are more likely to occur. Variables that could be described by a triangular distribution include past sales history per unit of time and inventory levels.
- PERT: The user defines the minimum, most likely, and maximum values, just like the triangular distribution. Values around the most likely are more likely to occur. However values between the most likely and extremes are more likely to occur than the triangular; that is, the extremes are not as emphasized. An example of the use of a PERT distribution is to describe the duration of a task in a project management model.
- Discrete: the user defines specific values that may occur and the likelihood of each. An example might be the results of a lawsuit: 20% chance of positive verdict, 30% change of negative verdict, 40% chance of settlement, and 10% chance of mistrial.

During a Monte Carlo simulation, values are sampled at random from the input probability distributions. Each set of samples is called iteration, and the resulting outcome from that sample is recorded. A Monte Carlo simulation does this hundreds or thousands of times, and the result is a probability distribution of possible outcomes. In this way, a Monte Carlo simulation provides a much more comprehensive view of what may happen. It tells you not only what could happen, but how likely it is to happen (Palisade, 2010).

A Monte Carlo simulation provides a number of advantages over deterministic analysis:

- Probabilistic Results: results show not only what could happen, but how likely each outcome is.
- Graphical Results: because of the data a Monte Carlo simulation generates, it is easy to create graphs of different outcomes and their chances of occurrence. This is important for communicating findings to other stakeholders.
- Sensitivity Analysis. With just a few cases, deterministic analysis makes it difficult to see which variables impact the outcome the most. In a Monte Carlo simulation, it is easy to see which inputs had the biggest effect on bottom-line results.
- Scenario Analysis. In deterministic models, it is very difficult to model different combinations of values for different inputs to see the effects of truly different scenarios. Using a Monte Carlo simulation, analysts can see exactly which inputs had which values together when certain outcomes occurred. This is invaluable for pursuing further analysis.
- Correlation of Inputs. In a Monte Carlo simulation, it is possible to model interdependent relationships between input variables. It is important for the sake of accuracy to represent how, in reality, when some factors go up, others go up or down accordingly.

The selected company has somewhat adapted quantitative risk analysis. It is simplified in a way that for each identified risk cumulative likelihood and cumulative costs are estimated. Also from the probability distributions only the following four distributions are available in the risk register: normal, pert, uniform and discrete.

## 6.2.1 Risk simulation in selected company

The selected company uses @Risk software to perform risk analysis using a Monte Carlo simulation. Running an analysis with @Risk software involves two steps:

- Setting up Risk model
- Running Risk simulation

The selected company sets a risk model by determining the following data:

- Risk likelihood in percentage
- Minimum, maximum and if possible most likely costs of risk
- Probability distribution of risk

*Table 10: Risk model of the Slovene subsidiary of the selected company according to the risk review in March 2010*

Risk Description	Risk Model					Distribution
	ID	Likelihood	Min	ML	Max	
Direct sales Distribution disruption	1	30%	50.000 €	100.000 €	110.000 €	p
GDP below forecast	2	15%	250.000 €	300.000 €	450.000 €	p
Increased competition - PLG will increase activities in AFB	3	10%	10.000 €	40.000 €	50.000 €	p
Introduction of PET deposit	4	60%	10.000 €	80.000 €	100.000 €	p
Increased outstanding debts	5	10%	70.000 €	80.000 €	150.000 €	p
People retention SAP	6	10%	50.000 €	100.000 €	120.000 €	p
Product quality issues still drinks- Nestea	7	20%	10.000 €	15.000 €	17.000 €	p
Traffic risk of sales personell	8	20%	5.000 €	8.000 €	9.000 €	p
Knowledge transfer SAP	9	10%	10.000 €	20.000 €	32.000 €	p
Relationship with main Key account (Mercator)	10	10%	40.000 €	50.000 €	60.000 €	p
Waste Packaging regulation change	11	40%	50.000 €	80.000 €	90.000 €	p
Slovenian Customers buying from foreign CCH countries	12	40%	40.000 €	50.000 €	60.000 €	p
External supply point dependancy	13	15%	40.000 €	65.000 €	70.000 €	p
Promotional mechanics	14	5%	10.000 €	20.000 €	22.000 €	p
Employee strike	15	5%	10.000 €	50.000 €	60.000 €	p
Changed labelling from GDA to traffic light	16	10%	5.000 €	20.000 €	23.000 €	p

*Source: Risk model of the Slovene subsidiary of the selected company, 2010.*

In the above model are presented identified risks in the Slovene subsidiary of the selected company in March 2010. Risks are listed according to their priority which originates from their qualitative assessment described in the previous chapter.

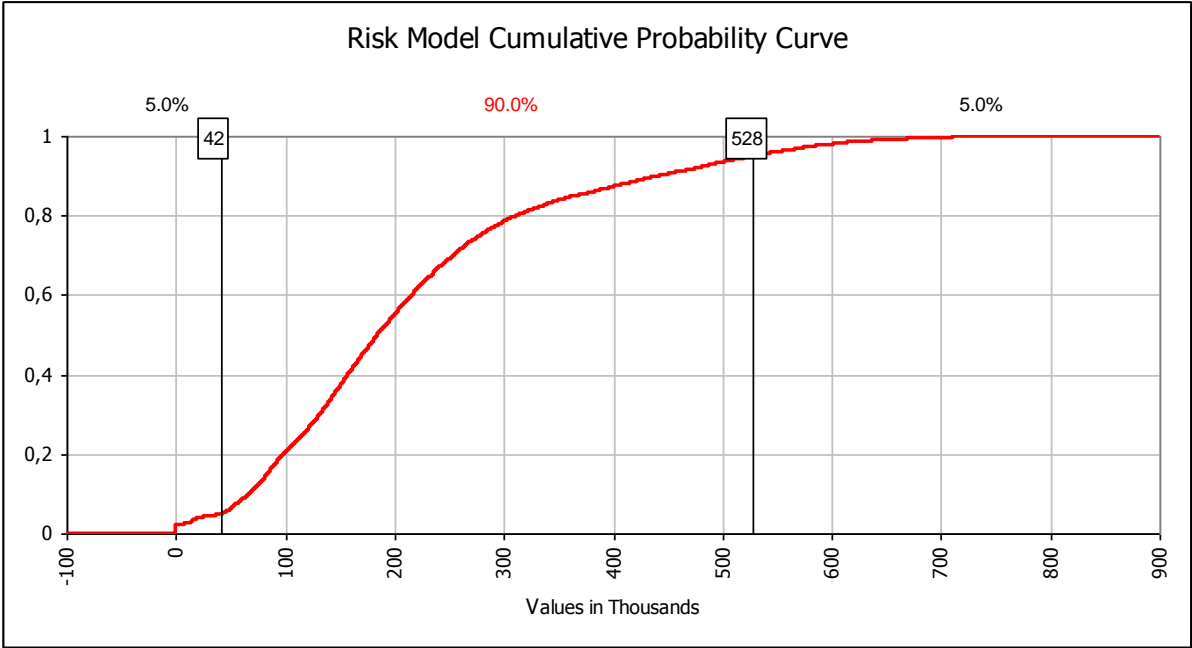
In the model risk likelihood is defined by senior management team. When defining risk likelihood, senior management team should consider risk response plans which were identified after qualitative risk assesment. Risk likelihood should be an estimation of risk occurring, after response plans have been completed.

In the model follows estimation of minimum, maximum and most likely costs. This is estimation of costs in the case that identified risk will occur.

One of the four probability distributions (pert, normal, uniform and discrete) should be chosen for each identified risk. From the model we can see that in Slovene subsidiary only pert distribution was used.

After risk model is fulfilled selected company uses @Risk software which recalculates risk model thousands of times. Each time, @Risk samples random values from the risk functions entered in the Risk model and records the resulting outcome. Risk software plots all of the resulting outcomes on a graph called a cumulative probability curve or ‘S’ curve.

*Figure 4: S Probability Curve for the Slovene subsidiary of the selected company according to the risk review in March 2010*



*Source: Risk model output of the selected company, 2010.*

The cumulative probability curve shows the likelihood of different outcomes occurring. From the curve the percentiles can be recognized:

*Table 11: The percentiles for cumulative impact of the identified risks for the Slovene subsidiary of the selected company according to the risk review in March 2010*

<b>Percentiles (Millions Euros)</b>	
<b>P05</b>	<b>0,862 €</b>
<b>P25</b>	<b>0,872 €</b>
<b>P75</b>	<b>1,150 €</b>
<b>P95</b>	<b>1,651 €</b>

*Source: Risk model output of the Slovene subsidiary of the selected company, 2010.*

P95 informs us about the maximum cumulative impact of identified risks. In the above case there is a 95% likelihood that identified risks will not have higher cumulative impact than 528.404 €. Similarly, P05 informs us that there is only a 5% likelihood that identified risks will not have higher cumulative impact than 42.003 €.

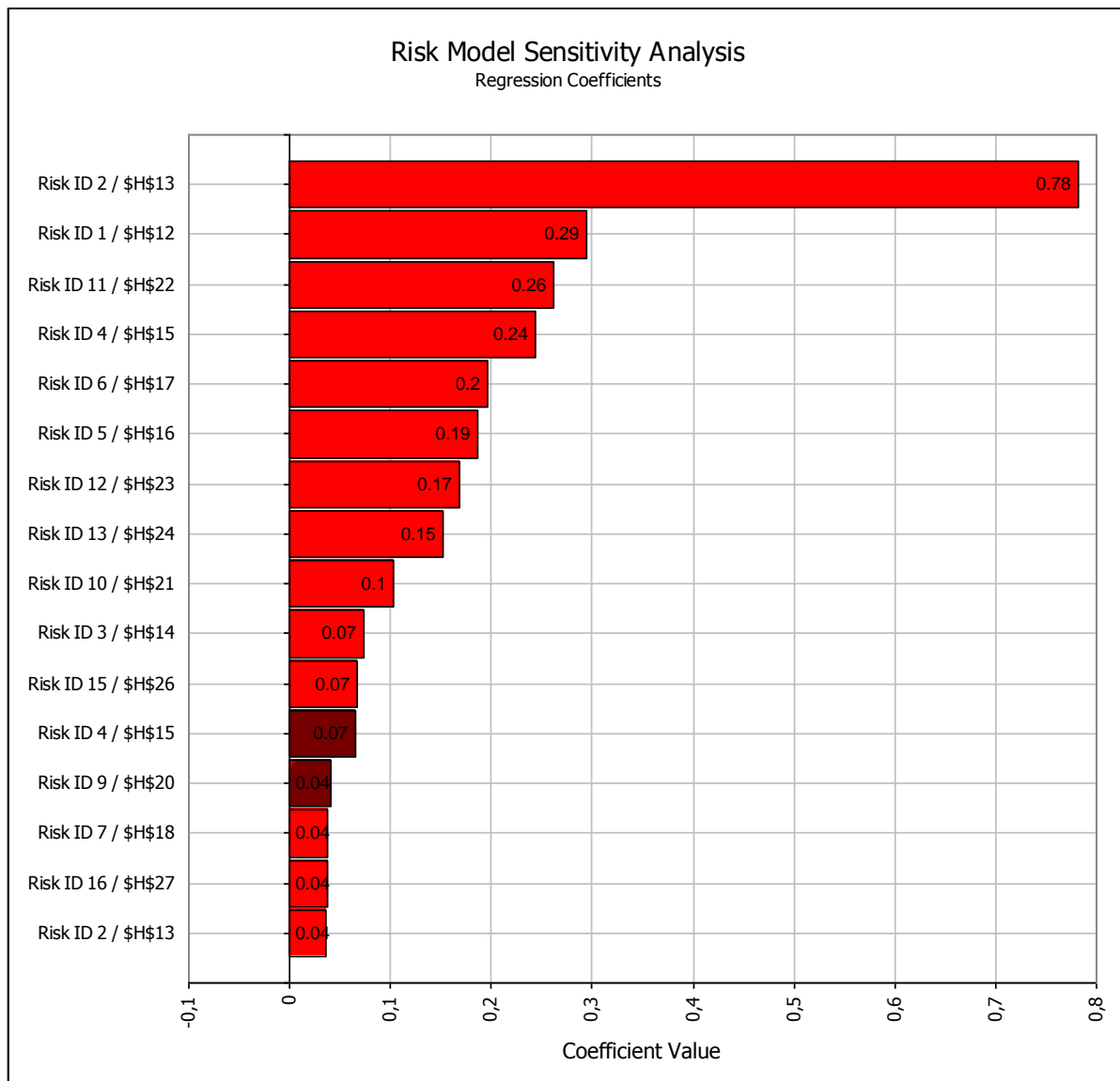
Considering P05 and P95, we could say that there is a 90% likelihood that the cumulative costs of identified risks will be between 42.003 € and 528.404 €.

## **6.2.2 Application of the risk simulation outputs**

Besides the Cumulative Probability Curve, an important output of the risk simulation is a risk sensitivity analysis which tells us which risks are the most influential according to the impact they have on the cumulative risk



*Figure 5: Risk Model Sensitivity analysis for the Slovene subsidiary of the selected company according to the risk review in March 2010*



*Source: Risk model output of the Slovene subsidiary of the selected company, 2010.*

From the above figure we can see that the risk with identification number 2 (risk that gross domestic product will be below forecast) with regression coefficient 0,78 was most influential for the selected company in March 2010. It is followed with the risk of distribution disruption with regression coefficient 0,29 and the risk of changed waste packaging regulation with regression coefficient 0,26.

By knowing its most influential risks, the company can adapt risk response plans so that most resources are provided for most influential risks. The adaptation of initial response plans to most influential risks usually leads to decrease in the company's overall risk exposure. Re-running of the risk simulation enables assessment of the benefits due to adapted risk response

plans. Furthermore, it enables a comparison between overall risk reduction and additional costs due to the adaptation of initial risk response plans.

## **7 ANALYSIS OF THE ERM IN THE SELECTED COMPANY**

In the past risk reporting in the subsidiaries of the selected company was fragmented. Namely risks originating in different areas of the organization were being reported separately to the board. The most critical risks that the company faced were managed from different departments which often had little communication and cooperation. This approach was leaving senior management in subsidiaries unable to assess the subsidiaries' risk environment in a holistic manner.

To view risks in a holistic manner several organizational obstacles must be overcome. For an enterprise risk initiative to succeed there must be a leader of the initiative. In the selected company a project for improvement of the ERM process in the subsidiaries was initiated by the corporate Risk Department in the last quarter of 2009. The main goal was to improve involvement of senior management teams in subsidiaries in risk assessment. The subsidiaries nominated risk advisors, who took the responsibility to engage senior management teams in risk assessment.

I was responsible for the improvement of the ERM process in the Slovene subsidiary of the selected company. On the first risk review held in March 2010 there were no obstacles with the involvement of the senior management team in risk assessment. On the first ERM workshop in March 2010 I introduced the main changes in risk management process, particularly the need that senior management team views all sources of risk. What contributed most to successful starting point of the ERM process was a clear ERM framework which included:

Clear ERM glossary: risk advisors, trained by experts from corporate risk department, enabled that risk definitions, such as risk, risk management, ERM, likelihood and risk assessment were properly understood by everyone in the organization.

Revised Risk policy supporting the achievement of the principal group business objectives and assurance that risk management is executed in a robust, professional and efficient manner across the group.

- Common assessment criteria
- Risk register
- Risk model

The predefined risk universe common for all subsidiaries of the selected company was very useful for risk identification in Slovene subsidiary and enabled that the senior management

team did not mainly focus on the financial sources of risk, which was a common practise in the past.

The predefined assessment criteria helped to assess risks faster and brought uniform rules in risk assessment. However, the senior management team often experienced difficulties using the predefined assessment criteria. In the qualitative risk assessment two of the following five impact categories should be chosen: EBIT, Company reputation/perception, Health and Safety, Management effort and Quality. In the case of certain risks it was difficult to agree on which the two most influential impact categories were. The senior management team often linked certain risks with more than two impact categories (for example distribution disruption could influence EBIT, reputation, management effort and quality). It was also difficult to achieve consensus on risk likelihood between different senior management team members.

Risk response plans in the Slovene subsidiary of the selected company are commendable. For every risk senior management team quickly defined a risk response plan, person responsible and a due date. I understood that managers were already aware of most of the identified risks and the implementation of risk response strategies was already part of their regular activities.

The response plan for one of the major risks (distribution disruption) was efficiently carried out. The company engaged a new distributor already in April 2010 and no consumers were affected. The risk of distribution disruption was significantly reduced and this decreased the cumulative risk exposure calculated in June 2010.

The P95 from the risk review in March was 584.000 € (distribution disruption had significant impact) while the P95 from the risk review in June was 456.796 € when the risk of distribution disruption was significantly reduced.

*Table 12: Comparison of percentiles for the cumulative impact of identified risks for the Slovene subsidiary of the selected company according to the risk reviews in March and June 2010.*

	<b>March 2010</b>	<b>June 2010</b>
<b>P 05</b>	42.003 €	0 €
<b>P 25</b>	116.452 €	59.076 €
<b>P 50</b>	184.225 €	116.426 €
<b>P 75</b>	278.097 €	199.356 €
<b>P 95</b>	528.404 €	456.796 €

*Source: Risk model output of the Slovene subsidiary of the selected company in March and June 2010.*

While the senior management team was mostly interested in risk response plans and took care that proper risk reduction plans were timely implemented, the quantification of risks remains an unattractive area for the majority of senior management team.

Furthermore, the Risk model, used for risk quantification in the selected company is simplified in a way that it only requires the cumulative likelihood and costs of identified risks. It is not possible to determine the probability of different possible outcomes in the model, although the @Risk software, that the company is using, enables calculation of risk based on the probability of different possible outcomes. Furthermore, different probability distributions, which could be used in the model, are ignored, since Pert distribution is always used.

The cooperation of the senior management team in risk assessment worsened if I compare the first risk review with the following risk reviews. While in the first review the senior management team identified 16 risks; in the following risk reviews they did not identify any additional risks. In the first risk review the senior management team actively participated in risk assessment, while in the following risk reviews they briefly adjusted their initial assessments. In the table 13 comparisons between likelihood and most likely costs of identified risks according to the risk assessment in March and June is shown.

*Table 13: Comparisons between likelihood and most likely costs of the identified risks according to the risk assessment in March and June 2010*

ID	Risk Description	March 2010		June 2010	
		Likelihood	Most likely costs	Likelihood	Most likely costs
1	Direct sales Distribution disruption	30%	100.000 €	10%	30.000 €
2	GDP below forecast	15%	300.000 €	15%	300.000 €
3	Increased competition -PLG will increase activities in AFB	10%	40.000 €	20%	40.000 €
4	Introduction of PET deposit	60%	80.000 €	10%	80.000 €
5	Increased outstanding debts	10%	80.000 €	20%	80.000 €
6	People retention SAP	10%	100.000 €	10%	100.000 €
7	Product quality issues still drinks-Nestea	20%	15.000 €	20%	15.000 €
8	Traffic risk of sales personell	20%	8.000 €	20%	8.000 €
9	Knowledge transfer SAP	10%	20.000 €	10%	20.000 €
10	Relationship with main Key account	10%	50.000 €	10%	50.000 €

»continued«

ID	Risk Description	March 2010		June 2010	
		Likelihood	Most likely costs	Likelihood	Most likely costs
	(Mercator)				
11	Waste Packaging regulation change	40%	80.000 €	30%	80.000 €
12	Slovenian Customers buying from foreign CCH countries	40%	50.000 €	40%	50.000 €
13	External supply point dependancy	15%	65.000 €	15%	65.000 €
14	Promotional mechanics	5%	20.000 €	5%	20.000 €
15	Employee strike	5%	50.000 €	-	-

*Source: Risk model of the selected company, 2010.*

Similarly the senior management team could not directly connect the percentiles for cumulative impact of identified risks calculated by the @Risk software with their key performance indicator EBIT.

One reason might be that each subsidiary is monthly submitting the planned profit and loss account for the current year which is monthly updated according to the market situation and internal information from different functions within the subsidiary. The Profit and loss account planned for the coming months already considers main risks by adapting planned volumes, prices or costs. For example, the risk that gross domestic product will be below forecast is already incorporated in lower sales volumes planned. Similarly, the increased competition is already incorporated in lower sales volumes or lower sales prices planned. Since most of identified risks are incorporated in profit and loss planning and by that in planned EBIT, it was difficult to define the relationship between the Risk model output and subsidiary's EBIT.

## **7.1 Suggestions for the selected company**

The participation of the senior management team in the ERM process is an area, which needs the most improvements in the selected company. The main reason for the lack of motivation is that the senior management team believes that dealing with most influential risks is already a part of their regular activities. Therefore, they found ERM to be an additional and too bureaucratic process, while dealing with risk and implementing risk mitigation activities is already included in their daily activities.

In the Slovene subsidiary of the selected company cumulative risk exposure, measured by P95 from Cumulative probability distribution, has decreased from March to June 2010, mainly due to effective response plan on the subsidiary's main risk of distribution disruption.

But since March 2010 onwards no additional risks were identified and at the same time the likelihood of initially identified risks was mostly decreased, the credibility of the cumulative probability distribution is questionable. On the one hand, it could be that the subsidiary's cumulative risk exposure has actually decreased due to effective response plans. But taking into account that the senior management team was not motivated enough in risk identification in their further risk reviews, important risks could be left out from the risk analysis.

One of the most important things of the ERM process is to identify the impact of identified risks on the organization's goals. In Slovene subsidiary of the selected company senior management team found no direct linkage between the risk model output (Cumulative probability distribution) and the subsidiary's key performance indicator EBIT, which is also one of the main reasons for the lack of their motivation. Since most of the risks were already incorporated in the financial planning (particularly profit and loss account), they maintained that risks were being considered twice.

I would recommend that the ERM process should be upgraded in a way that direct linkage between the ERM model output and EBIT, which is the company's main performance indicator, is established.

The company has purchased risk software which enables a vast variety of simulations. By standardizing the risk register, the company did not turn to the advantage of many additional features that the software has. An important feature of the software is to perform risk analysis according to defined probabilities for different possible outcomes for each identified risk. This feature was disabled since the Risk model in the selected company only requires the cumulative probability of each identified risk. Therefore, it would be advantageous to upgrade the Risk model in a way that different possible outcomes for each identified risk would be determined.

Although the ERM process in the selected company can be improved, the selected company is highly aware of risk. This can be verified by efficiently implemented risk response strategies and a continuous effort of the management team to reduce the likelihood of different risks occurring. The fact is that risk management in the selected company is an important part of managers' activities ever since the company was established. To manage risks efficiently was also rigorously required by the company's main shareholder The Coca Cola Company which also shared its risk management practises and tools.

I would recommend to the management team of the Slovene subsidiary of the selected company to continue with the collective identification and assessment of risks. The most

improvements should be done in the area of risk assessment and analysis. The predefined risk assessment criteria should be reviewed and adapted to subsidiaries' needs. To improve the involvement of the senior management teams in subsidiaries in risk assessment, the direct linkage between the ERM model output (cumulative probability of identified risks) and EBIT should be established.

## **CONCLUSION**

Multinational companies are facing uncertainty while operating on different markets. This uncertainty can lead to unanticipated variation or negative variation in business outcome variables such as revenues, costs, profits or market shares.

Managing risks efficiently has become an important management's activity. Companies that understand their risks better than their competitors are in a very powerful position to leverage risk to a competitive advantage. Greater knowledge of risks delivers the ability to deal with risk that intimidates competitors, to project adversity better than competitors, and to manage risk at the lowest costs.

In the master's thesis I have introduced the concept of Enterprise Risk Management (ERM) and analysed its performance in the Slovene subsidiary of the selected multinational company.

ERM is a process which enables identification and assessment of various risks that might adversely or positively impact the performance of the organization. Vast variety of risks should be treated in a holistic manner and the correlation of the various risks should be analysed. ERM requires involvement of whole management team in the process. It can be conceptualized by defining the types of risk included and the various risk management process steps.

ERM in the selected company consists of the following three standard steps: risk identification, risk assessment (qualitative and quantitative) and risk response. These steps were presented and analysed for Slovene subsidiary of the selected company in this master thesis.

The selected company has defined main risk areas that are specific for its business and should be considered in the risk identification phase. The predefined risk universe was very useful for risk identification in Slovene subsidiary of the selected company and enabled the senior management team to not mainly focus on the financial sources of risk.

The predefined assessment criteria were developed for qualitative risk assessment. These criteria brought uniform rules in risk assessment. However, the senior management team often

experienced difficulties using them and it was difficult to achieve consensus on risk assessment among different senior management team members.

The selected company uses @Risk software to perform risk analysis using a Monte Carlo simulation. Running an analysis with @Risk software involves two steps:

- Setting up Risk model
- Running Risk simulation

The risk model is set by determining the following data:

- Risk likelihood in percentage
- Minimum, maximum and if possible most likely costs of risk
- Probability distribution of risk

@Risk software recalculates risk model thousands of times. Each time, @Risk samples random values from the risk functions entered in the Risk model and records the resulting outcome. Risk software plots all of the resulting outcomes on a graph called a cumulative probability curve or ‘S’ curve.

However, the senior management team could not directly connect the percentiles for cumulative impact of identified risks calculated by the @Risk software with their key performance indicator EBIT. This was the main reason for the lack of senior management team’s motivation in further risk assessments.

In the Slovene subsidiary of the selected company risk response plans proved to be very efficient in the first half of the year 2010. One of the major risks was distribution disruption since one of the major distributors was facing serious liquidity problems. This risk was efficiently managed and that decreased the subsidiary’s overall risk exposure measured by the cumulative risk probability distribution. Furthermore, on all risks identified at the beginning of 2010, risk response plans were agreed and actually executed.

The main goal of improvement of the ERM process in the subsidiaries of the selected company was to involve the senior management teams in risk identification and assessment. Efficient ERM process would increase awareness of the senior management teams of various risks that could affect the performance of their subsidiaries.

Since the selected company was developing its risk management capabilities since its establishment and risk mitigation planning was a part of management’s and employees’ regular work, the senior management team found the new approach in ERM more of a documented process, while dealing with risk and implementing the risk mitigation activities is already included in their daily activities.



To improve the involvement of the senior management teams in subsidiaries in the ERM process, the direct linkage between the ERM model output (cumulative probability of identified risks) and EBIT should be established.

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# **APPENDIX**

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## **Appendix 1: Povzetek**

Multinacionalna podjetja poslujejo na številnih trgih, ki imajo različne politične, finančne in ekonomske sisteme. Heterogenost okolja, v katerem poslujejo, ima močan vpliv na njihovo izpostavljenost tveganjem. Ta tveganja lahko vplivajo na prihodke, stroške, tržne deleže multinacionalnih podjetij in s tem na njihov poslovni rezultat.

Upravljanje s tveganji je postala pomembna aktivnost managerjev. Poznavanje in upravljanje s tveganji bolje od konkurentov, lahko postane pomembna konkurenčna prednost podjetij.

V magistrski nalogi sem predstavila koncept celovitega obvladovanja poslovnih tveganj. Proces celovitega obvladovanja poslovnih tveganj sem analizirala v slovenski podružnici izbranega mednarodnega podjetja, ki se ukvarja s proizvodnjo, distribucijo in prodajo brezalkoholnih pijač.

Celovito upravljanje s tveganji je proces, ki omogoča identifikacijo in oceno različnih vrst tveganj, ki lahko negativno ali pozitivno vplivajo na poslovanje podjetja. Različna tveganja, s katerimi se srečuje podjetje, je potrebno obravnavati celovito in analizirati njihovo medsebojno povezanost. Celovito obvladovanje s tveganji je lahko konceptualizirano z določitvijo vrst tveganj, vključenih v proces, in korakov, ki so potrebni za njihovo obvladovanje.

Proces celovitega obvladovanja poslovnih tveganj ima v izbranem podjetju tri temeljne korake: identifikacija tveganj, kvalitativna in kvantitativna ocena tveganj in odziv na tveganja. Ti koraki so bili predstavljeni in analizirani v slovenski podružnici izbranega multinacionalnega podjetja.

Izbrano podjetje je določilo glavna področja tveganj, ki so značilna za njegovo poslovanje in morajo biti upoštevana v fazi identifikacije tveganj v vseh podružnicah. Vnaprej določena področja tveganj, so olajšala identifikacijo tveganj v slovenski podružnici izbranega podjetja in pripomogla k temu, da se vodstvo podjetja ni osredotočilo zgolj na finančna tveganja.

Ravno tako je izbrano podjetje vnaprej določilo kriterije za kvalitativno ocenjevanje tveganj. Ti kriteriji naj bi zagotovili enotna pravila pri ocenjevanju tveganj v različnih podružnicah. Vendar je vodstvo slovenske podružnice izbranega podjetja z uporabo vnaprej določenih kriterijev težko ocenjevalo identificirana tveganja, saj jim pogosto ni ustrezala nobena ocena, ki so jo ponujali omenjeni kriteriji.

Analiza poslovnih tveganj v izbranem podjetju poteka tako, da se najprej pripravi model poslovnih tveganj, kjer se za vsako identificirano tveganje določiti verjetnost njegovega nastopa, minimalen, maksimalen ter najverjetnejši znesek stroškov v primeru nastopa posameznega tveganja ter verjetnostno porazdelitev. Uporaba programske opreme @Risk

podjetju omogoča analizo poslovnih tveganj z Monte Carlo simulacijo. Vrednosti posameznih poslovnih tveganj so naključno izbrane iz modela poslovnih tveganj. Programska oprema @Risk jih več tisočkrat preračuna in rezultate prikaže v obliki kumulativne verjetnostne porazdelitvene krivulje tveganj.

Vendar vodstvo slovenske podružnice izbranega podjetja ni videlo neposredne povezave med rezultatom modela poslovnih tveganj in dobičkom, ki je glavni pokazatelj uspešnosti slovenske podružnice izbranega podjetja. To je bil tudi glavni razlog, da se je motivacija vodstva za kvalitativno in kvantitativno ocenjevanje poslovnih tveganj, močno znižala.

Odziv na identificirana tveganja je bil v slovenski podružnici izbranega podjetja zelo dober. Enega izmed najpomembnejših tveganj je predstavljalo tveganje uničenja distribucijske mreže, saj je imel najpomembnejši prevoznik, katerega storitve je podjetje koristilo že vrsto let, hude likvidnostne težave. Izpostavljenost temu tveganju je podjetje uspešno znižalo, kar je bistveno znižalo celovito izpostavljenost poslovnih tveganjem, merjeno z kumulativno verjetnostno porazdelitvijo tveganj. Ravno tako se je vodstvo slovenske podružnice izbranega podjetja odzvalo na vsa identificirana tveganja in pripravilo aktivnosti za zmanjševanje identificiranih poslovnih tveganj.

Glavni cilj projekta za izboljšanje celovitega obvladovanja poslovnih tveganj v podružnicah izbranega podjetja je bil vključiti vodstvo podružnic v identifikacijo in oceno poslovnih tveganj. Glede na to, da je izbrano podjetje poudarjalo in razvijalo sposobnosti vodstva za upravljanje s poslovnimi tveganji vse od njegove ustanovitve, je vodstvo slovenske podružnice nov pristop k upravljanju poslovnih tveganj dojelo kot preveč dokumentiran proces, medtem ko so bile aktivnosti za zmanjševanje poslovnih tveganj že vključene v njihove redne aktivnosti.

Enega izmed najpomembnejših ciljev procesa celovitega obvladovanja poslovnih tveganj predstavlja določitev vpliva identificiranih tveganj na poslovni rezultat podjetja. Da bi v prihodnje povečali vključenost vodstva v identifikacijo in oceno poslovnih tveganj, bi bilo potrebno izpostaviti neposredno povezavo med rezultatom modela poslovnih tveganj in dobičkom, ki je glavni pokazatelj uspešnosti slovenske podružnice.



## **Appendix 2: List of abbreviations**

CAS	Casualty Actuarial Society
COSO	Committee of Sponsoring Organizations of the Treadway Commission
ERM	Enterprise Risk Management
EBIT	Earnings Before Interest and Taxes
H, S & E	Health, Safety and Environment
ISO	International Standardization Organization
MNC	Multinational company
PLP	Property Loss Prevention
R&D	Research and Development
VAR	Value at Risk