

Міністерство освіти і науки України

Національний університет «Києво-Могилянська академія»

Факультет економічних наук

Кафедра фінансів

Кваліфікаційна робота

освітній ступінь - бакалавр

на тему: **«УПРАВЛІННЯ РИЗИКАМИ У ПРОЦЕСІ ЗДІЙСНЕННЯ
ІНВЕСТИЦІЙНОЇ ДІЯЛЬНОСТІ
(RISK MANAGEMENT IN THE INVESTMENT ACTIVITY PROCESS)»**

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«_____» _____ 2022 р.

Київ 2022

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INTRODUCTION

In the rapidly developing contemporary world, the profitability results of a company are significantly influenced by a great variety of risk factors, neglecting which may cause losses and even lead to bankruptcy. It is the main reason why we should understand the nature of business risks, define different types of risk factors and compresence risk-management approaches.

Investing as a business process may cause significant risks for a company, but at the same time may be rewarded by the additional profit from strategically successful decision. The constant need of understanding and mitigation of changing risk factors determines the relevance of this work.

The main goal of this research is the theoretical and practical study of risk types, as well as their influence on decision-making process while investing.

Achieving the goal involves solving such tasks:

- to explore a theoretical background of risk and the history of its formation in business environment;
- to determine the main risk factors and risk types;
- to determine the general state of the global beverage industry and difficulties it may face due to changing market trends;
- to discover the impact of different risks on the example of the global beverage industry;
- to provide practical evidence of the importance of risk assessment in investing decision-making process;
- to advice on risk-preventing measures on the example of the global beverage industry.

The object of research is the different types of financial risks and their impact on the business processes.

The subject of research is practical evidence of the impact of internal and external risk factors on the profitability of companies on the example of the global beverage industry.

In the first part, we reveal the concept of risk, its historical and theoretical background. We determine different risk types and negative consequences they may case.

In the second part, we analyze the key trends in the global beverage industry, identify the main players and determine the impact of external macroeconomic and political factors on the industry. We also analyze the financial condition of the leading beverage company in Ukraine as well as the leading beverage company in the global market.

In the third part, we provide practical evidence of the impact of internal financial factors on the profitability of the company. We also consider internal financial factors that potential investors should pay attention to in the investment process in order to mitigate risks.

SECTION

THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF RISKS

1.1.Determination of risk in the investment process

To begin with, we should admit that risk is a universal category that applies to all activities in day-to-day life, but it is also known to be especially important in business activities of enterprises. Studies show that in modern economic circles there are many approaches to defining the term "risk", which sometimes even cause contradictory assertions. In this regard, it is essential to consider the various definitions of this term in order to comprehensively disclose it. Moreover, a complex understanding of this term assists in shaping the policy of economic risk management, which is one of the aims of this research work.

First of all, we can highlight that the word “risk” originally comes from the Latin word "resecum" - a rock or danger of collision with it [12]. The word was usually used to highlight the negative result of an event in everyday life. What is important, with the rapid development of science in the 20th century, the word appeared to be universal in occurrence in military, economic, demographic, medicine, biology, law, and other disciplines [13]. By the same token, many scientific theories were built using the concept of risk: Game theory (John von Neumann and Oskar Morgenstern, 1944), Operations research (A.P. Rowe and Robert Watson-Watt, 1937) etc.

In Ukraine, the emergence of a new direction of study on risk was announced at a conference held in October 1998 [9]. The research in this field was aimed to find effective management solutions toward risk within a market economy.

In modern economic literature, the concept of risk is used in civil and commercial law, in the insurance system, and in banking and stock exchange

transactions. Figure 1.1 provides a set of definitions of “risk” that would help to understand the peculiar properties of the word.

Table 1.1 “Risk” definitions

The Concise Oxford Dictionary	"The chance of hazard, bad consequences, loss" [1]
David L. Bickelhaupt	"Risk is uncertainty of financial loss" [2]
George E. Rejda	"Risk is defined as uncertainty concerning the occurrence of a loss" [3]
Irving Pfeffer and David R. Klock	"For our purpose the term risk usually refers to perils to which the individual is objectively exposed at any time." [4]
C.Arthur Williams	"Risk is defined as the variation in the outcomes that could occur over a specified period. If only one outcome is possible, the variation and hence the risk is zero. If many outcomes are possible the risk is not null." [5]
Neil A. Doherty	"The lack of predictability of outcomes may be termed risk. Risk in this sense, does not imply that outcome are adverse, only that they are not known in advance" [6]
J.L. Athearn	"Risk is a state in which losses are possible.Risk has no meaning without loss being the outcome of concern." [7]
Emmett J. Vaughan	"Risk is a condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped for." [8]
The Commission on Insurance Terminology of	"Uncertainty as to the outcome of an event when two or more possibilities exist." [9]

the American Risk and Insurance Association	
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From all the definitions mentioned above, we can highlight some distinguishing features of the risk. It is important to note, that the concept of risk is associated with the possibility of the occurrence of a certain event, which can be estimated. In most cases, this event has a negative connotation and is considered to be a "danger", a "threat", an "unreliability", or a "loss". Besides, as we have previously mentioned, for a long time the concept of risk was not only associated with significant negative manifestations of life situations but was often used as a synonym for them.

We can also distinguish four characteristic properties of risk that are inseparable from its content:

- *Inconsistency*. The contradictory nature of risk is manifested in the collision of objectively existing risky actions with their subjective assessment. The risk inconsistency is also reflected in the fact that by taking the same action, one can obtain both negative and positive results [10].
- *Alternative*. The alternative of risk is the need to choose a solution in the presence of two or more of the most possible options. Difficulties in decision-making caused by alternatives are solved depending on the specific situation in different ways: in simple cases, one would rely on experience, and in complex cases, one would resort to special methods and models [11].
- *Legitimacy*. Especially in a business environment, the decision must meet the requirements of current legislation, enterprise' policy, and the activities of other decision-makers [12].
- *Uncertainty*. The most common reason for the existence of risk in management is uncertainty. Uncertainty arises from the unpredictability of the end result, which may either coincide with the expected or be better or worse than it. Uncertainty is an incomplete notion of the importance of various parameters in the future, which are caused by various reasons and, above all, incomplete or

inaccurate information about the conditions of the decision, including related costs and results [14].

Spatial attention must be paid to uncertainty as it is a core of risk. The decision is made in conditions of uncertainty when it is impossible to estimate the probability of potential results [19]. For instance, the case with the use of innovative ideas and new technologies is always fraught with risk. Uncertainty is also characteristic of some decisions that must be made in rapidly changing circumstances. From the point of view of philosophy, uncertainty in the socio-economic system is caused not only by the subjective limitations of our knowledge about the object of study at a given time but also by the objective impossibility of describing it in detail in understandable language [12].

What is more, the concept of choice under uncertainty in some way determines the risk in the investment process. Likewise, an investment with low risk is considered to be more profitable. Alongside, the greater the risk, the higher the return. The basic idea of choosing the investment project underlies achieving the most favorable balance for the investor between the degree of the risk and the amount of possible return [17]. The choice of an investor is greatly represented in Expected Utility Theory (EUT).

The general concept of the theory was developed by D. Bernoulli in 1738, however, the modern approach emphasizes two well-received versions of the theory: Savage's Subjective Expected Utility Theory (SEUT) published in 1964 that is used in the case of uncertainty, and von Neumann-Morgenstern Theory (VNMT) published in 1947 that is used in the case of risk [18]. Considered all around, in Expected Utility Theory, it is assumed that market agents make their decisions under risk by comparing the expected utility values of the available alternatives. Rational investors aim to maximize their expected utility which can be calculated as weighted sums of utility values multiplied by the corresponding probabilities. According to theory, market agents are categorized as risk-averse, risk-neutral and risk-loving individuals. Furthermore, the theory proves that the utility function for different types of investors has different characteristics depending on their risk tolerance (figure 1.1). In other words, the utility function for a risk-averse investor is concave (1.1) due to the fact that

for the same amount of utility a risk-averse person would prefer to take less risk than a risk-loving person (1.3). It should be mentioned that EUT was considered to give a basic idea of the behavior of investors and their decision-making under risk. Above all, we can highlight that the human factor and the perception of risk strongly influence the decision-making process.

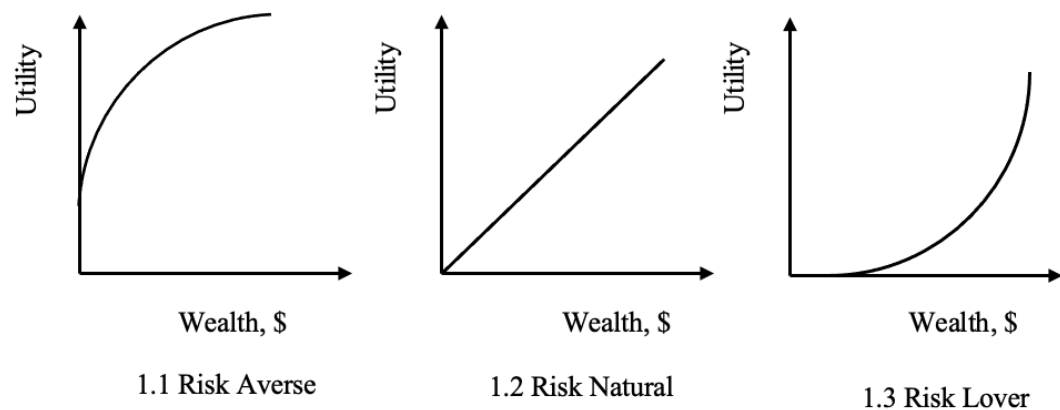


Figure 1.1. Expected utility functions for three risk attitude types

We should also determine the place of investment risk in the life-cycle of an enterprise. To put it simply, we should focus on the common classification of activities of an enterprise. All economic activities of an enterprise can be divided into three main forms also known as cash flow activities: operating activities, financial activities, and investing activities. Operating activities are formed of cash activities related to net income (for instance, revenue or expenses related activities that influence the net income of an enterprise). Financial activities are formed of activities related to noncurrent liabilities and owners' equity (for instance, dividend payments or stock sales of an enterprise). Finally, investing activities are formed by the purchase and sale of long-term assets and other business investments (for instance, buying or selling of an enterprise property) [15]. It is important to note that enterprise development opportunities as well as economic growth to a considerable degree are determined by investment activities. Each enterprise has its investment policy that manages the formation of investment potential and performance of the investment process. The

investment policy can be defined as a complex set of measures that ensure a profitable investment of own, borrowed and other funds in investments in order to ensure the stable financial stability of the enterprise [16].

But no matter how well the investment policy of an enterprise is composed and observed, the risk is an integral attribute of the investment process. Therefore, it is essential to determine forms of investment risk and analyze the solutions that can minimize it.

It is also important to mention how risk occurs and how it can result in loss. Figure 3.1 shows that it is a three-step process, starting with a hazard, with the help of contributing factor or catalyst, a risk event itself, and with it a concomitant loss or result [20]. The chances of this hazard resulting are conceivable higher when there are deep individual and political connections involved.

For instance, the case of CL bank might be highly representative. It was quite a successful public French bank that expanded rapidly from 1987 onwards. The new CEO as well as representatives of the French government then aimed to take CL to a global scale that would rival the major US investment banks. Despite the lack of operational capacity, the management of the bank planned to be as skilled and powerful as the top global US financial players on short notice. At that point, all risks during the bank globalization process were not taken into account and, as a result, CL bank was pushed towards bankruptcy. The decision was rather emotional and ambitious than strategic and wise. The catastrophic moves inadvertently linked strategic risk with a lax risk management function. The bank nearly went bankrupt after 1993 and its bail-out was estimated variously in the region of \$25 billion [20].

In the case of CL bank, a “hazard” was in ambitions unfounded by detailed planning. The hazard was strengthened by the hiring of a new CEO, who also tried to embody his ambitions, rather than being concerned about the stable development of the bank. The CEO turned out to be a "risk catalyst". The outcome or "risk result" in this case was near-bankruptcy with a big cost.

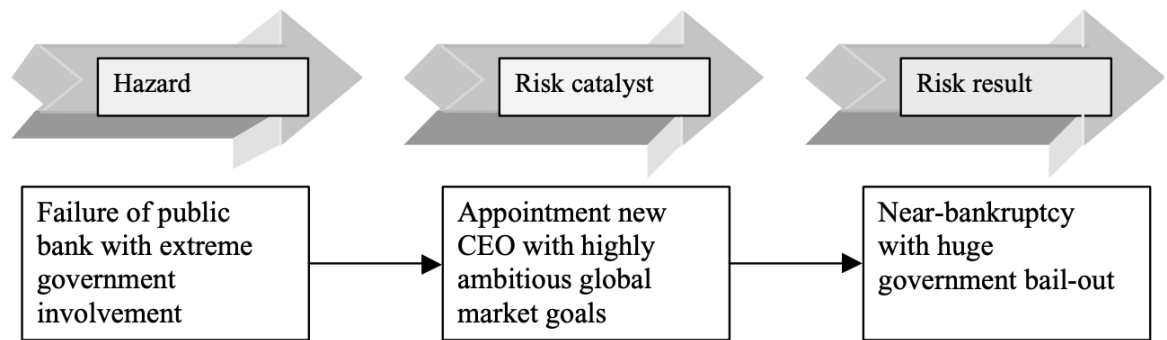


Figure 1.2. Structure of risk

Last but not least, we should define factors that could influence investment risk. There are many factors that are likely to influence investment risk, but in terms of this work we'd like to concentrate on the most common ones [17]:

- *Investment level.* The larger the amount of investment, the greater the risk for an enterprise.
- *Terms of investment.* As the future of the economy cannot be fully predictable, long-term investments are usually considered to be riskier than short-term ones.
- *Wrong or biased decisions.* The decisions based on erroneous calculations or flawed assumptions can be the root of unsuccessful investment.
- *External economic factors.* New legislation, the rapid increase of inflation or unemployment, changing in the interest rate or exchange rates might seriously damage the investment strategy of an enterprise.
- *Field of activity.* The success of investment activity is significantly determined by the field of activity of an enterprise. At that point, we can admit that growing industries are considered to be less risky.

Considering all the distinguishing characteristics of risk we can define *investment risk* as to the probability of occurrence of some unforeseen financial costs in the investment process of an enterprise [15].

To conclude, we can admit that the concept of risk is cross functional and may be defined from the great verity of perspectives. Nevertheless, from the business point of view, risk is inseparable from the business development. The concept of risk is

associated with the possibility of the occurrence of a certain negative event, which can be somehow estimated. The sources of risk for a company are varied but can range from changes in consumer needs and demands, the overall state of economy, and government environment and regulations. It is also important to conclude that, due to a certain level of uncertainty, a company may not be able to utterly avoid all kinds of financial risks, but it can take some steps to mitigate the impact of potential risks, including the development of a strategic risk plan and forming the emergency response policy.

1.2. Classification of risks

The economic literature and scientific publications provide various classifications of investment risks, almost all of which are based on uncertainty. For instance, Bender and Panz in their research found 193 single financial risks, which can influence an enterprise [20]. Therefore, in terms of this work, we focus on the most common types of risks (Figure 1.3).

We can also mention that in the investment aspect, any of the risks can be interpreted as a degree of uncertainty in providing income from the investment. An investor should understand each type of risk and use that knowledge to balance the level of risk with the desired investment return. First and foremost, we should admit that all risks can be classified as systematic risks and unsystematic risks. Systematic risks occur due to the external factors that may influence an enterprise and cannot be controlled by an enterprise. The nature of such risks is macro economical as they usually affect a great number of companies under a similar domain. An example of such a risk could be a political coup, a new series of lockdowns due to Covid-19, or an increase in the interest rate. Alongside systematic risks, unsystematic risks are usually caused by internal factors that arise within the enterprise. Such factors are normally

predictable, controllable, and mostly occurred by the low-quality risk management system of an enterprise. Unlike systematic, unsystematic risk bears a micro economical nature, therefore it can be mitigated. For instance, such risk is often caused by unreasoned management decisions or incorrect financial calculations.

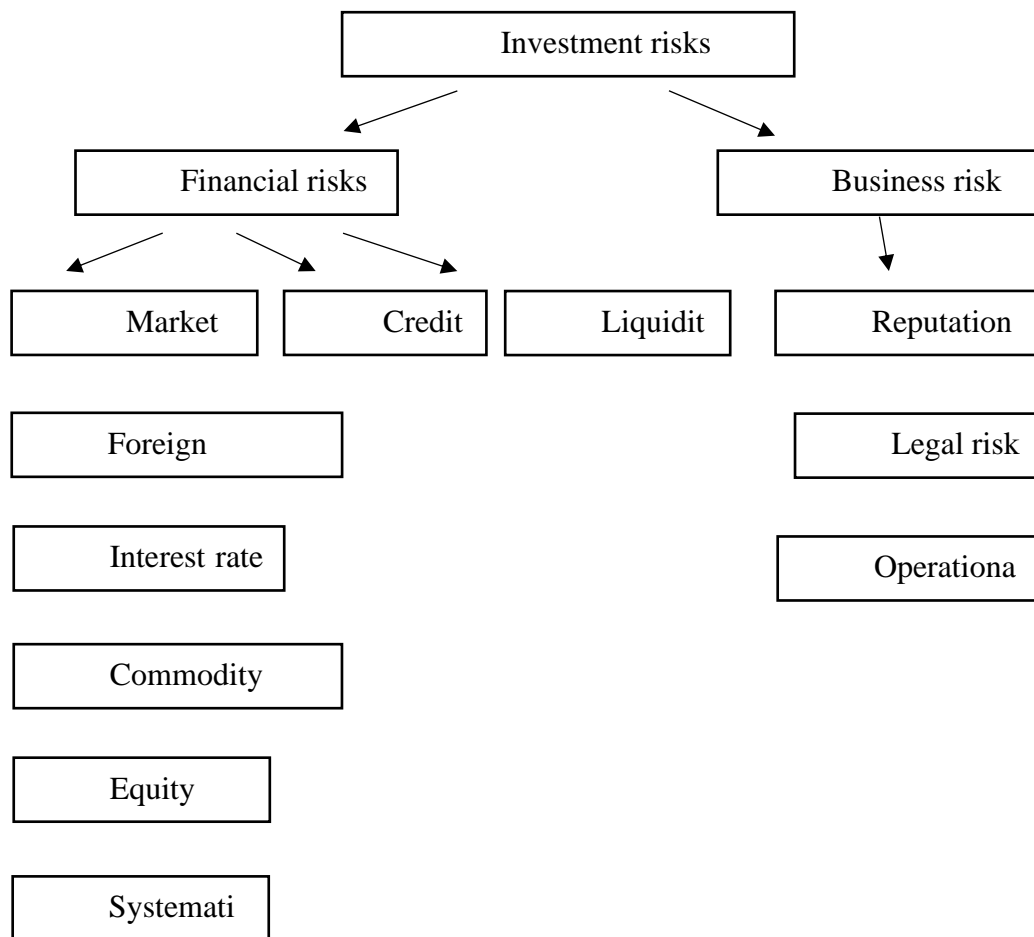


Figure 1.3. Risk types

First and foremost, we should admit that all risks can be classified as systematic risks and unsystematic risks. Systematic risks occur due to the external factors that may influence an enterprise and cannot be controlled by an enterprise. The nature of such risks is macro economical as they usually affect a great number of companies under a similar domain. An example of such a risk could be a political coup, a new series of lockdowns due to Covid-19, or an increase in the interest rate. Alongside systematic risks, unsystematic risks are usually caused by internal factors that arise within the enterprise. Such factors are normally predictable, controllable, and mostly occurred by the low-quality risk management system of an enterprise. Unlike systematic,

unsystematic risk bears a micro economical nature, therefore it can be mitigated. For instance, such risk is often caused by unreasoned management decisions or incorrect financial calculations.

We can also classify investment risks by their main characteristics and the potential loss they can cause. All the investment risks could be divided into two groups financial risks and business risks. In its turn, financial risks are divided into the set of market risks, credit risks, and liquidity risks. As for business risk, scholars tend to form various classifications depending on the branch of activity of the enterprise, however, it is important to highlight the three most frequent and universal business risks: reputational risk, legal risk, and operational risk.

Market risk is the loss in value of the investment caused by changes in various price-related factors [26]. There are five most common market risks:

- *Foreign exchange risk.*

Foreign exchange risk can be determined as the probability of currency losses due to changes in the exchange rate of foreign currency against the national in the period between the conclusion of a contract and the actual settlements for it. Foreign exchange risk can also occur in export or import engaged businesses [17]. The risk can be mitigated by implementing hedging strategies. When an organization works with a foreign currency it is essential to make a cash forecast for each currency. A forecast should help determine whether there is a cumulative surplus or deficit of currency over a period of time based on certain cash flows that may require hedging. Sometimes it is also possible to mitigate foreign exchange risk by transferring it to customers or suppliers. For instance, a company may offer customers to offset the exposure of their currency by paying in another one. Such a strategy suits transactions with widely traded currencies that are always in permanent migration.

- *Interest rate risk*

Interest rate risk is the risk of financial losses due to fluctuations in market interest rates and changes in the value of loans. The sources of such risk can be changes in the financial market or measures for its state regulation. Interest rate changes can

affect many investments, but mostly it affects the value of different fixed-income securities such as bonds [20].

- *Commodity price risk*

Commodity price risk is the probability of incurring unforeseen financial losses from changes in the price level of certain goods or financial instruments [20]. Commodity price risk may be important for companies producing goods or for companies engaged in the distribution of goods. Usually, this risk can be mitigated by hedging strategies on commodities markets. Managing commodity price risk also requires an understanding of the nature of the risk as, unlike financial securities, commodities are physical assets with unique features. Often commodities should be stocked properly as they have the ability to spoil within time. Moreover, not all the commodities can be hedged effectively, therefore there are alternative risk management mechanisms, such as crop insurance for agricultural products.

- *Equity price risk*

Equity price risk is the risk of devaluation of the company's shares. Equity price risk usually affects corporate investors that have assets the performance of which is tied to equity prices [23]. For a company, such a risk can be related to the ability to obtain sufficient capital or liquidity.

- *Systematic risk*

Systematic risk can be determined by the fact that the failure of a major player in the market may provoke a domino effect and negatively affect the performance of all companies in the industry or even the integrity of the financial system in general. A company highly interconnected with others in the industry can also be a source of systemic risk. Moreover, systemic risk can arise from industry meaningful negative events such as major disasters or technological failure. For instance, systemic risk was a major contributor to the financial crisis of 2008 when some companies were considered “too big to fail”.

A word must be also said about the other important type of financial risk called credit risk. The risk can be determined as the potential suffering loss because of not being able to extract the expected profit due to the borrower's failure to meet certain

financial obligations [20]. To put it simply, when a company suggests a credit of any form to a customer, there is always a risk that the customer may fail in paying their invoices. The credit risk is quite common in countries with a widely used system of deferred payment (for instance, this is typical of the American service sector). In a broader sense, credit risk may also arise when an insurance company is unable to pay a claim, or a bond issuer may fail to make payment in a requested period of time [29]. We should also admit that this type of risk is the central issue of the banking sector, in which profit is constantly generated through the provision of loans. Therefore, many companies have established departments solely responsible for the risk assessment, especially after the COVID-19 crises [31]. One of the key focuses of such departments is the credit risks of their current and potential customers. Likely, the technological progress of the 21st century has afforded businesses the ability to effectively analyze a customer's risk profile and timely prevent possible losses. The analysis of the credit history of a potential client also allows you to set the invoicing period and form the terms of cooperation.

Another type of risk worth attention to is liquidity risk. The risk may be defined as the risk of having losses resulting from the inability to meet payment obligations when they become due or from being unable to do so at a sustainable cost [32]. In other words, liquidity risk occurs when a business or financial institution cannot meet its short-term debt obligations due to a shortage in cash or cash equivalents. The company might not be able to quickly convert an asset into cash without giving up capital due to a lack of buyers or an inefficient market. It is also known, that the larger the size of the security or its issuer, the smaller the liquidity risk [20]. To avoid liquidity risk, a company should ensure that it holds a liquidity reserve composed of highly rated liquid securities whose market value and liquidity would be preserved during adverse market conditions [23]. On the other hand, the company should not have a too high level of liquidity, as this can lead to inefficient use of assets and potential profit loss.

Last but not least, in terms of this work we should briefly mention three main directions of business risk also known as reputational risk, legal risk, and operational risk. All these types of business risks are difficult to measure mathematically or predict

in advance, but they may cause irreversible consequences, losses and even lead to bankruptcy [25]. We can also admit that business risk components are interconnected as poor operational management and erroneous global strategic goal setting may cause reputational problems and different legal accusations [24].

To sum up, we can admit that there are a great variety of risk types a company can meet. All risk types can be divided into two groups: financial risk, including market risk types, credit risk, and liquidity risk, and business risk, including reputational risk, legal risk, and reputational risk. To tackle different risks a company may use risk assessments, especially when looking to forward development plan and implement change. Likewise, risk assessment may help in identifying potential business hazards and determine whether a control program is required for a particular risk. Hence, excellent risk assessment gives an ability to properly manage a company in a business environment and the existing uncertainty. Continuous improvements in risk management will enable a company to accelerate its response to investment risks, reduce operating losses, improve capital utilization and identify risks at their inception stage.

1.3. The assessment of internal indicators of financial risk

First and foremost, we should admit that the main idea of the investing process is to gain profit or other kinds of benefits. Therefore, it is essential to understand the methods of measuring risk factors and determine “red flags” that can signal an increased risk of a shortfall in profits [36].

Such “flags”, called financial ratios, give an opportunity to properly investigate and compare relationships between different pieces of financial information. All the financial ratios are calculated using financial statements of a company. There is a great variety of financial ratios that can be divided into the following groups: short-term solvency or liquidity measures, long-term solvency measures, asset management or turnover measures, profitability measures, and market value measures [33]. Moreover, the complex process of analyzing financial ratios is called risk assessment. Risk

assessment (RA) is a set of regular risk analysis procedures and determination of qualitative and quantitative indicators of the magnitude of possible business outcomes for a company [42].

In terms of this work, we would like to highlight the most common financial ratios, that may be essential for the beverage industry.

Net profit Margin. This financial ratio is the most popular indicator of the company's profitability level and overall financial health [38]. The net profit margin shows how much net income is generated as a percentage of revenue, illustrating how revenue collected by a company transforms into profit. Basically, we can note that a high net profit margin is the synonym for successful management. Therefore, future investors usually use this ratio in the assessment process [33]. Great profit margins mean that more of every dollar in revenue translates into profit. Net profit margin can be calculated by the following formula:

$$\text{Net profit margin} = \frac{\text{Net Income}}{\text{Revenue}}$$

Return on equity (ROE). This ratio is considered to give a clear picture of a company's financial health as it shows how much net income is generated by investing \$1 in shareholder's equity [35]. The higher ROE shows better efficiency in generating profits, but this ratio extremely depends on the industry the company operates [33]. Return on equity can be calculated using the following formula:

$$\text{Return on equity} = \frac{\text{Net Income}}{\text{Shareholder's equity}}$$

Return on assets (ROA). Same way as ROE, the Return on assets is the key ratio to indicate the profitability level of a company. ROE determines whether a company uses its assets efficiently to generate a profit by showing how much net income is generated by \$1 of assets [34]. The higher ROA, the better. Return on assets can be calculated using the following formula:

$$\text{Return on assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Current ratio. This ratio is an important short-term measure of liquidity. As current assets and liabilities are converted to cash over the following 12 months, the Current ratio shows the company's ability to pay short-term obligations or other due within one year [37]. In other words, the ratio shows how a company can most efficiently accumulate the current assets to satisfy its current debt and other payables. Usually, a company with a current ratio of less than 1 is likely to not have a capital on hand to cover its short-term obligations, supposing the due date for them comes simultaneously. However, the Current ratio greater than 1 shows the financial ability of a company to remain solvent in the short term and, ultimately, mitigate the short-term risk of inefficiency. The current ratio can be calculated using the following formula:

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

Cash ratio. The cash ratio also applies to indicators of short-term liquidity. The ratio shows a company's ability to cover its short-term obligations using cash and different cash equivalents exclusively. It is also important to note, that the Cash ratio is used to estimate the value of a company under the worst-case scenario [38]. For instance, when the company is in crisis and forced to go out of business, it is important to understand how much money investors can take out quickly either in cash or other current assets, which can easily be converted to cash. The formula for a company's cash ratio is:

$$\text{Cash ratio} = \frac{\text{Cash and cash equivalents}}{\text{Current Liabilities}}$$

Total assets turnover. This ratio helps to form the top vision of the overall financial health of a company. The ratio shows how well a company manages its assets to generate revenue. This ratio is reasonably helpful in comparing companies from the one industry as the higher the asset turnover ratio, the better the company is performing [33]. Total assets turnover can be calculated using the following formula:

$$\text{Total Assets Turnover} = \frac{\text{Revenue}}{\text{Total Average Assets}}$$

Debt ratio. The debt ratio is an extremely essential metric that reflects the amount of debt a company use, which is also called “financial leverage” [35]. The leverage shoves how many assets a company use compering to its debts. The higher the debt ratio is, the riskier the current performance of a company. In other words, when a company abuse using borrowed money, the risk of bankruptcy is higher. The formula for a company's debt ratio is:

$$\text{Debt ratio} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

Debt-Equity ratio (Leverage). The Debt-to-Equity ratio is also an indicator of the financial risks of a company as it shows the relationship between debt and equity [33]. This ratio is usually used by management to decide whether they can afford to take another debt. Generally, the Debt to Equity ratio below 1 is believed to be satisfying, correspondingly Debt to Equity ratio above 2 is believed to signal a threat to a company’s performance. The debt-to-Equity ratio can be calculated using the following formula:

$$\text{Debt to Equity ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Long-term Debt-Equity ratio (Long term leverage). This ratio shows the relationship between long-term borrowings and the equity of a company. The Long-term Debt-Equity ratio is similar to Debt to Equity ratio in some way, but it is long-term liabilities oriented and it is also more revealing in dynamics. Furthermore, it reflects the level of additional return on equity with varying degrees of borrowing [41]. The Financial leverage ratio can be calculated using the following formula:

$$\text{Long-term Debt-Equity ratio} = \frac{\text{Long-term liabilities}}{\text{Total Equity}}$$

Financial stability ratio. This ratio enables a closer estimation of the financial resistance of a company. To maintain financial stability, a company should generate capital on a long-term basis, mainly through equity raising or long-term debt attraction. The financial stability ratio, in its turn, determine determines the share of long-term liabilities in the total value of overall funding sources [34]. The ratio is recommended to be at least 0.5, if the company has no long-term debts, and to be greater than 0.5 in case of engaging no long-term debts. It is also should be noted that the ratio year over year growth is an indicator of constant growth. The financial stability ratio can be calculated using the following formula:

$$\text{Financial stability ratio} = \frac{\text{Long-term liabilities} + \text{Equity}}{\text{Total liabilities} + \text{Total Equity}}$$

As we have previously mentioned, satisfying values of financial ratios are extremely varied by industry. Therefore, it is important to estimate the benchmark values for the particular industry, before conducting the detailed analysis. Table 3.1 represents benchmarks for the beverage industry within the last 5 annual financial periods [39,40].

Accounts Receivable Turnover Ratio. The Accounts receivable turnover ratio shows how successfully and fast a company collects its accounts receivable. It also

shows how much time in average a company needs to collect its short-term debts over a particular period and indicates how effectively the company has organized work to provide financial income for its products [33]. A decrease in this indicator may signal an increase in the number of insolvent customers and cause serious sales problems. But at the same time the decrease may be caused by a company's transition to a softer policy of customer relations aimed at expanding market share. The lower the turnover of receivables, the higher will be the company's need for working capital to expand sales. The Accounts receivable turnover can be calculated using the following formula:

$$\text{Accounts receivable turnover} = \frac{\text{Net credit sales}}{\text{Average Accounts Receivable}}$$

Accounts Payable Turnover Ratio. Accounts payable turnover ratio is another essential measure of the company's creditworthiness and financial stability. The turnover indicates how presentably a company is at paying its short-term debts [34]. A company is constantly balancing the intention to quickly return its accounts payable and the intention to invest the earned money for a certain period to generate additional profit. Accounts payable turnover ratio can be calculated using the following formula:

$$\text{Accounts payable turnover} = \frac{\text{Net Credit Purchases}}{\text{Average Accounts Payable}}$$

Inventory Turnover Ratio. Inventory turnover ratio shows how often the inventory is converted into revenue, determining its efficiency [33]. The ratio is calculated based on the average value of the inventory and cost of goods sold during a period. To put it simple, this turnover indicates the capacity of a company for generating revenue from selling its inventory. Inventory turnover ratio may be calculated using the following formula:

$$\text{Inventory turnover ratio} = \frac{\text{COGS}}{\text{Average Inventory}}$$

To sum up, it should be mentioned that financial ratios are useful in completing an evaluation of a company's performance, as well as comparing it with other representatives of the industry. The ratios measure the relationship between different components of financial statements. The financial ratios also give an ability to identify weaknesses in the company's financial management and define financial risks, which may occur in the near future. There is a great variety of financial ratios, that can be divided into such groups: short-term and long-term liquidity measures, turnover measures, profitability measures, and market value measures. It is also essential to note, that financial ratios are used most effectively when they are canalized in dynamic.

Conclusion to part 1

We may conclude that the concept of risk had been used to emphasize the negative outcome of an event, but with the rapid development of science in the twentieth century, risk became a universal term in economics, medicine, biology, law and other disciplines. Some famous scientific theories were built using the concept of risk: game theory, operations research. There are four characteristic properties of risk, inseparable from its content: inconsistency, alternative, legitimacy and uncertainty. The last one is extremely important, because it is the basis for determining the risk in the investment process: the main idea of choosing an investment project is the basis for achieving the most favorable balance for the investor between risk and potential return. Therefore, investment risk is the risk of not receiving the expected return on investment.

The economic literature presents various classifications of investment risks commonly based on uncertainty. Investment risks can be divided into systematic and non-systematic. Systemic risks arise due to external factors that may affect the company and cannot be controlled. In turn, non-systematic risks are usually based on internal factors that exist within the enterprise. Such factors can be foreseen, controlled and mostly arise due to poor quality risk management system of the enterprise. Unlike

systemic risk, non-systemic risk is microeconomic in nature and can be mitigated. All risk types can be divided into two groups: financial risk, including market risk types, credit risk, and liquidity risk, and business risk, including reputational risk, legal risk, and reputational risk.

Internal risk assessment may be based on financial measurements such as financial ratios. All the financial ratios can be divided into the following groups: short-term and long-term liquidity measures, turnover measures, profitability measures, and market value measures.

SECTION 2

THE INVESTMENT ATTRACTIVENESS OF COMPANIES IN BEVERAGE INDUSTRY

2.1. The analysis of the global beverage industry

In terms of this work, we will analyze the main trends presented in the global beverage industry, define global market leaders and characterize the main essential benchmarks of the industry.

The global beverage industry generated 206.93 billion US dollars in 2021 and is expected to generate 343.6 billion US dollars in 2022 (Figure 2.1). The industry is valued at 232.16 billion by 2022 and the industry is growing at a CAGR of 4% [46].

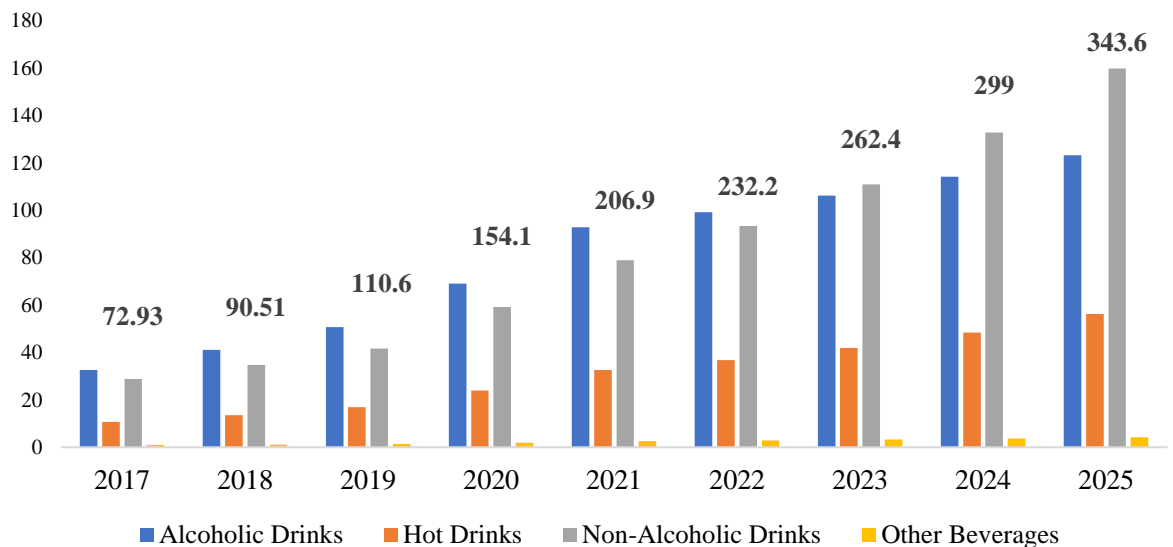


Figure 2.1. Global beverage industry fact and forecast revenue (in mln USD \$) [47]

The beverage industry can be classified into alcoholic drinks, non-alcohol drinks, hot drinks, and other beverages. The alcohol market includes such categories

as brewing, distilled spirits, and wines. The non-alcoholic beverage market includes soda and soft drinks, fruit juices, syrup, caffeinated drinks, and sports drinks. The hot beverage categories are mostly represented by coffee and tea. As of the end of 2021 non-alcohol drinks turned up to form the most popular category, but alcoholic drinks still generate more revenue per person. It is also interesting to note, that the COVID-19 lockdowns made people drink more alcohol and average consumption increased by 14.4 per cent for the 2021 year (Figure2 .2).

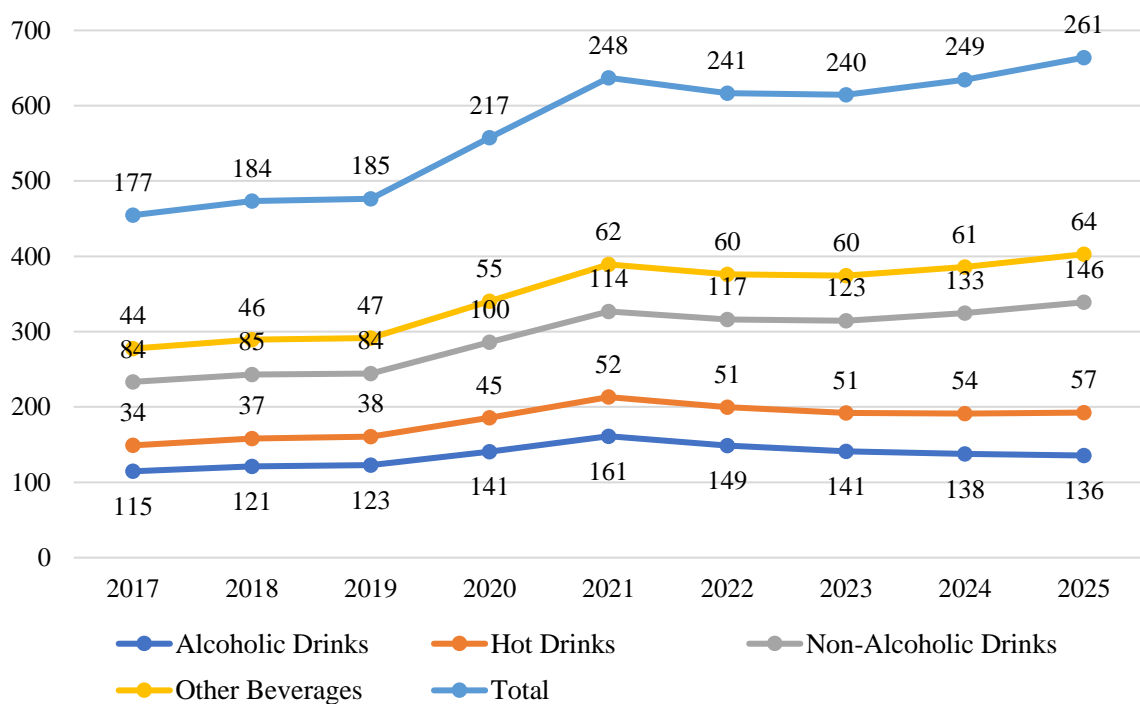


Figure 2.2. The average revenue per user by segment (fact and forecast, 2017-2025).

As for the non-alcoholic beverage market, its size is valued at 1337 billion USD in 2022. The market is anticipated to grow at an estimated CAGR of 5.5%. The value estimations are 1885 billion USD in 2023 and will be valued at 1488 billion USD in 2024. The largest segment of the non-alcoholic beverage market is soft drinks. The soft drinks market is estimated to be 268 million dollars in 2022 [46]. In addition, researchers estimate that the average revenue per person in the Soft Drinks segment amounts to be 90 US dollars by the end of 2022.

The market growth is mainly driven by the growing per capita consumption of drinks in major developing regions because of rising disposable income and changing preferences of consumers mostly towards “ready to drink” beverages [43]. We should

also note that the main threat to the beverage market is the trend toward a healthy lifestyle, as well as rising health concerns regarding the sugar content of soft drinks and alcoholic drinks. Therefore, the launch of new products with low or zero sugar, zero calories, or non-alcoholic are expected to create new opportunities for market growth and help in resisting upcoming challenges [44]. Talking about new trends in the beverage industry, we may specify the following:

- *Growth of Private labeled beverages*

More and more popular leading retailers in the global beverage industry are coming up with their private-label brands and launching different private-label products. For instance, Walmart, Kroger, Albertsons, Trader Joe's, Whole Foods Market, Target Corp., and Costco all have launched private-label drinks in various beverage categories. This is bringing loads of traction and growth in the private label beverage market.

- *Sustainability*

Consumers' purchasing decisions tend to be influenced by environmental concerns lately. Likewise, beverage companies are responding to this by moving towards more eco-friendly options like the usage of recyclable plastic containers or bio-friendly packaging.

- *Personalization*

All the players in the beverage market nowadays are striving to meet the never-ending desires of the consumers. For instance, last year PepsiCo unveiled a new hydration platform, which is completely customizable to the customer needs. It suggests a variety of flavors, carbonation, and temperature options to choose from.

Considering geographically, we can admit that the largest beverage consumer markets are in China, the United States, Japan, the United Kingdom, and South Korea (Figure 2.3). It is also important to note that in the coming years the developing countries in the Asia Pacific, such as Thailand, India, and China are expected to have the fastest growth rate and still be the largest beverage markets, owing to rapid urbanization, rising disposable income and the lifestyle of consumers [44]. We can also

note that Ukraine in 2022 year take the 38 place out of 150 by the size of the beverage market.

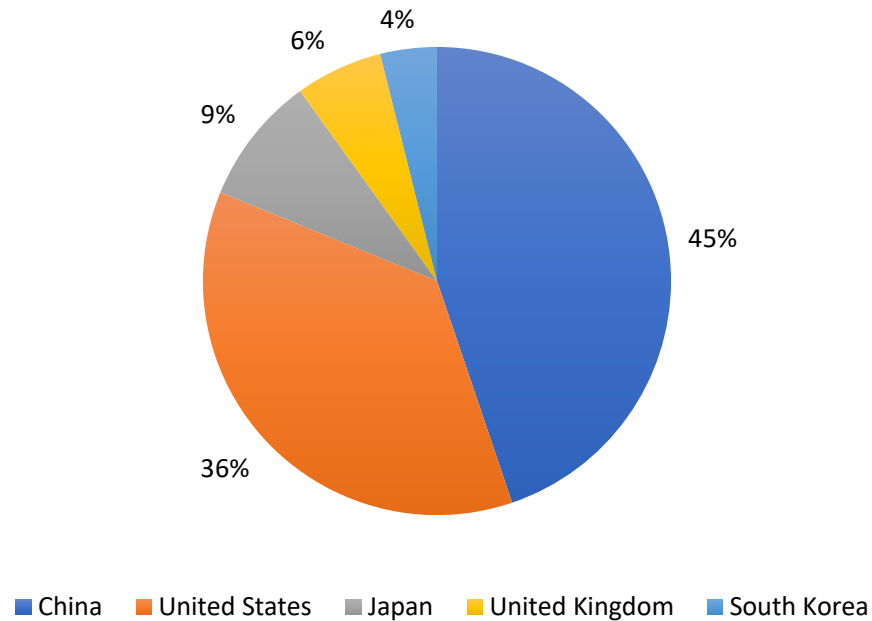


Figure 2.3. Global revenue comparison (fact and forecast, 2017-2025).

Over the recent years, the global beverage industry has experienced a growing number of mergers, famous acquisitions, and product launches. Moreover, leading beverage companies use this to maintain their competitive advantage over other market players. For instance, in August 2019, Diageo acquired Seedlip, the world's first distilled non-alcoholic spirits. In the same year, the Coca-Cola Company announced the acquisition of Chi Ltd., a leading dairy and juice drinks company [45]. The main beverage global market players are defined in Table 2.1.

Table 2.1 Top 10 Largest Beverage Companies in the World

Rank	Company	Country	Market Value
1	PepsiCo	United States	178.2
2	Anheuser-Busch InBev	Belgium	175.5
3	Coca-Cola	United States	203
4	Diageo	United Kingdom	98
5	Heineken	Netherlands	28.3
6	Kweichow Moutai	China	177.1
7	FEMSA	Mexico	34.5
8	Pernod Ricard	France	45.9
9	Constellation Brands	United States	37.3
10	Asahi Group Holdings	Japan	19.9

We should also determine the financial average state of the global beverage industry. As we have previously mentioned, satisfying values of financial ratios are extremely varied by industry. Therefore, it is important to estimate the benchmark values for the particular industry, before conducting the detailed analysis. Table 2.2 represents benchmarks for the beverage industry within the last 5 annual financial periods [7,8].

Table 2.2 The benchmark values for the beverage industry

Financial ratio	Benchmark				
	2017	2018	2019	2020	2021
Net profit margin	-0.3%	3.5%	5.3%	-0.7%	7.7%
ROA	-1.8%	-0.3%	0.6%	0.2%	5.4%
ROE	-9.6%	-8%	2.1%	0.5%	12.9%
Current ratio	1.43	1.45	1.42	1.46	1.5
Cash ratio	0.11	0.34	0.29	0.38	0.34
Total assets turnover	0.66	0.6	0.56	0.55	0.56
Debt ratio	0.76	0.68	0.54	0.53	0.51
Debt-Equity ratio	0.37	0.41	1.05	0.75	1.02
Financial leverage ratio	3.19	3.67	2.85	2.64	2.8
Financial stability ratio	0.86	0.99	0.77	0.71	0.76

We can note that the 2017-2018 years weren't quite successful for the beverage producers as the Net profit margin was negative in 2017. Also, the Return on equity and the Return on assets ratios was negative for both the 2017 and 2018 financial years. First of all, these unsatisfactory results can be explained by dramatic changes in dietary trends toward healthy eating and the state policy to support these trends in many countries that entered into force at the beginning of 2017 [48]. The most essential and profitable market segments of energy drinks, carbonated drinks, and beer were becoming saturated, while the government was introducing measures aimed to decrease the consumption of unhealthy products, focusing on drinks with high sugar content and alcohol. For instance, these restrictions highly affected the Thai beverage market, despite the overall economic development. It was also an uneasy period for the beverage industry in 2020 as the COVID-19 crisis was breaking supply chains. A string

of lockdowns and public panic resulted in a negative Net profit margin benchmark. Nevertheless, in 2021 beverage companies succeed to adapt to the post-covid market challenges and became extremely aligned with emerging trends, showing the best financial performance over 5 years.

To conclude, we should admit that the global beverage industry is actively developing and adapting to the new global trends, including the demand for healthy products, personalization, high quality, as well as sustainability. The beverage industry can be classified into alcoholic drinks, non-alcohol drinks, hot drinks, and other beverages: the alcohol segment proved to generate the highest amount of revenue, but the non-alcohol segment is still the most victual and popular by the number of consumers. Moreover, each market segment is unique and requires spatial domain expertise to reach consumer loyalty. We can also admit that geographically the largest beverage markets are in China, the United States, Japan, the United Kingdom, and South Korea. We should also determine the financial average state of the global beverage industry was quite unstable over the 5 former financial periods. The market was critically affected by a sharp trend in health nutrition in 2017, as well as the coronavirus in 2020. Nevertheless, the global beverage market is believed to achieve high profitability over the next years.

2.2. Financial condition and potential risks assessment of the “Thai Beverage”

Thai Beverage Public Company Limited (also known as “Thai Bev”), founded in Thailand in 2003, is one of Southeast Asia's largest beverage companies known worldwide. Thai Beverage PCL owns and distributes a large number of popular beverage brands, including the “Mekhong”, “Chang beer” and “SangSom”. We should also admit that the company significant part of the European market, producing vodka, gin, and Scotch whisky.

In the 2021 financial year company generated 8 433 million dollars and had a net profit margin estimated as 10.25% [51]. The company segments include beer, spirits, non-alcoholic beverages, and food. Figure 2.4 illustrates that in the 2021 year the largest segment proved to be spirits (48%), then stands beer segment (41%), non-alcoholic beverage (6%), and the food segment (5%).

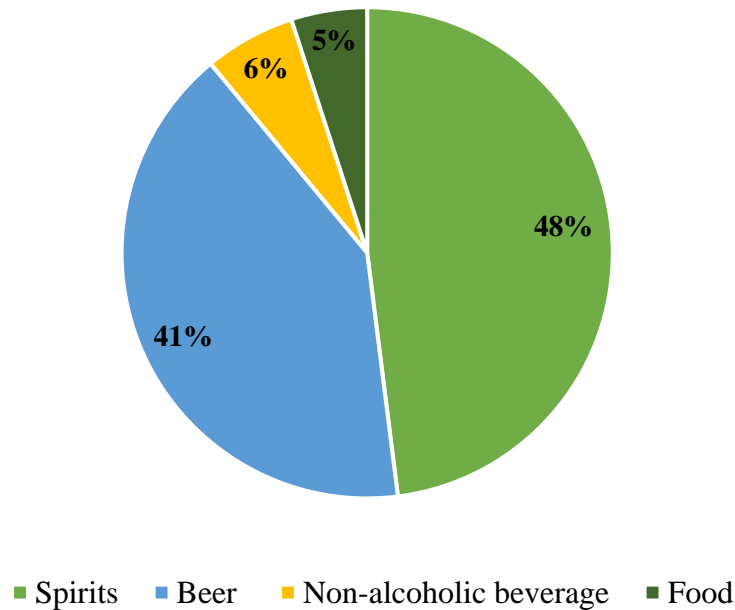


Figure 2.4. Business segments of Thai Beverage PCL.

A word must be said about the condition of the spirits business in 2021. It has still been impacted by the ongoing coronavirus crises and new lockdowns, especially in Thailand which experienced another pandemic wave. To control the virus, the government implemented strict measures such as a ban on on-premises alcohol consumption and the closure of entertainment rest zones. Nevertheless, the overall spirits business remained resilient, mostly due to strong off-premises spirits consumption and Thai Beverage's well-diversified product portfolio. By the end of 2021, the government started to reopen some entertainment venues and ease general anti-COVID measures. Compared to the 2020 year, sales revenue decreased by 1.9% and amounted to 3 336.5 mm US dollars. The total sales volume of spirits was 656.1 million liters, which is less than last year's results by 1.8%. Gross profit was 1,124 million US dollars, a decrease of 1.2%, which is mainly explained by a decrease in

sales revenue. And finally, the net profit was 642 mm US dollars, a decrease of 0.6% compared to the 2020 year results.

The state of the beer segment in the 2020 year was quite similar to the spirits segment, due to the COVID-19 driven consequences. However, Thai Beverage continued to build a business with various strategic adjustments to ensure a smooth production process and sufficient continuous supply for consumers. The focus was on the development of off-premises, adopting new technologies, and enhancing offerings and competitiveness. Compared to the 2020 year, sales revenue for the beer segment decreased by 7.2% and amounted to 2 875.5 mm US dollars. The total sales volume of spirits was 2 095.3 million liters, which is less than last year's results by 11.1%. Gross profit was 633.6 million US dollars, a decrease of 8.5%, which is mainly explained by a decrease in sales revenue. And finally, the net profit was 90.5 mm US dollars, a decrease of 11.4% compared to the 2020 year results.

To generally estimate the financial state of Thai Beverage, we calculated key financial ratios represented in table 2.3.

Table 2.3 Key financial ratios of the Thai Beverage

Financial ratio	2017	2018	2019	2020	2021
ROA	1,0	0,5	0,6	0,6	0,5
ROE	1,4	1,5	1,7	1,5	1,2
Current ratio	1,2	2,0	1,6	1,0	1,0
Cash ratio	0,2	0,6	0,5	0,4	0,4
Total assets turnover	1,0	0,5	0,6	0,6	0,5
Debt ratio	0,3	0,6	0,6	0,6	0,6
Debt-Equity ratio	0,5	1,7	1,7	1,4	1,3

We should note that the Return on equity ratio and the Return on assets ratio was well below the industry benchmark. In 2021 Thai Beverage was generating 1.2\$ by investing \$1 in shareholder's equity and 0.5\$ by investing \$1 in assets. But still, we

should admit that the company management-maintained profitability at a sufficient level, which is an indicator of high-quality financial management.

The current ratio shows the state of short-term liquidity and for the Thai Beverage in 2021 FY it is proved to be at an optimal level, even though it is less than the industry average. The same can be said about the cash ratio, which indicates a company's ability to cover its short-term obligations using cash and different cash equivalents. This indicates the resistance of the company and its ability to meet new unexpected crises caused by COVID-19 or other unpredictable events.

Total assets turnover has been resulting at the same level as the benchmark of the industry over 5 financial years. Likewise, the overall performance of the company may be estimated as satisfying.

The Debt ratio and the Debt to Equity ratio indicate that the company's financial leverage was admissible over 5 annual financial periods. By the same token, Thai Beverage is unlikely to go bankrupt due to its inability to pay its debt obligations.

The overall financial state of Thai Beverage is considered to be healthy. Unsurprisingly, the company was able to launch a few important business projects. For instance, Thai Beverage released a new online platform, that was created to serve as an e-marketplace for ordering and delivering beverages, food, and consumer products with convenience, speed, and safety. Finally, the success of the company was confirmed by getting on Dow Jones Sustainability Index and Dow Jones Emerging Markets Index. It was also recognized as Indices Leader in Beverages Industry with the highest score for the fourth consecutive year.

We must also note that risk management is integral to Thai Beverage's sustainability strategy as well as the achievement of its ultimate goals. The company's success depends not only on preparedness to cope with uncertainties arising from rapid changes in society and globalizing economy, but also ability to anticipatorily identify potential business opportunities. Therefore, Thai Beverage pays much attention to the risk assessment process and prevention measures elaboration. In terms of this work, we also analyzed the potential risks that the company may face. The first category of

risk that we would like to highlight is a strategic risk, which can be divided into the following topics:

1. *Business investment risk*

Thai Beverage grew significantly through both overseas and domestic acquisitions during previous years. In 2020 and 2021, there were some uncertainties caused by the coronavirus pandemic. As a result, generating expected returns from investments has become the company's strategic challenge. To mitigate such a risk the company's management should monitor the performance of investments through both external and internal indicators that could result in a shortfall in return on investment.

2. *Water risk*

Natural water is crucial for the company's operations, as well as its success. The major water risks are floods and water pollution. Therefore, it is essential to systematically control water quality and improve water treatment systems.

3. *Corporate image and reputational risk*

Social media has become one of the largest channels of communication and improvement of brand awareness. Negative news or feedback could severely affect the Company's reputation in both the short and long run in an unquantifiable way. Therefore, Thai Beverage should build a long-term relationship with customers in order to gain their loyalty. Communicating the company's strategies, values, and guidelines on business could also be the key to success.

4. *Changing consumer behavior and trends in the beverage industry*

A sharp change in global trends has repeatedly affected the success of companies over the last few years. For example, the consequences of the COVID-19 crisis proved to have a drastic effect on purchasing behavior, which could change a long-term perspective. At the beginning of the COVID-19, digital adoption was accelerated by the development of online-purchasing consumer apps and e-commerce platforms. Likewise, it is essential for the company to permanently control global trends and adapt to them as quickly as possible.

To conclude, Thai Beverage is a worldwide known company that has been successfully developing over the last years. Thai Beverage experienced both

operational and management changes because of the COVID-19 pandemic. Nevertheless, the company was able to adapt to the new market conditions and customers' preferences. Over the last two years, Thai Beverage has launched several successful products, an online purchasing platform as well as made several investments. The financial state of Thai Beverage may be classified as highly satisfactory. There are a few potential risks that the company may face in the nearest future, including business investment risk, water pollution risk, reputational risk, and unpredicted consumer behavior risk.

2.3. Financial condition and potential risks assessment of the “Carlsberg Ukraine”

Carlsberg Ukraine is a part of the Carlsberg Group which is believed to be one of the leading beer groups in Europe. Carlsberg has a large portfolio of both alcohol and non-alcohol drinks, including “Lvivske”, “Robert Doms”, “Baltika”, “Carlsberg”, “Tuborg”, “Kronenbourg 1664”, “Arsenal”, “Kvas Taras”, “Somersby”, “Guinness”, “Seth & Riley's Garage”, “Warsteiner”, “Grimbergen” and other popular over both Ukraine and the whole world beverage brands.

Focusing on Carlsberg Ukraine we may admit that the company established its production in Zaporizhia, Kyiv, and Lviv. The Kyiv Brewery founded in 2004 is currently the most modern brewery in Ukraine equipped with special filtration and purification systems created in Switzerland. Due to this, the plant has become an advanced European-type enterprise with efficient production and a high level of technological processes atomization. However, the Lviv Brewery, which joined the Carlsberg Group in 1999, is believed to be the historically branded place as it was initially founded in 1715. The Carlsberg Group perform spatial care of this plant since they invested more than 1 million US dollars in it. The production capacity of all three factories is almost the same. For example, in the 2020 year the brewery in Kyiv used 2.38 gallons per hour (g/h) of water, Lviv brewery used 2.29, and Zaporizhzhia

brewery used 2.54. We can also note that on average a Carlsberg Ukraine plant used 2.42 gallons of water to produce a liter of the finished product.

The company segments include both non-alcoholic and alcoholic beverages. Figure 2.5 illustrates that in the 2020 year the largest segment proved to be beer (86%), then does cider (3%), and non-alcoholic beverage (11%).

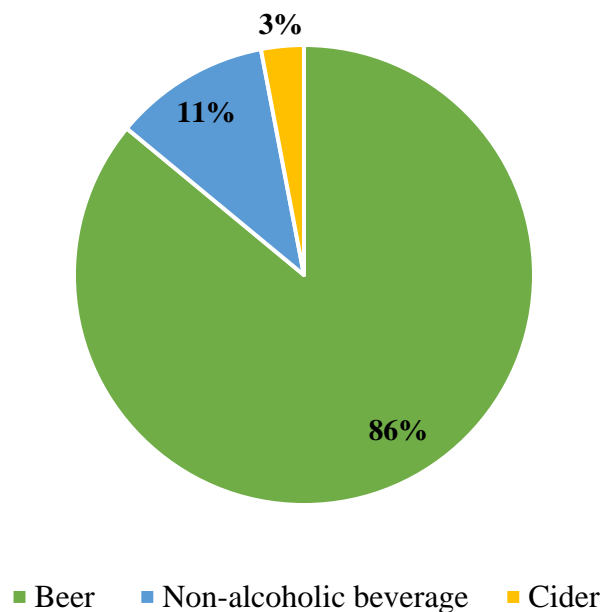


Figure 2.5. Business segments of Carlsberg Ukraine

The Group's net financial result for 2020 compared to 2019 decreased and reached 51 million US dollars. In the 2020 year, production volumes decreased by 6.3% and overall revenue sales by 5%, which can be explained by the COVID-19 crisis, especially by supply chain breaks caused by it. Nevertheless, Carlsberg Ukraine was able to meet the profit targets due to the complex price adoption, technological improvements, and efficient logistic system.

According to the results of the 2020 FY, the market share of Carlsberg in Ukraine was around 30.9% as it's illustrated in Figure 2.6. Its closest competitors were “Abinbev Efes Ukraine” (36.1%), “Obolon” (18.7%) and “Oasis CIS” (12.6%).

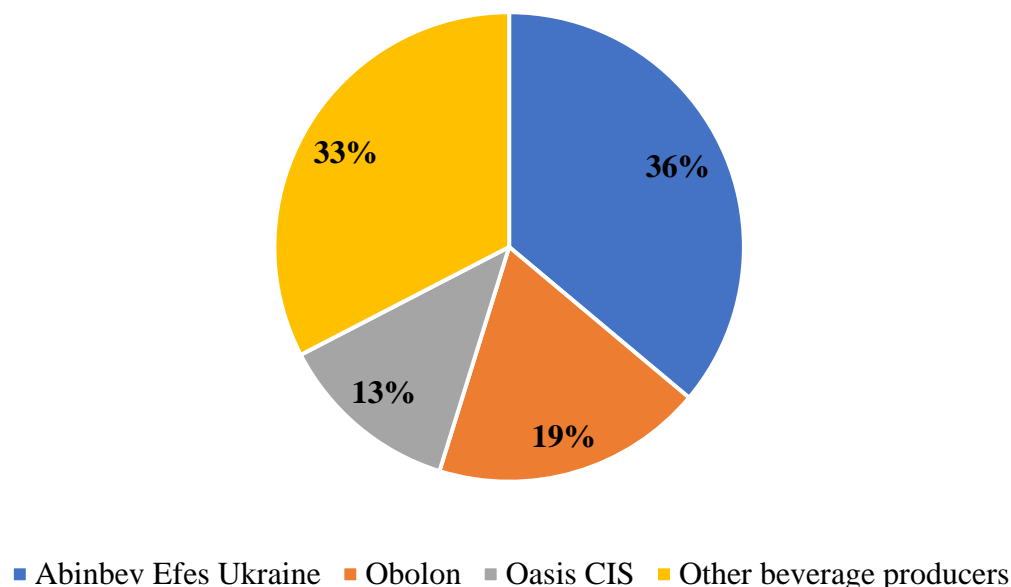


Figure 2.6. The Ukrainian beer market's largest represents

It's also worth mentioning that Carlsberg Ukraine is included in the list of the largest taxpayers of Ukraine in 2021 FY. In total, the company paid 110, 48 million US dollars to the Ukrainian budget.

To generally estimate the financial state of Carlsberg Ukraine, we calculated key financial ratios represented in table 2.4.

Table 2.4 Key financial ratios of the Carlsberg Ukraine

Finantial Ratio	2016	2017	2018	2019	2020
ROA	1,4	1,6	1,6	1,8	1,6
ROE	3,1	2,8	3,0	2,9	2,5
Current ratio	1,5	1,4	1,5	1,5	1,4
Cash ratio	0,7	0,8	0,9	0,8	0,7
Total assets turnover	1,5	1,5	1,6	1,8	1,6
Debt ratio	0,5	0,3	0,3	0,4	0,4
Debt-Equity ratio	0,6	0,4	0,5	0,6	0,6

First of all, we should admit that the financial results of Carlsberg Ukraine over 5 financial years were quite stable. There were no drastic changes in financial ratios, therefore company's development proved to be consistent.

As for the most representative from the profit point of discussion, the Return on equity and the Return on assets financial ratios were significantly high in the 2020 FY. Likewise, Carlsberg Ukraine was generating 2.5\$ by investing \$1 in shareholder's equity and 1.6\$ by investing \$1 in assets.

It can be noted that the potential risk may occur because of the low level of short-term liquidity. Despite the moderate value of the current ratio, the cash ratio was extremely lower than the benchmark for the beverage industry. It indicates the shortfall in cash and cash equivalents for the 2018-2020 years, that increase the risk of the company's inability to cover its short-term obligations. We may admit that during the mentioned period Carlsberg Ukraine was at a high risk of not having capital on hand to cover its short-term liabilities, which may have resulted in further financial difficulties.

As for the company's financial leverage, we may admit that the Debt ratio and the Debt to equity ratio are at a low level, which is allied to the beverage industry benchmark. Likewise, Carlsberg Ukraine uses more assets compering to its debts.

Overall, Carlsberg Ukraine is a financially healthy company with stable growth potential. Nevertheless, the company may face some difficulties due to high uncertainty and a verity of both systematic and unsystematic risks:

1. High uncertainty due to the russion invasion of Ukraine

The war that started on Ukrainian territories in February 2022 is the largest risk factor for the company as well as for the country in general. At the moment, the plant located in Zaporizhzhia is in the high-risk zone, as it is closely located to the combat line. Carlsberg Ukraine may lose a third of its production capacity. Furthermore, the general economic situation in Ukraine is negative and may become worse as the war continue. According to the National Bank, the economy of Ukraine loses 50% of "unproduced" GDP, and each week of hostilities "costs" the national economy more than 3 billion US dollars [53].

2. Human capital risk

As of May 20, more than 6 million citizens left Ukraine, and almost half of them are people of working age [52]. Many working-age men were mobilized, and some workers moved to relatively safe regions. We may admit a dramatic outflow of working capital abroad, as well as the lack of workers in Ukraine for businesses that cannot be relocated to the safe zones.

3. Regulatory changes

Last but not least, changing laws or government policies with emphasis on economic development in tandem with social, community, and environmental development, including laws related to Carlsberg Group's operations, could lead to business operation risk, especially when the Ukrainian economy tries to adapt to the new war conditions. For instance, the risk of an increased tax rate may affect the profitability of the company and its future investing potential.

To sum up, we should note that Carlsberg Ukraine is one of the largest beer producers in Ukraine, that in 2020 hold a significant market share. Mostly, Carlsberg Ukraine specializes in making beer, but the company also produces cider and soft drinks. The financial ratios analysis proved, that the state of Carlsberg Ukraine's financial management over 2016 – 2020 was quite satisfactory. The only possible emerging risk could occur because of the shortage in cash and cash equivalents, decreasing short-term liquidity potential. All the essential risks that could be highlighted in 2022 are connected with Russia's invasion of Ukraine. The war formed an environment of high uncertainty, which is extremely complicated for all the representatives of Ukrainian businesses. Carlsberg Ukraine is likely to face the risk of human capital shortage, regulatory changes as well as the risk shortage of production capacity due to the war.

Conclusion to part 2

To conclude, we should admit that the global beverage industry is actively developing and adapting to the new global trends, including the demand for healthy products, personalization, high quality, as well as sustainability.

In terms of this work, we analyzed two companies representing the beverage market - Thai Beverage, as a world leader, and Carlsberg Ukraine, as a leader in the Ukrainian market. The COVID-19 pandemic in Thai Beverage has seen both operational and managerial changes. However, the company was able to adapt to new market conditions and customer desires. Over the past two years, Thai Beverage has launched several successful products, and an online shopping platform, and made several investments. Thai Beverage's financial condition can be classified as very satisfactory. There are several potential risks that a company may face shortly, including business investment risk, water pollution risk, reputational risk, and consumer unpredictable risk.

We also analyzed Carlsberg Ukraine as one of the largest beer producers in Ukraine. Carlsberg Ukraine specializes in beer, but the company also produces cider and soft drinks. The analysis of financial ratios proved that the state of financial management of Carlsberg Ukraine during 2016-2020 was satisfactory. The only financial risk that has been observed for the last 5 years is the liquidity risk. It was caused by the lack of cash and cash equivalents, which in 2021 reduced the potential for short-term liquidity. All the significant risks that could be identified in 2022 are related to Russia's invasion of Ukraine. The war created an environment of high uncertainty, extremely difficult for all representatives of Ukrainian business. Carlsberg Ukraine is likely to face the risk of human capital shortages, the risk of constant change, and the risk of capacity shortages.

SECTION 3

THE IMPACT OF INTERNAL RISK FACTORS ON THE PROFITABILITY

3.1. The regression models on the impact of internal factors for the beverage industry

To tackle the financial risk of not gaining a profit, one should determine factors that could influence the successful performance of an enterprise. In terms of this work, we will focus on previously mentioned financial ratios, which may be indicators of financial management inefficiency and, as a result, lead to revealing erroneous investments.

To define the significant influence of internal factors on enterprise performance, we construct a multivariate regression model, as well as its further testing, using the application for econometric modeling EViews 12. We use a dataset based on the biggest representatives of the beverage industry both in Ukraine and across the world. Likewise, we collected data for 4 closed annual financial periods for 23 companies (table 3.1) and calculated a set of financial ratios that are supposed to influence companies' profitability.

Table 3.1 The main representatives of the beverage industry

Company Name	Country	Company Type
Mirgorogska	Ukraine	private
PepsiCo Inc.	USA	public
Coca-Cola Co.	USA	public
La Croix	France	private
Carlsberg	Ukraine	private
Danone	France	public
Bisleri	India	private
Nongfu Spring Co. Ltd.	China	public

Primo Water Corp.	Canada	public
Monster Beverage Corp.	USA	public
Constellation Brands	USA	public
Kweichow Moutai	China	public
Anheuser-Busch	Belgium	public
Wuliangye Yibin	China	public
Fomento Económico Mexicano	Mexico	public
Thai Beverage	Thailand	public
Diageo	UK	public
Ambev	Brazil	public
Budweiser APAC	Hong Kong	public
Campari	Italy	public
Suntory	Japan	public
Varun Beverages	India	public
HiteJinro	S. Korea	public

As a dependent variable, we use the net profit margin ratio, which indicates the profitability level of a company. We also use some previously mentioned financial ratios as independent variables:

- Return on Equity for the previous period - ROE(-1)
- Current ratio for the current period - CURRENT_RATIO
- Cash ratio for the current period - CASH_RATIO
- Total assets turnover for the pre previous period – TAT(-2)
- Debt ratio for the current period – DEBT_RATIO
- Debt-Equity ratio for the current period - DE_RATIO
- Financial stability ratio for the current period - FS_RATIO
- Long term financial leverage for the current period FL_RATIO

First of all, we will demonstrate the absence of multicollinearity by constructing a correlation matrix between variables (table 3.2). According to the table, no direct or inverse strong relationships were found between the independent variables, consequently, there is no problem of multicollinearity.

Table 3.2 The correlation matrix

	NET_PROF...	ROE	CURRENT_...	CASH_RATIO	TAT	DEBT_RATIO	DE_RATIO	FS_RATIO	FL_RATIO
NET_PROF...	1.000000	0.537141	0.465372	0.380091	-0.221073	-0.419446	-0.290683	0.148179	-0.307755
ROE	0.537141	1.000000	0.172581	0.254313	0.264216	-0.027818	0.230425	0.036500	0.208021
CURRENT_...	0.465372	0.172581	1.000000	0.616731	0.215300	-0.667363	-0.438604	0.457737	-0.465496
CASH_RATIO	0.380091	0.254313	0.616731	1.000000	0.200423	-0.489928	-0.329918	0.242908	-0.344420
TAT	-0.221073	0.264216	0.215300	0.200423	1.000000	-0.373635	-0.244838	-0.030631	-0.213759
DEBT_RATIO	-0.419446	-0.027818	-0.667363	-0.489928	-0.373635	1.000000	0.881865	-0.265832	0.873583
DE_RATIO	-0.290683	0.230425	-0.438604	-0.329918	-0.244838	0.881865	1.000000	-0.224590	0.986270
FS_RATIO	0.148179	0.036500	0.457737	0.242908	-0.030631	-0.265832	-0.224590	1.000000	-0.372463
FL_RATIO	-0.307755	0.208021	-0.465496	-0.344420	-0.213759	0.873583	0.986270	-0.372463	1.000000

To analyze the direct relationships between independent variables and the net profit margin ratio, the Granger causality test was performed (table 3.3). We can admit that there is a strong causal relationship between Net profit margin and such independent variables as Return on Equity, Total assets turnover, and Financial stability ratio because the Prob value is less than 0.5 and we can reject the null hypotheses about lack of causal connections. This result gives us grounds to proceed with building a regression model.

Table 3.3 The Granger causality test results

Pairwise Granger Causality Tests
Date: 04/26/22 Time: 15:00
Sample: 2017 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
ROE does not Granger Cause NET_PROFIT_MARGIN	69	3.50047	0.0361
NET_PROFIT_MARGIN does not Granger Cause ROE		1.00641	0.3712
CURRENT_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	2.37621	0.1011
NET_PROFIT_MARGIN does not Granger Cause CURRENT_RATIO		0.74420	0.4792
CASH_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	1.29853	0.2800
NET_PROFIT_MARGIN does not Granger Cause CASH_RATIO		0.29155	0.7481
TAT does not Granger Cause NET_PROFIT_MARGIN	69	3.94660	0.0242
NET_PROFIT_MARGIN does not Granger Cause TAT		1.41382	0.2507
DEBT_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	1.94972	0.1507
NET_PROFIT_MARGIN does not Granger Cause DEBT_RATIO		0.01788	0.9823
DE_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	0.80140	0.4531
NET_PROFIT_MARGIN does not Granger Cause DE_RATIO		0.17664	0.8385
FS_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	2.95923	0.0590
NET_PROFIT_MARGIN does not Granger Cause FS_RATIO		0.28652	0.7518
FL_RATIO does not Granger Cause NET_PROFIT_MARGIN	69	1.10160	0.3386
NET_PROFIT_MARGIN does not Granger Cause FL_RATIO		0.25405	0.7764

Given the following analysis, we can proceed to the construction of multifactor regression (table 3.4).

Table 3.4 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN				
Method: Panel Least Squares				
Date: 04/26/22 Time: 14:57				
Sample (adjusted): 2019 2021				
Periods included: 3				
Cross-sections included: 23				
Total panel (balanced) observations: 69				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.368061	0.325174	4.207163	0.0001
ROE(-1)	0.275626	0.099646	2.766056	0.0075
CURRENT_RATIO	0.049901	0.015943	3.129890	0.0027
CASH_RATIO	0.005942	0.017409	0.341314	0.7341
TAT(-2)	-0.150986	0.027999	-5.392502	0.0000
DEBT_RATIO	-0.294073	0.182348	-1.612697	0.1121
DE_RATIO	0.514737	0.189777	2.712320	0.0087
FS_RATIO	-1.345967	0.394710	-3.410011	0.0012
FL_RATIO	-0.404303	0.144252	-2.802753	0.0068
R-squared	0.645374	Mean dependent var	0.141159	
Adjusted R-squared	0.598091	S.D. dependent var	0.135696	
S.E. of regression	0.086026	Akaike info criterion	-1.947224	
Sum squared resid	0.444029	Schwarz criterion	-1.655819	
Log likelihood	76.17924	Hannan-Quinn criter.	-1.831614	
F-statistic	13.64906	Durbin-Watson stat	1.877539	
Prob(F-statistic)	0.000000			

Some variables are statistically insignificant according to the t-test. Since the p-value for Cash ratio and Debt ratio significantly exceeds the critical level of 0.05, we cannot reject the null hypothesis that the coefficients are zero and therefore insignificant.

By the same token, the p-value for other variables is below the critical level of 0.05, and therefore with a 5% probability of error, we can reject the null hypothesis and conclude that these coefficients are significant.

Excluding statistically insignificant variables over three iterations, we obtain the following model (table 3.5).

Table 3.5 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN
Method: Panel Least Squares
Date: 04/26/22 Time: 14:58
Sample (adjusted): 2019 2021
Periods included: 3
Cross-sections included: 23
Total panel (balanced) observations: 69

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.247711	0.316540	3.941715	0.0002
ROE(-1)	0.345712	0.089146	3.878032	0.0003
CURRENT_RATIO	0.063709	0.012911	4.934348	0.0000
TAT(-2)	-0.146075	0.027842	-5.246509	0.0000
DE_RATIO	0.462871	0.187463	2.469137	0.0163
FS_RATIO	-1.355089	0.395703	-3.424511	0.0011
FL_RATIO	-0.396070	0.144471	-2.741517	0.0080
R-squared	0.629834	Mean dependent var	0.141159	
Adjusted R-squared	0.594012	S.D. dependent var	0.135696	
S.E. of regression	0.086462	Akaike info criterion	-1.962307	
Sum squared resid	0.463487	Schwarz criterion	-1.735659	
Log likelihood	74.69961	Hannan-Quinn criter.	-1.872388	
F-statistic	17.58209	Durbin-Watson stat	1.998964	
Prob(F-statistic)	0.000000			

According to the results of the t-test, we may conclude that all ratios are statistically significant. Since the p-value for each coefficient is less than 0.05, we can reject the null hypothesis with a 5% probability that the coefficients are zero and therefore insignificant. Likewise, all the coefficients of the obtained model are significant.

The same conclusion can be reached with the help of the F-test: since the p-value does not exceed the critical value of 0.05, we can reject the null hypothesis of simultaneous insignificance of all coefficients of the model, and therefore the coefficients are significant.

The coefficient of determination is 0.62, so it can be argued that this model explains 62% of the change in the Net profit Margin. According to the moderate-high coefficient of determination, it can be concluded that the model is adequate.

Since the difference between the coefficient of determination and the "adapted" coefficient of determination (adjusted R-squared) is insignificant, it can be argued that the number of observations is sufficient.

So, the regression model based on internal financial factors for the beverage industry is the following:

$$\begin{aligned} \text{Net Profit Margin} = & 0.36 \times \text{ROE}(-1) + 0.06 \times \text{Current ratio} - 0.15 \times \text{TAT}(-2) + \\ & 0.46 \times \text{DE Ratio} - 1.36 \times \text{FS Ratio} - 0.4 \times \text{FL Ratio} \end{aligned}$$

We can also determine the influence of each individual factor of the built model and draw economic interpretation:

1. *Return on Equity for the previous period.* When Return on Equity for the previous period increases by 1%, the Net profit margin increases by 0.4%
2. *Current ratio for the current period.* When the Current ratio for the current period increases by 1%, the Net profit margin increases by 0.06%.
3. *Total assets turnover for the pre previous period.* When Total assets turnover for the pre previous period increases by 1%, the Net profit margin decreases by 0.2%
4. *Debt-Equity ratio for the current period.* When the Debt-Equity ratio for the current period increases by 1%, the Net profit margin increases by 0.5%.
5. *Financial stability ratio for the current period.* When the Financial stability ratio for the current period increases by 1%, the Net profit margin decreases by 1.36%.
6. *Long-term financial leverage for the current period.* When the Long-term financial leverage for the current period increases by 1%, the Net profit margin decreases by 0.4%.

We should also note that we use annual financial statements for 2017-2021 for the beverage industry, including the COVID-19 pandemic crises period. By all means, this period was complicated for all the companies worldwide, including representatives of the beverage industry. We can assume that during the pandemic, the impact of internal financial management may have had less of an impact on the company's profitability. In other words, the impact of external factors created by several long-term lockdowns may have been stronger. To test this hypothesis, we build one multifactor

regression with financial ratios for the crisis year of 2020, as well as another for the relatively economically stable year of 2019.

Table 3.6 shows the absence of a multicollinearity problem between variables for the 2019 regression model.

Table 3.6 The correlation matrix

	NET_PROF...	CURRENT_...	CASH_RATIO	DEBT_RATIO	DE_RATIO	FS_RATIO	FL_RATIO	ROE_2018	TAT_2017
NET_PROF...	1.000000	0.671003	0.350746	-0.462579	-0.294800	0.195154	-0.307056	0.222916	-0.197487
CURRENT_...	0.671003	1.000000	0.697902	-0.722182	-0.564761	0.352483	-0.564433	0.210412	0.302600
CASH_RATIO	0.350746	0.697902	1.000000	-0.510558	-0.388496	0.292002	-0.393113	0.225179	0.348862
DEBT_RATIO	-0.462579	-0.722182	-0.510558	1.000000	0.913140	-0.341102	0.894768	0.057154	-0.372371
DE_RATIO	-0.294800	-0.564761	-0.388496	0.913140	1.000000	-0.369103	0.986947	0.369652	-0.275976
FS_RATIO	0.195154	0.352483	0.292002	-0.341102	-0.369103	1.000000	-0.508472	0.157131	0.161370
FL_RATIO	-0.307056	-0.564433	-0.393113	0.894768	0.986947	-0.508472	1.000000	0.327142	-0.266054
ROE_2018	0.222916	0.210412	0.225179	0.057154	0.369652	0.157131	0.327142	1.000000	0.253627
TAT_2017	-0.197487	0.302600	0.348862	-0.372371	-0.275976	0.161370	-0.266054	0.253627	1.000000

As we found no multicollinearity between variables, we can build the 2019 regression model (table 3.7). Based on the estimation output, we can conclude that we have both significant and insignificant coefficients.

Since the p-value for Cash ratio, Debt ratio, and ROE is significantly higher than the critical level of 0.05, we cannot reject the null hypothesis that the coefficients are zero and, therefore, insignificant.

Table 3.7 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN

Method: Least Squares

Date: 04/26/22 Time: 16:24

Sample: 1 23

Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.821378	0.826766	2.203016	0.0448
CURRENT_RATIO	0.100687	0.030559	3.294808	0.0053
CASH_RATIO	-0.019061	0.035739	-0.533337	0.6022
DEBT_RATIO	-0.513995	0.382644	-1.343273	0.2006
DE_RATIO	0.927574	0.455283	2.037357	0.0610
FS_RATIO	-1.879787	0.991434	-1.896029	0.0788
FL_RATIO	-0.671081	0.343156	-1.955616	0.0708
ROE_2018	0.027587	0.180228	0.153067	0.8805
TAT_2017	-0.109913	0.045248	-2.429128	0.0292

R-squared	0.761341	Mean dependent var	0.159130
Adjusted R-squared	0.624964	S.D. dependent var	0.132250
S.E. of regression	0.080990	Akaike info criterion	-1.902803
Sum squared resid	0.091832	Schwarz criterion	-1.458479
Log likelihood	30.88224	Hannan-Quinn criter.	-1.791057
F-statistic	5.582627	Durbin-Watson stat	1.819830
Prob(F-statistic)	0.002630		

After reconstructing the model, we achieve the new version with excluded insignificant coefficients (table 3.8).

Table 3.8 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN				
Method: Least Squares				
Date: 04/26/22 Time: 16:25				
Sample: 1 23				
Included observations: 23				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.874482	0.771649	2.429191	0.0273
CURRENT_RATIO	0.093535	0.025356	3.688826	0.0020
DEBT_RATIO	-0.552904	0.269144	-2.054303	0.0567
DE_RATIO	0.960396	0.410938	2.337086	0.0328
FS_RATIO	-1.923413	0.933930	-2.059483	0.0561
FL_RATIO	-0.690038	0.319336	-2.160851	0.0462
TAT_2017	-0.111635	0.040288	-2.770928	0.0136
R-squared	0.756259	Mean dependent var		0.159130
Adjusted R-squared	0.664857	S.D. dependent var		0.132250
S.E. of regression	0.076562	Akaike info criterion		-2.055649
Sum squared resid	0.093787	Schwarz criterion		-1.710064
Log likelihood	30.63997	Hannan-Quinn criter.		-1.968735
F-statistic	8.273928	Durbin-Watson stat		1.894097
Prob(F-statistic)	0.000344			

According to the results of the t-test, we can conclude that all ratios are statistically significant. Since the p-value for each coefficient is less than 0.05, we can reject with a 5% probability the null hypothesis, so all the coefficients of the obtained model are significant.

The same conclusion can be drawn with the F-test results. Since the p-value does not exceed the critical value of 0.05, we can reject the null hypothesis of simultaneous insignificance of all coefficients of the model, and therefore the coefficients are significant. The coefficient of determination is 0.76, so we can admit that this model explains 76% of the change in the Net profit margin.

It is also important to conduct LM-test and check whether the model has an autocorrelation problem (table 3.9). The results of the LM-test show that we have no autocorrelation. All p-values are higher than the critical value of 0.05, so we can reject

the null hypothesis and admit that we have no residual autocorrelation. So, residuals are independent of each other.

Table 3.9 The LM-Test results

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.596097	Prob. F(10,6)	0.7761	
Obs*R-squared	11.46247	Prob. Chi-Square(10)	0.3226	
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 04/26/22 Time: 16:26				
Sample: 1 23				
Included observations: 23				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.305907	1.293019	-1.009967	0.3515
CURRENT_RATIO	-0.050406	0.054555	-0.923948	0.3912
DEBT_RATIO	-0.501907	0.524240	-0.957399	0.3753
DE_RATIO	-0.865872	0.768281	-1.127026	0.3028
FS_RATIO	1.992208	1.654524	1.204097	0.2739
FL_RATIO	0.703443	0.621629	1.131613	0.3010
TAT_2017	-0.085556	0.069897	-1.224022	0.2668
RESID(-1)	-0.320147	0.574451	-0.557310	0.5975
RESID(-2)	-0.687948	0.607247	-1.132896	0.3005
RESID(-3)	-0.676612	0.480688	-1.407592	0.2089
RESID(-4)	-0.445662	0.669072	-0.666090	0.5301
RESID(-5)	-0.572777	0.600258	-0.954217	0.3768
RESID(-6)	-1.068512	0.595485	-1.794357	0.1229
RESID(-7)	-0.448279	0.583749	-0.767931	0.4717
RESID(-8)	-0.104974	0.957481	-0.109635	0.9163
RESID(-9)	0.334182	0.721353	0.463271	0.6595
RESID(-10)	0.523687	0.690908	0.757969	0.4772
R-squared	0.498368	Mean dependent var	4.86E-16	
Adjusted R-squared	-0.839316	S.D. dependent var	0.065292	
S.E. of regression	0.088550	Akaike info criterion	-1.875973	
Sum squared resid	0.047047	Schwarz criterion	-1.036695	
Log likelihood	38.57369	Hannan-Quinn criter.	-1.664897	
F-statistic	0.372561	Durbin-Watson stat	2.062447	
Prob(F-statistic)	0.946450			

The regression model based on internal financial factors for the 2019 financial year in the beverage industry is the following:

$$\text{Net Profit Margin} = 0.09 \times \text{Current ratio} - 0.55 \times \text{Debt ratio} + 0.96 \times \text{DE Ratio} - 1.92 \times \text{FS Ratio} - 0.69 \times \text{FL Ratio} - 0.11 \times \text{TAT}(-2)$$

We can determine the influence of each individual factor of the built model and draw an economic interpretation:

1. *Debt ratio for the current period.* When Return on Equity for the previous period increases by 1%, the Net profit margin increases by 0.5%
2. *Current ratio for the current period.* When the Current ratio for the current period increases by 1%, the Net profit margin increases by 0.09%.

3. *Total assets turnover for the pre previous period.* When Total assets turnover for the pre previous period increases by 1%, the Net profit margin decreases by 0.1%.
4. *Debt-Equity ratio for the current period.* When the Debt-Equity ratio for the current period increases by 1%, the Net profit margin increases by 0.96%.
5. *Financial stability ratio for the current period.* When the Financial stability ratio for the current period increases by 1%, the Net profit margin decreases by 1.9%.
6. *Long-term financial leverage for the current period.* When the Long-term financial leverage for the current period increases by 1%, the Net profit margin decreases by 0.7%.

As the next step, we build a multifactor regression model using financial data for the 2020 crisis year. Firstly, we check the covariance matrix. Table 3.10 shows that there is no multicollinearity problem.

Table 3.10 The correlation matrix

	NET_PROF...	CURRENT_...	CASH_RATIO	DEBT_RATIO	DE_RATIO	FS_RATIO	FL_RATIO	ROE_2019	TAT_2018
NET_PROF...	1.000000	0.445162	0.372588	-0.509268	-0.300805	0.112134	-0.315453	0.347900	-0.157369
CURRENT_...	0.445162	1.000000	0.564242	-0.705208	-0.430768	0.496061	-0.465377	0.313182	0.464346
CASH_RATIO	0.372588	0.564242	1.000000	-0.512101	-0.351453	0.341869	-0.381890	0.375852	0.516783
DEBT_RATIO	-0.509268	-0.705208	-0.512101	1.000000	0.861052	-0.266083	0.857655	-0.074655	-0.423617
DE_RATIO	-0.300805	-0.430768	-0.351453	0.861052	1.000000	-0.178060	0.984558	0.254929	-0.250078
FS_RATIO	0.112134	0.496061	0.341869	-0.266083	-0.178060	1.000000	-0.335530	0.121372	0.129428
FL_RATIO	-0.315453	-0.465377	-0.381890	0.857655	0.984558	-0.335530	1.000000	0.210754	-0.235213
ROE_2019	0.347900	0.313182	0.375852	-0.074655	0.254929	0.121372	0.210754	1.000000	0.351710
TAT_2018	-0.157369	0.464346	0.516783	-0.423617	-0.250078	0.129428	-0.235213	0.351710	1.000000

In the second step, we can construct the regression model, using all previously mentioned financial ratios (Table 3.11).

Table 3.11 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN
Method: Least Squares
Date: 04/26/22 Time: 15:06
Sample: 1 23
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.620904	0.733974	0.845949	0.4118
CURRENT_RATIO	0.011723	0.028041	0.418061	0.6822
CASH_RATIO	0.040557	0.028247	1.435780	0.1730
DEBT_RATIO	-0.577502	0.298360	-1.935586	0.0734
DE_RATIO	0.047202	0.420093	0.112361	0.9121
FS_RATIO	-0.241426	0.901871	-0.267695	0.7928
FL_RATIO	-0.013989	0.324639	-0.043091	0.9662
ROE_2019	0.296043	0.236053	1.254137	0.2303
TAT_2018	-0.224220	0.060475	-3.707626	0.0023
R-squared	0.735424	Mean dependent var	0.138261	
Adjusted R-squared	0.584238	S.D. dependent var	0.139599	
S.E. of regression	0.090013	Akaike info criterion	-1.691563	
Sum squared resid	0.113432	Schwarz criterion	-1.247239	
Log likelihood	28.45298	Hannan-Quinn criter.	-1.579817	
F-statistic	4.864364	Durbin-Watson stat	1.597142	
Prob(F-statistic)	0.004964			

Since the p-value for the Current ratio, Cash ratio, Debt to Equity ratio, Financial stability ratio, and Long term financial leverage ratio is higher than the critical level of 0.05, we cannot reject the null hypothesis that the coefficients equal zero. Excluding all insignificant coefficients, we construct the new model represented in table 3.12.

Table 3.12 The multifactor regression model output

Dependent Variable: NET_PROFIT_MARGIN
Method: Least Squares
Date: 04/26/22 Time: 15:12
Sample: 1 23
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.443429	0.072146	6.146283	0.0000
DEBT_RATIO	-0.506889	0.099166	-5.111516	0.0001
ROE_2019	0.446611	0.120967	3.691998	0.0015
TAT_2018	-0.196864	0.046651	-4.219896	0.0005
R-squared	0.667526	Mean dependent var	0.138261	
Adjusted R-squared	0.615030	S.D. dependent var	0.139599	
S.E. of regression	0.086615	Akaike info criterion	-1.897911	
Sum squared resid	0.142542	Schwarz criterion	-1.700434	
Log likelihood	25.82598	Hannan-Quinn criter.	-1.848246	
F-statistic	12.71576	Durbin-Watson stat	1.776327	
Prob(F-statistic)	0.000086			

The t-test shows that all ratios are statistically significant. Since the p-value for each coefficient is less than 0.05, we can reject with a 5% probability the null hypothesis, so all the coefficients of the obtained model are significant.

The same conclusion can be reached by the F-test result. Since the p-value does not exceed the critical value of 0.05, we can reject the null hypothesis of simultaneous insignificance of all coefficients of the model, and therefore the coefficients are significant. The coefficient of determination is 0.66, so we can admit that this model explains 66% of the change in the Net profit margin.

It is also essential to conduct LM-test and check whether the model has an autocorrelation problem (table 3.13). The results of the LM-test show that all p-values are higher than the critical value of 0.05, so we can reject the null hypothesis and admit that model has no autocorrelation.

Table 3.13 The LM-Test results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.596097	Prob. F(10,6)	0.7761
Obs*R-squared	11.46247	Prob. Chi-Square(10)	0.3226

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 04/26/22 Time: 16:26

Sample: 1 23

Included observations: 23

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.305907	1.293019	-1.009967	0.3515
CURRENT_RATIO	-0.050406	0.054555	-0.923948	0.3912
DEBT_RATIO	-0.501907	0.524240	-0.957399	0.3753
DE_RATIO	-0.865872	0.768281	-1.127026	0.3028
FS_RATIO	1.992208	1.654524	1.204097	0.2739
FL_RATIO	0.703443	0.621629	1.131613	0.3010
TAT_2017	-0.085556	0.069897	-1.224022	0.2668
RESID(-1)	-0.320147	0.574451	-0.557310	0.5975
RESID(-2)	-0.687948	0.607247	-1.132896	0.3005
RESID(-3)	-0.676612	0.480688	-1.407592	0.2089
RESID(-4)	-0.445662	0.669072	-0.666090	0.5301
RESID(-5)	-0.572777	0.600258	-0.954217	0.3768
RESID(-6)	-1.068512	0.595485	-1.794357	0.1229
RESID(-7)	-0.448279	0.583749	-0.767931	0.4717
RESID(-8)	-0.104974	0.957481	-0.109635	0.9163
RESID(-9)	0.334182	0.721353	0.463271	0.6595
RESID(-10)	0.523687	0.690908	0.757969	0.4772
R-squared	0.498368	Mean dependent var	4.86E-16	
Adjusted R-squared	-0.839316	S.D. dependent var	0.065292	
S.E. of regression	0.088550	Akaike info criterion	-1.875973	
Sum squared resid	0.047047	Schwarz criterion	-1.036695	
Log likelihood	38.57369	Hannan-Quinn criter.	-1.664897	
F-statistic	0.372561	Durbin-Watson stat	2.062447	
Prob(F-statistic)	0.946450			

The regression model based on internal financial factors for the 2019 financial year in the beverage industry is the following:

$$\text{Net Profit Margin} = 0.45 \times \text{ROE}(-1) - 0.50 \times \text{Debt ratio} - 0.2 \times \text{TAT}(-2)$$

We can also determine the influence of each individual factor of the built model and draw economic interpretation:

1. *Return on Equity for the previous period.* When Return on Equity for the previous period increases by 1%, the Net profit margin increases by 0.45%
2. *Total assets turnover for the pre previous period.* When the Total assets turnover for the pre previous period increases by 1%, the Net profit margin decreases by 0.2%
3. *Debt ratio for the current period.* When the Debt ratio for the current period increases by 1%, the Net profit margin decreases by 0.5%.

To conclude, in this work, 3 different regression models were built. All the models were based on the dataset consisting of financial data of the 23 biggest beverage industry representatives both worldwide and in Ukraine. The first model has 115 observations covering a 5-year period. This model aims to confirm or reject the influence of internal financial factors on the profitability of the company. The other two models were built using 2019 financial data and 2020 financial data separately. The main goal of building such models is to show the difference in the influence of financial ratios within crisis year and non-crisis year. As a result, we were able to gain the following conclusions.

The first model for the period of 2017-2021 confirms the significant impact of Return on Equity for the previous period, Current ratio for the current period, Total assets turnover for the pre previous period, Debt-Equity ratio, Financial stability ratio, and Long term financial leverage on Net profit Margin. Consequently, the state of these financial ratios may form the amount of profit a company may gain in the beverage

industry. The coefficient of determination is 0.62, so it can be argued that this model overall explains 62% of the change in the Net profit Margin.

The second model is based on 2019 financial data. It shows that for the beverage industry in the 2019 year the impact on Net profit margin was significant for the following ratios: Current ratio for the current period, Debt-Equity ratio for the current period, Return on Equity for the previous period, Financial stability ratio for the current period, Long term financial leverage for the current period and Total assets turnover for the pre previous period. The model has neither multicollinearity problem nor autocorrelation. The third model explains 76% of the change in the Net profit margin.

The third model is based on the 2020 pandemic year financial data. It shows that for the beverage industry in 2020 the impact on Net profit margin was significant for the following ratios: Debt ratio for the current period, Return on Equity for the previous period, and Total assets turnover for the pre previous period. The model has neither multicollinearity problem nor autocorrelation. The model explains 67% of the change in the Net profit margin.

The assumption about the less impact of internal financial factors in pandemic 2020 year was confirmed as the coefficient of determination in 2019 is higher by 13.4% (or 0.09 points).

3.2. The risk management process in investing activity

As the analysis of the beverage industry has shown, the internal financial factors are important for the analysis of the financial condition of the enterprise as well as the identification of possible risk factors. Unlike external unpredictable circumstances, internal factors can be measured mathematically. In turn, this allows stakeholders to compare companies in some industry and choose the best for investment purposes.

As the main aim of any investment is generating profit, it is essential to validate internal factors that may lead to different types of risks. Theoretical analysis of the global beverage industry and the construction of econometric models enables to give

advice on both internal and external factors that should be considered in the investment process to prevent the following common risks:

- *Company risk*

This is the risk that may be caused by the influence of the reputational risk, legal risk and operational risk. For example, the return on investment in a particular company may be greatly reduced by adverse environmental factors, such as additional tax rules, the introduction of a legal framework that restrict companies in an industry, or unfavorable climatic conditions for doing business. The beverage industry has shown that even the trend towards healthy eating can reduce the company's profitability in this industry. In addition, the company's reputation and the loyalty of its customers are important. To mitigate the risk, investors should properly investigate the internal and external conditions of the company. In case of threat of the mentioned factors, the losses are likely to be even if the company is healthy financially.

- *General financial risk*

In some cases, a company can report great sales and profit figures, but its real capacities are not strong enough to meet investor expectations. In the most extreme circumstances, companies may experience bankruptcy, resulting in the total loss of any capital invested. Therefore, it is essential to check the condition of the company with the help of audit companies, which can give a clear and unbiased assessment of the situation.

- *Liquidity risk*

Building an econometric model has shown that liquidity is an important factor influencing profitability of the beverage industry. Monitoring liquidity indicators such as Current ratio and Cash ratio may help anticipate this risk.

- *Credit risk*

It is essential to track the company's credit history and its ability to repay long-term and short-term liabilities. Investors should determine a company's ability to meet debt obligations as this risk may be the most important factor of financial health of a company. Such financial measures as debt ratio and debt to equity ratio proved to influence the performance of companies in beverage industry.

To conclude, we can admit that stakeholders who plans to invest in a beverage industry company must be aware of potential external and internal risks that may occur. Although the beverage industry is quite stable, four risks can be identified that may reduce the attractiveness of the investment: liquidity risk, credit risk, general financial risk and company risk. One should also pay attention, that the risk assessment process should be constant due to changing global customer behavior trends and macroeconomics global conditions.

Conclusion to part 3

To conclude, in terms of this work, we built three different regression models. All the models were based on the financial data of the 23 biggest beverage industry representatives both worldwide and in Ukraine. This model aims to confirm the significant impact of internal financial factors on the profitability of the company. The other two models were built using 2019 financial data and 2020 financial data separately. The main goal of building such models is to show the difference in the influence of financial ratios within crisis year and non-crisis year. As a result, we were able to gain the following conclusions.

The first model for the period of 2017-2021 confirms the significant impact of Return on Equity for the previous period, Current ratio for the current period, Total assets turnover for the pre previous period, Debt-Equity ratio, Financial stability ratio, and Long term financial leverage on Net profit Margin. The model overall explains 62% of the change in the Net profit Margin. The second model is based on 2019 financial data. It shows that for the beverage industry in the 2019 year the impact on Net profit margin was significant for the following ratios: Current ratio for the current period, Debt-Equity ratio for the current period, Return on Equity for the previous period, Financial stability ratio for the current period, Long term financial leverage for the current period and Total assets turnover for the pre previous period. The model has neither multicollinearity problem nor autocorrelation. The third model explains 76% of the change in the Net profit margin. The third model is based on the 2020 pandemic

year financial data. It shows that for the beverage industry in 2020 the impact on Net profit margin was significant for the following ratios: Debt ratio for the current period, Return on Equity for the previous period, and Total assets turnover for the pre previous period. The model has neither multicollinearity problem nor autocorrelation. The model explains 67% of the change in the Net profit margin.

CONCLUSIONS

We may conclude that the concept of risk is extensive and can be determined from different angles. From the business perspective, risk is inseparable from the business development. The concept of risk is associated with the possibility of the occurrence of a certain negative event, which can be analytically or mathematically measured. We can also distinguish four characteristic properties of risk that are inseparable from its content: inconsistency, alternative, legitimacy and uncertainty. The risks of risk for a company are varied but can range from the microeconomic environment to marketing trends. It is also important to note that, a company may not be able to completely avoid all kinds of financial risks because of uncertainty. Nevertheless, a management team may take some actions toward uncertainty mitigation, including conduction of the emergency response policy. To tackle different risks a company may also use risk assessments, especially when looking to forward development plan and implement change. Likewise, risk assessment may help in identifying potential business hazards and determine whether a control program is required for a particular risk. Excellent risk assessment gives an opportunity to properly manage a company in a business environment and the general uncertainty.

We can note that there are a great variety of risk types, including financial risk group and market risk group. Financial risk group is represented by market risk types, credit risk, and liquidity risk. On the other hand, business risk can be divided into reputational risk, legal risk, and reputational risk.

It should be also mentioned that financial health assessment of a company may be essential in risk assessment. Financial health usually represents the ability of a company to constantly grow and generate profit. Likewise, financial ratios are useful in completing an evaluation of a company's performance, as well as comparing it with other representatives of the industry. Financial ratios analysis may be the way of understanding the potential internal weaknesses that could hinder the profitability of an investment. The ratios measure the relationship between different components of

financial statements. The financial ratios also give an ability to identify problems in the company's financial management and define financial risks, which may occur in the near future. There is a great variety of financial ratios, that can be divided into such groups: short-term and long-term liquidity measures, turnover measures, profitability measures, and market value measures. It is also essential to note, that financial ratios are used most effectively when they are canalized in dynamic.

It should also be concluded that in terms of this work we analyzed the global beverage industry to determine potential risks in it. We may admit that the global beverage industry is actively developing and adapting to the new global trends, including the demand for healthy products, personalization, high quality, as well as sustainability. The industry is quite stable in development and is attractive to potential investors.

The beverage industry can be divided into alcoholic segment, non-alcohol segment, hot drinks segment, and other beverages segment. The alcohol segment proved to generate the highest amount of revenue, but the non-alcohol segment is still the most popular among consumers. Each market segment is believed to be unique and requires spatial domain expertise to reach consumer loyalty. We can also admit that geographically the largest beverage markets are in China, the United States, Japan, the United Kingdom, and South Korea. We can also note that Ukraine in 2022 year take the 38 place out of 150 by the size of the beverage market.

It also worth mentioning that the financial average state of the global beverage industry was quite unstable over the 5 former financial periods. The market was critically affected by a sharp trend in health nutrition in 2017, as well as the coronavirus in 2020. Nevertheless, the global beverage market is believed to achieve high profitability over the next years.

As the representer of the leading global beverage market player, we analyzed Thai Beverage. Thai Beverage experienced both operational and management changes because of the COVID-19 pandemic. Nevertheless, the company was able to adapt to the new market conditions and customers' preferences. Over the last two years, Thai Beverage has launched several successful products, an online purchasing platform as

well as made several investments. The financial state of Thai Beverage may be classified as highly satisfactory. There are a few potential risks that the company may face in the nearest future, including business investment risk, water pollution risk, reputational risk, and unpredicted consumer behavior risk.

We also analyzed Carlsberg Ukraine as one of the largest beer producers in Ukraine. Carlsberg Ukraine specializes in making beer, but the company also produces cider and soft drinks. The financial ratios analysis proved, that the state of Carlsberg Ukraine's financial management over 2016 – 2020 was quite satisfactory. The only possible emerging risk could occur because of the shortage in cash and cash equivalents, decreasing short-term liquidity potential. All the essential risks that could be highlighted in 2022 relates to Russia's invasion of Ukraine. The war formed an environment of high uncertainty, which is extremely complicated for all the representatives of Ukrainian businesses. Carlsberg Ukraine is likely to face the risk of human capital shortage, regulatory changes as well as the risk shortage of production capacity due to the war.

To prove that internal financial factors may be important in the risk assessment process, we built 3 different regression models. All the models were based on the dataset consisting of financial data of the 23 biggest beverage industry representatives both worldwide and in Ukraine. The first model aims to confirm or reject the influence of internal financial factors on the profitability of the company. The other two models were built using 2019 financial data and 2020 financial data separately. The main goal of building such models is to show the difference in the influence of financial ratios within crisis year and non-crisis year. As a result, we were able to gain the following conclusions.

The first model for the period of 2017-2021 confirms the significant impact of Return on Equity for the previous period, Current ratio for the current period, Total assets turnover for the pre previous period, Debt-Equity ratio, Financial stability ratio, and Long term financial leverage on Net profit Margin. The coefficient of determination is 0.62, so it can be argued that this model overall explains 62% of the change in the Net profit Margin.

The second model is based on 2019 financial data. It shows that for the beverage industry in the 2019 year the impact on Net profit margin was significant for the following ratios: Current ratio for the current period, Debt-Equity ratio for the current period, Return on Equity for the previous period, Financial stability ratio for the current period, Long term financial leverage for the current period and Total assets turnover for the pre previous period. The third model explains 76% of the change in the Net profit margin.

The third model is based on the 2020 pandemic year financial data. It shows that for the beverage industry in 2020 the impact on Net profit margin was significant for the following ratios: Debt ratio for the current period, Return on Equity for the previous period, and Total assets turnover for the pre previous period. The model explains 67% of the change in the Net profit margin. The assumption about the less impact of internal financial factors in pandemic 2020 year was confirmed.

We may also conclude that stakeholders who wants to invest in a beverage industry company must be aware of potential external and internal risks that may occur. Although the beverage industry is quite stable, four risks can be identified that may reduce the attractiveness of the investment: liquidity risk, credit risk, general financial risk and company risk. We should note that the risk assessment process should be constant due to changing global customer behavior trends and macroeconomics global conditions.

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