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RISKS IN LATVIAN SMALL BUSINESS

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Micro and small enterprises in Latvia, like larger enterprises, constantly face various risks. As a rule, the standard deviation of random income measured by the same scale as income itself is taken as the risk, and its mathematical expectation, around which the random income is scattered, is taken as the expected income. Depending on the behavior in relation to risks, there are three types of entrepreneurs: risk-averse entrepreneurs who avoid risks; risk-taking entrepreneurs; entrepreneurs who are indifferent (neutral) to risks. Micro and small enterprises' leaders in Latvia tend to avoid risks. A review of publications, including SCOPUS indexed ones, by foreign and Latvian scientists has demonstrated that the theme related to risks in entrepreneurship is topical in today's unstable conditions. Therefore, the theme of the research is topical for Latvia. The aim of the research is to assess the risk situation at micro and small enterprises in Latvia. The object of the research is micro and small enterprises in Latvia. The subject of the research is the risks arising from the operation of enterprises. Research methods – the analysis of statistical data, scenarios for the development of situations and expert survey. An integrated holistic approach to risk is currently considered the most rational one. The management staff of the firm is usually involved in risk identification and assessment. To identify, analyze and rank risks and their consequences, expertsurvey has been conducted. The experts are managers and owners of micro and small enterprises, 38 respondents in total. The following ten main risks have been identified and analyzed: political, social, commercial, financial, production, innovation, technical, transport, environmental and risks of changes in legislation. Based on the results of expert assessment, a risk matrix has been built. The analysis has demonstrated that more than half of all risks have large or very large potential damage. Of these, the greatest threat is posed by financial risks and risks of changes in legislation. The magnitude of the threat is much lower for the remaining risks of this group – political, commercial, industrial and technical – than that of the first two risks. The four types of risks (innovation, transport, social and environmental) are classified as risks with small and medium potential damage. To reduce the potential damage from financial risks, it is necessary to improve work with customers, to take into account all possible situations in contracts with them. Of the remaining risks, innovation risks are the most important, but innovation increases the competitiveness of enterprises. Here it would be useful to create innovation guarantee funds for micro and small enterprises.

Key words: Latvia, micro and small enterprises, risks, risk matrix, expert survey.

Riski Latvijas mazajā uzņēmējdarbībā

Mikro un mazie uzņēmumi Latvijā, tāpat kā lielie uzņēmumi, pastāvīgi saskaras ar dažādiem riskiem. Parasti par risku tiek uzskatīta nejaušā ienākuma standartnovirze ar tādu pašu skalu kā pašam ienākumam, bet ienākuma matemātiskā prognoze, ap kuru tiek izkaisīti nejaušie ienākumi, tiek izmantota kā paredzamais ienākums. Atkarībā no uzvedības attiecībā uz riskiem izšķir trīs veidu uzņēmējus: piesardzīgi uzņēmēji, kuri izvairās no riskiem; riskanti uzņēmēji;

vienaldzīgi (neitrāli) pret riskiem uzņēmēji. Mikro un mazo uzņēmumu vadītāji Latvijā mēdz izvairīties no riskiem. Ārvalstu un Latvijas zinātnieku publikāciju, tostarp SCOPUS datubāzē iekļauto, analīze parādīja, ka ar riskiem uzņēmējdarbībā saistītās tēmas ir ļoti aktuālas mūsdienu nestabilajos apstākļos. Līdz ar to pētījuma tēma ir aktuāla Latvijā. Pētījuma mērķis ir novērtēt riskus mazajos un mikro uzņēmumos Latvijā. Pētījuma objekts ir mikro un mazie uzņēmumi Latvijā. Pētījuma priekšmets ir no uzņēmumu darbības izrietošie riski. Pētījuma metodes – statistikas datu analīze, situāciju attīstības scenāriji un ekspertu aptauja. Integrēta holistiska pieeja riska izvērtēšanai pašlaik tiek uzskatīta par racionālāko pieeju. Riska noteikšana un novērtēšana parasti ir visa uzņēmuma vadības personāla atbildība. Risku un to seku noteikšanai, analīzei un ranžēšanai tika izmantota ekspertu aptauja. Eksperti bija mikro un mazo uzņēmumu vadītāji un īpašnieki, kopā 38 respondenti. Pētījuma ietvaros tika noteikti un analizēti desmit galvenie riski: politiskie, sociālie, komerciālie, finanšu, ražošanas, inovāciju, tehniskie, transporta, vides un likumdošanas izmaiņu riski. Par pamatu ņemot ekspertu novērtējumu rezultātus, tika izveidota risku matrica. Tās analīze parādīja, ka vairāk nekā puse no visiem riskiem var novest pie būtiskiem vai ļoti būtiskiem iespējamiem zaudējumiem. Vislielākos draudus rada finanšu un likumdošanas izmaiņu riski. Pārējie šīs grupas riski – politiskie, komerciālie, ražošanas un tehniskie – rada daudz mazākus draudus nekā pirmie divi riski. Četri risku veidi (inovāciju, transporta, sociālie un vides riski) tiek klasificēti kā riski ar nelielu un vidējus iespējamos zaudējumus. Lai samazinātu iespējamos zaudējumus no finanšu riskiem, nepieciešams pilnveidot darbu ar klientiem un līgumos ar viņiem ņemt vērā visas iespējamās situācijas. No pārējiem riskiem būtiska nozīme ir tiem, kas ir saistīti ar inovācijām – uzņēmumu konkurētspējas sekmētāju. Šajā jomā būtu lietderīgi izveidot inovāciju garantiju fondus mikro un mazajiem uzņēmumiem.

Atslēgas vārdi: Latvija, mikro un mazie uzņēmumi, riski, riska matrica, ekspertu aptauja.

Риски в малом предпринимательстве Латвии

Микро и малые предприятия в Латвии, как и более крупные предприятия, постоянно сталкиваются с различными рисками. В качестве риска принимается, как правило, стандартное отклонение случайного дохода с той же размерностью, что и сам доход, а в качестве ожидаемого дохода используется его математическое ожидание, вокруг которого рассеяны случайные доходы. В зависимости от поведения по отношению к рискам встречаются три типа предпринимателей: осторожные предприниматели, избегающие рисков; рискующие предприниматели; безразлично (нейтрально) относящиеся к рискам предприниматели. Руководители микро и малых предприятий в Латвии, как правило, стараются избегать рисков. Обзор публикаций, в том числе включённых в базу *SCOPUS*, иностранных и латвийских учёных показал, что тематика, связанная с рисками в предпринимательстве, весьма актуальна в сегодняшних нестабильных условиях, поэтому тема исследования актуальна для Латвии. Целью данного исследования является оценка рисков на микро и малых предприятиях в Латвии. Объектом исследования являются микро и малые предприятия Латвии. Предметом исследования являются риски, возникающие при работе предприятий. Методы исследования – анализ статистических данных, сценариев развития ситуаций и опрос экспертов. В настоящее время наиболее рациональным считается интегрированный целостный подход к рискам. Выявлением рисков и их оценкой обычно занимается весь управленческий персонал предприятия. Для выявления, анализа и ранжирования рисков и их последствий авторы используют опрос экспертов. В качестве экспертов выступают руководители и владельцы микро и малых предприятий – всего 38 респондентов. Выявлены и проанализированы следующие 10 основных рисков: политические, социальные, коммерческие, финансовые, производственные, риски инноваций, технические, транспортные, экологические и риски изменений законодательства. По результатам экспертных оценок

построена матрица рисков. Её анализ показал, что большой или очень большой ущерб предприятию могут нанести более половины всех рисков. Из них наибольшую угрозу представляют финансовые риски и риски изменений законодательства. У остальных рисков этой группы – политических, коммерческих, производственных и технических – величина угрозы намного меньше, чем у первых двух рисков. Остальные четыре вида рисков (риски инноваций, транспортные, социальные и экологические) отнесены к рискам с малым и средним размером возможного ущерба. Для снижения возможного ущерба от финансовых рисков необходимо совершенствовать работу с заказчиками, учитывать в договорах с ними все возможные ситуации. Из остальных рисков наиболее важными являются риски инноваций, необходимых для повышения конкурентоспособности предприятий. Здесь было бы полезным создание гарантийных фондов инноваций для микро и малого предпринимательства.

Ключевые слова: Латвия, микро и малые предприятия, риски, матрица рисков, опрос экспертов.

Introduction

Micro and small enterprises make up the majority (over 98%) of all enterprises in Latvia. Any entrepreneur is always interested in producing more quality products at lower costs and the lowest acceptable risks, obtaining the highest possible income. Thus, the management of the enterprise is faced with the task of optimizing decision-making on production management for obtaining the greatest profit, and developing an optimized way of thinking (Heyne 1987). As a rule, there cannot be immediately an optimal solution due to many criteria, which can exist in real life circumstances. Usually the solution is optimal according to one or two criteria. In the simplest situation, each decision has two main characteristics: the average expected return and the average expected risk (Vishniakov, Radaev 2008). An optimization two-criterion problem of choosing the best solution is solved (Markowitz 1952).

The modern theory of investing in projects considers a set (portfolio) of several possible options at once. Both profitability and risks are taken into account for individual projects and for the portfolio as a whole. The probabilistic non-deterministic nature of the analysed values is taken into account. It allows reducing the risk of the portfolio in comparison with the risks of the projects included in it. The portfolio optimization problem solved here is multi-criteria. Various portfolio models have been developed (Markowitz 1952; Malikhin 1999). As a rule, the standard deviation of random income (σ) measured by the same scale as income itself is taken as the risk (r), and its mathematical expectation (M), around which the random income is scattered, is taken as the expected income.

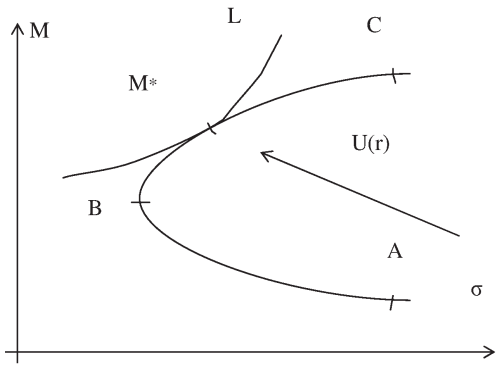
Finding an optimal solution for investing in different projects can be presented graphically on the criterion plane M, r (Figure 1).

According to the investment theory, the investor's preferences are characterised by indifference curves. Each curve represents a set of portfolios that are equivalent from an investor's point of view. Points of the indifference curve correspond to transactions equally acceptable for an entrepreneur with different average income and risks. The utility function on the indifference curve is constant. Section AB (Figure 1)

is a set of dominant projects that are not Pareto optimal and not feasible in reality. Section BC represents a Pareto optimal set of efficient projects. The higher the position of the curve indifference L, the greater the value of the utility function. When moving the curve L in the direction of the vector U, the last point of contact between L and the section BC of the optimal Pareto set will be the point M*. It is the point of optimal solution to the problem of choosing a project.

Figure 1

Finding the point M* of the optimal solution to the problem of choosing the best project in a geometric way



Note: ABC – a set of effective portfolios of projects, L – the investor's indifference curve, U(r) – the vector of the utility function, σ – the standard deviation of random income (equivalent to risk r).

Source: Troianovskii 2002.

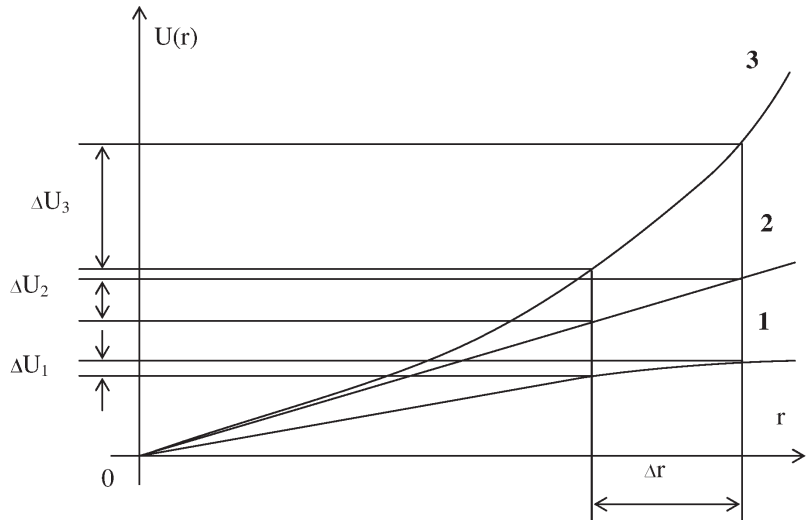
The entrepreneur's preferences are set by the convolution of several criteria into one criterion, which is the utility function U. This utility function is a single criterion for comparing project portfolios. The entrepreneur is assumed to be risk averse, and from two portfolios with the same return, the entrepreneur always chooses the portfolio with a lower risk (Markowitz 1952). The portfolios are compared according to two criteria: the expected return and the risk (standard deviation). According to H. Markowitz's theory, alower threshold of the project profitability is set and the optimal variant with the least risk is sought. Complete elimination of risk can only be achieved if there is a risk-free project. The entrepreneur's actions are always aimed at maximizing the utility function (Neumann, Morgenstern 2004). Depending on the behaviour in relation to risks, there are three types of entrepreneurs: risk-averse investors who avoid risks; risk-taking investors who think they will succeed and investors who are indifferent (neutral) to risks (Figure 2).

The graph of the utility function U(r) for a risk-averse investor (1) is concave upward, since the same increase in income in case of a small amount of income will bring the investor more satisfaction than with a large amount of income. This is due to the fact that in case of low income the risks will also be small, and high income will

bring about significant risks. For an investor who prefers significant income and, accordingly, high risks (3), the graph of the utility function will be concave downward, since the same increase in income in case of their small value brings the investor less satisfaction. Conversely, with high income and risks, the same increase in income for this investor will bring more satisfaction. For an investor indifferent to risks, the graph of the utility function U(r) is a straight line (2). In this case, the same increase in income, both for small and large amounts, will bring the investor the same satisfaction, since the utility function is directly proportional to income.

Figure 2

Utility functions for different types of investors according to the behaviour



Note: 1 – risk-averse investors, 2 – neutral investors, 3 – risk-taking investors, r – risks.

Source: elaborated by the authors based on the Neumann-Morgenstern theorem (Neumann, Morgenstern 2004).

Over the course of evolution, humans have acquired a multidimensional, complex understanding of risk (Maslow 1971). They are very wary of new, unfamiliar risks. There is a calm attitude of people towards the already known, typical risks. Entrepreneurs' perception of risk is governed by processes of a psychological, anthropological and socio-psychological nature. In general, the perception of risk depends on many factors: uncertainty in the consequences, the ability to control events, the time factor, the benefit factor, the factor of understanding the processes, etc. Managers of micro and small enterprises (also in Latvia), as a rule, try to avoid risks, preferring to receive less income, but be sure of low risks. Female executives are generally more cautious than male executives. Wealthy people tend to preserve their wealth rather than take risks to increase it. At the same time, managers with high self-esteem tend to downplay the likelihood of bad consequences of risks.

There are several types of utility functions. The most typical and widespread is the Neumann-Morgenstern quadratic function (Figure 2, graph 1). The expected utility criterion is based on the well-known theory of these authors that people always choose the option with the highest expected utility, but with less risk (Neumann, Morgenstern 2004). This is the case in small and micro businesses. The managers of these enterprises are always more prone to risk aversion, especially any new types of risk. The degree of risk aversion is determined by the concavity of the utility function – the more concave the function, the greater the risk aversion.

To assess the degree of risk aversion, the Arrow-Pratt coefficient A(r) is used, which is the ratio of the 2nd and 1st derivatives of the utility function:

$$A(r) = - U''(r) / U'(r) = 2a / (b - 2ar), \quad (1)$$

where

a, b – coefficients (a, b > 0).

Here, the first derivative of the utility function U′(r), according to the postulates of H. Markowitz, indicates the degree of non-saturation with wealth – the greater the income, the greater the utility from its possession. The second derivative U″(r) determines the degree of risk aversion – the effect of saturation with income, when there is no longer a desire to take risks in order to increase it.

The quadratic utility function is analysed only in the area of concavity (0, b/2a) (Figure 3). The calculation shows that the quadratic function does not increase the degree of utility in proportion to the growth of income (Table 1). It is assumed that the income and risks accompanying it are proportional.

Table 1

Utility function and risk aversion coefficient in case of different income

No	Income (r)	Utilty function U(r)	Coefficient A(r)
1	b / 8a	$7b^2$ / 64a	8a / 3b
2	b / 4a	$3b^2$ / 16a	4a / b

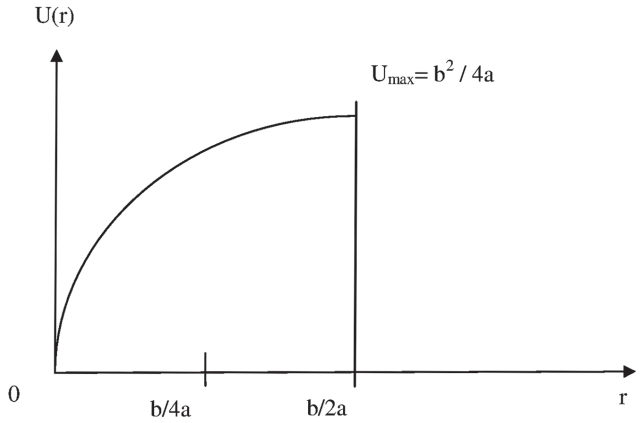
Note: income is proportional to risks r.

Source: elaborated by the authors based on the Neumann-Morgenstern theorem (Neumann, Morgenstern 2004).

For example, with the value of income r_1 = b/8a, the existing utility function will be $U_1(r_1) = 7b^2/64a$. With an increase in income by 2 times, r_2 = b/4a, the utility function increases not two-fold, but by ~1.7 times to $U_2(r_2) = 3b^2/16a$. At the same time, the Arrow-Pratt coefficient of risk aversion increases by 1.5 times. This is fully confirmed by the real behaviour of the managers of micro and small enterprises in Latvia. They are very wary of the possibilities of increasing their income in the presence of increasing risks.

Figure 3

Quadratic utility function



Source: elaborated by the authors based on the Neumann-Morgenstern theorem (Neumann, Morgenstern 2004).

Managers of micro and small enterprises in Latvia are usually cautious when doing business. They compensate for the increased risk by increasing income (1st type of entrepreneurs). Risk-averse entrepreneurs do not take high risks, in which their income increases slightly. According to the surveys, there are no entrepreneurs with an indifferent attitude to risks (2nd type) in Latvia. Only entrepreneurs, who believe that they will succeed, take actions with high risk (3rd type of entrepreneurs). However, this behaviour is not typical in Latvia.

Large global companies (Du Pont, United Grain, Esso, etc.), as a rule, have their own risk management system, they constantly monitor risks and develop solutions to reduce them (Barton et al. 2002). There are no opportunities for micro and small enterprises in Latvia to use this experience in full. Monitoring risks andpotential courses of action for responding to risks are the prerogative of the owners and managers of enterprises themselves.

The review of the available information demonstrates that risks in business have always received increased attention. Since uncertainty prevails in the modern economy and in the world in general, it is impossible to engage in entrepreneurship without taking risks, since risk is a manifestation of uncertainty (Boulton et al. 2000). Economic uncertainty is the price to pay for growth and development (Mandel 1996). The discovery of the main laws and tools for risk management took place back in the 17th century (Vishniakov, Radaev 2008). Since then, risk theory and its applications have been improved by many famous scientists: A. Marshall, J. Keynes, F. Knight, J. Neumann, O. Morgenstern, H. Markowitz, and others.

There are many publications on risks in small business and in the related financial sphere, available in the SCOPUS database. A significant proportion of these publications focus on financial and lending risks (Turvey et al. 2012; Gill et al. 2018; Bams et al. 2021). There are many publications devoted to the role of risk management and

risk reduction in small businesses (Mohammad 2019; Wu, Olson 2009; Kucheryavenko et al. 2017; Syaifuddin et al. 2019; Dvorsky et al. 2020). There are also studies related to innovation in small businesses and information security issues (Temel, Durst 2020; Berry C., Berry R. 2018).

In Latvia, a lot of attention is also paid to the research of risks and the analysis of their impact on the working environment of enterprises, and occupational safety of employees (Kalka, Roja 2001; Kalkis et al. 2003; Jaunzems, Vasermanis 2001). An important place in research is given to financial risks and their management both at the level of banks and small enterprises (Kokins 1999; Stroganova 1999; Voronova 2000). Researchers pay attention to risks in entrepreneurship and ways to reduce them when solving problems of increasing the competitiveness of enterprises (Pettere, Voronova 2004; Grunsteine 2001; Sununa-Markevica 2000). The issues of making management decisions in the presence of risks and uncertainties, as well as methods of risk management in the non-financial sphere, are addressed in the studies by I. Voronova (1994) as well as I. Voronova and J. Komkova (2003). However, the impact of various risks on the functioning of micro and small enterprises, the relationship between risks and possible damage these enterprises may experience are not considered in the aforementioned publications. The present study addresses this gap to some extent. The given review of publications confirms the topicality of the research theme for Latvia.

The aim of the research is to assess the risk situation at small and micro enterprises in Latvia. The object of the research is micro and small enterprises in Latvia. The subject of the research is the risks arising from the operation of enterprises. The novelty of the research lies in the fact that, based on the analysis of the risk matrix for micro and small enterprises in Latvia, the risks that pose the greatest threat have been identified for the first time. The impact of other less dangerous risks has also been analysed. Research methods – the analysis of statistical data, scenarios for the development of situations and expert survey.

Main risks, their ranking and analysis

Small and micro enterprises in Latvia, like large enterprises, constantly face many different risks. Until recently (the end of the 20th century), insufficient attention was paid to the issues of a holistic, integrated approach to risk management. This often led to the situation that enterprises suffered large losses and even had to close. At the beginning of the 21st century, issues related to risks and their management are no longer only the concern of enterprise financiers. Previously, it was believed that the negative consequences of risks, any unforeseen and undesirable consequences caused by them, were limited to a certain area, for example, financial or management. In fact, risks affect simultaneously different areas of entrepreneurship. Therefore, a holistic approach to risks is more appropriate and relevant, as it takes into account, if possible, all the interrelationships and interactions of many factors (Barton et al. 2002).

At present, the most rational approach to risks is not fragmented, for example, taking risks into account only in the financial sector, but an integrated holistic approach

(Preston 2002). Risks simultaneously affect almost all areas of functioning of micro and small enterprises in Latvia. In all successful global companies, top managers of enterprises and boards of major shareholders participate in resolving situations with regard to important risks that can lead to significant losses for enterprises (Borge 2001). Monitoring of risks and work with them are carried out continuously by top- and middle-level managers. Both external and internal risks are analysed at enterprises.

There is no universal approach to organising risk management at enterprises of even one industry. Much depends on the nature and behaviour of company executives, the level of their special and general cultural preparedness, as indicated previously. In Latvia, the majority of executives of micro and small enterprises behave quite cautiously, often taking into account the opinions of external consultants involved in assessing risks and their consequences. According to experts of several leading companies in the world, a lot of information is usually available about recurring events with little possible damage. On the other hand, much less information is present about rare events, but with serious damage (Stewart 2000).

Since the end of the 20th century, many well-known companies have begun to use an integrated, rather than fragmented, approach to risk management. A peculiarity in the analysis of risks and their ranking is that in the world's leading companies (Microsoft Corporation, Du Pont de Nemours and Co, UGG, etc.) it becomes the responsibility of the top-level managers – the president, vice-president, etc. (Stewart 2000). For example, in Microsoft Corporation, risk management is strictly controlled by the top management of the company, and all top- and middle-level managers are involved in risk monitoring. Both internal and external risks that the company may face are under control. The approach to risk should include specific technologies to manage uncertainties that may harm the company (De Loach 2000). In today's rapidly changing international environment, many risks are not always obvious. Therefore, the identification of risks and their initial assessment should be carried out by all management personnel of the company. Subsequent work on risk management, taking measures to neutralize them and responsibility for possible adverse impact on the company rest with the top management of the enterprise. To assess the risks and the possible negative consequences for the enterprise, external consultants from other enterprises, research institutions and educational establishments are often invited. They provide a "fresh" unbiased perspective and analysis of the situation. The identified risks are ranked taking into account the significance for the enterprise, the severity of the consequences and the likelihood of their occurrence.

Risks in entrepreneurship are always closely related to the elaboration of a concept for the development of enterprises, a policy of action in the future to achieve a certain position both in the domestic and foreign markets. It is possible under the condition of constant work to improve the competitiveness of enterprises and to use active offensive strategies (using the weaknesses of competitors, penetrating unoccupied markets, resisting strong competitors, etc.) (Fatkhutdinov 2000). The most important condition for increasing the competitiveness of enterprises is an active innovation activity, the introduction of novelties. Innovation is the result of intellectual, scientific and technical or other activities in any area for the effective change (improvement) of the object of management (enterprise) through the introduction of novelties. Innovation

can occur in almost all areas of enterprise activity: materials used, raw materials, production technologies, machines, equipment, methods of organising work, management, etc. Each of these activities is associated with certain risks.

The internal market in Latvia, even for small and micro enterprises, is often insufficient. Therefore, they strive to enter the markets of the European Union and other regions of the world with their products. The main difficulty is maintaining and expanding one's niche in these markets, since there is a lot of competition. Therefore, it is necessary to constantly work to improve the competitiveness of enterprises, the main operating factor of which is innovation. Innovation is always associated with certain risks. Therefore, the article devotes special attention to them.

When conducting innovative events at enterprises, it is often necessary to use any inventions or discoveries. Legal regulation of intellectual property at the international level is carried out in accordance with the Paris Convention adopted at the end of the 19th century. The Convention protects patents, trademarks, etc. The use of inventions is formalised by purchasing a licence for partial use or full transfer of patent rights. Invention patents usually last for several years (up to 20 years). Licensing is the main form of trade of know-how, the use of patents, technologies, etc. If an enterprise introduces novelties containing someone's intellectual property that is protected by the Paris Convention, there is a risk of punishment in the absence of a licence agreement for the use of this property. Patent and licensing work and the conclusion of an appropriate agreement eliminate this risk.

It is practically impossible for small and micro enterprises in Latvia to independently carry out any scientific and technical research in their field of activity due to the lack of funding. A rare exception is companies involved as co-executors in the implementation of European research. Since the introduction of novelties often requires significant financial costs, a positive result can be obtained from the use of the Japanese experience of cooperation of several enterprises for the joint introduction and implementation of new equipment and advanced technologies. Here it is necessary to take into account the fact that such cooperation has its own risks: partners' failure to complete their part of the work within the required time frame, refusal to participate in the work, etc.

It should be borne in mind that in the innovation process, the introduction of new equipment, devices and technologies will require retraining of workers, raising their qualifications. This process should be planned and organised in advance. There may be risks associated with the need for employees to master new, more complex equipment and technologies. At the first stages of the innovation process, a qualitative study of market demands is of great importance, since it determines the areas and plans for subsequent innovations. The price of a wrong decision at this stage can be very high, the risks can be great. It can be useful to study the experience of related enterprises and to attract external consultants.

In the study, a survey of individual experts was used to identify, analyse and rank risks and their consequences according to the probabilities of possible damage to micro and small enterprises in Latvia. The survey was mainly carried out through questionnaires and in some cases the interview was used, when the respondents had questions filling out the questionnaires. The questionnaire was developed on the basis of literature sources (Fatkhutdinov 2000; Aliev 2019; Pettere, Voronova 2004, etc.).

The opinions of the interviewed owners and managers of enterprises were also taken into account. Experts from different enterprises answered the questions individually and were not influenced by any authority figures, which was undesirable.

The study is based on expert methods, which are currently widely used not only in sociology, but also in management. The use of these methods in scientific research makes it possible to identify the features of the studied processes at enterprises with a fairly high degree of accuracy. This way in the Doctoral Thesis by B. Aliev (BIA), expert methods were used to assess the areas of innovative development of enterprises in the industry (Aliev 2019). In another Doctoral Thesis, it was proposed to use expert methods to improve the quality of measurements of statistical data (Jesilevska 2017). The present study uses the method of scenario analysis to examine medium and long-term prospects for the development of situations. The survey involves 38 experts. The experts are mainly managers and owners of micro and small enterprises, similar to those of the world's leading companies (Barton et al. 2002). They are most fully informed about the state of affairs at their enterprises and about the existing risks. The research is empirical. The aim of the article is not to cover all industries and areas in which enterprises operate in Latvia, as there are a lot of them. The representatives of enterprises surveyed (38 in total) are associated with the wholesale of building materials and structures, software and international freight transport. The paper considers the main risks encountered in almost all enterprises that can lead to significant damage. It is also taken into account that it is impossible to foresee all dangerous situations for enterprises and to prepare for all risksin advance (Borge 2001). The following main risks have been identified and analysed:

1. Political risks: various economic sanctions; political upheavals; terrorist acts in the countries where customers are located (customer companies). The magnitude of the risks is 0.01-0.03.
2. Social risks: the possibility of worker strikes at the enterprise or in solidarity with other organisations. The magnitude of the risks is 0.01-0.02.
3. Commercial risks: customer refusals from finished products and from payment for all work performed. The magnitude of the risks is 0.05–0.1.
4. Financial risks: partial or complete refusal of customers to pay for the completed stages of work on time for various reasons; currency risks due to change in exchange rates. The magnitude of the risks is 0.5–0.6.
5. Production risks: inability to complete an order on time for various reasons (raw materials were not received on time; lack of specialists, equipment breakdown, low-quality raw materials, etc.). The magnitude of the risks is 0.2–0.3.
6. Innovation risks: refusal to carry out projects that have been started for various reasons (lack of funds, subcontractors let down, defects detected in new equipment, etc.). This group of risks takes into account that innovation is usually associated with a certain increase in risk by 15–20%. The magnitude of the risks is 0.2–0.4.
7. Technical risks: technology violations, defects caused by employees, safety violations, technological accidents, etc. The magnitude of the risks is 0.05–0.1.
8. Transport risks: damage to raw materials during delivery or damage to finished products during transportation to the customer, delays on the road, loss or theft of goods, etc. The magnitude of the risks is 0.05–0.2.

9. Environmental risks: impact of weather conditions (low air temperature, strong wind, drought, etc.), epidemics. The magnitude of the risks is 0.01–0.02.
10. Risks of changes in legislation: changes in the taxation system can reduce the competitiveness of companies and lead to direct losses. The magnitude of the risks is 0.4–0.6.

The baseline information was qualitative, not quantitative. Therefore, the gradations of risks and the amount of possible damage were assigned certain ranks according to the type of Harrington's verbal-numerical scale (Troianovskii 2002). The final ranks were determined as arithmetic mean values. Based on the results of expert assessment, a matrix of risks was built for micro and small enterprises in Latvia (Table 2). To construct the matrix, a 6-point empirical scale of the probabilities of undesirable events and the corresponding gradations of risks, as well as a 6-point scale of the size of possible damage were used. According to the ranking results, the risk numbers from the given list are provided in the cells of the matrix. The analysis of the risk matrix has been carried out in accordance with the theory of risks considered in the Introduction of the article.

The ranking showed that commercial risks (3), production risks (5) and risks of changes in legislation (10) have "very large" potential damage. From this group of risks, commercial and production risks are classified as very small (up to 0.1) and small risks (up to 0.3). The greatest threat is posed by the risks of changes in legislation (up to 0. 6). Financial risks (4) with the same probability (risk up to 0. 6) have slightly less potential damage. This is a group with "large" potential damage. It also includes political risks (1) and technical risks (7), which are very small (up to 0.1). Thus, more than half of all risks (six) are included in the group of large and very large potential damage.

The remaining four types of risks (2), (6), (8), (9) are attributed to the group of low and medium level of potential damage. Risks of innovation (6) and transportation risks (8) are classified as risks with "small" potential damage. In terms of magnitude, these risks are, respectively, medium (up to 0.4) and small (up to 0.3). Social (2) and environmental (9) risks are classified as "medium" risks in terms of potential damage. However, they are very small (up to 0.1).

Table 2

Risk matrix of small enterprises in Latvia

No.	Probability of undesirable outcome	Gradation of risks	Extent of potential damage					
			negligible	small	medium	large	very large	catastrophic
			a	b	c	d	e	f
1	0.0 – 0.1	very small	–	–	2; 9	1; 7	3	–
2	>0.1 – 0.3	small	–	8*	–	–	5	–
3	>0.3 – 0.4	medium	–	6	–	–	–	–
4	>0.4 – 0.6	large	–	–	–	4	10	–
5	>0.6 – 0.8	maximum permissible	–	–	–	–	–	–
6	>0.8 – 1.0	critical	–	–	–	–	–	–

* Hereinafter: number of the group of risks.

Source: elaborated by the authors based on the results of the expert survey.

The diagonal of the risk matrix going from cell a6 to cell f1 is the zone of "tolerance" to risks (McCarthy, Flynn 2004). It is generally accepted that risk appetite (tolerance) characterises the risks that the company's management can accept and successfully optimise. Such risks are the most acceptable for the company. With these risks, the management will ensure maximum profit without crossing the "forbidden" border (zone of tolerance) for itself in terms of the magnitude of risks. If this zone, in an effort to increase profit even more, is overcome, the risks will increase to unacceptable values.

The most dangerous risks are those that in the risk matrix are located below and to the right of the diagonal of the zone of tolerance. Theoretically, the optimisation of these dangerous risks should consist in shifting them to the zone of tolerance in the direction of the second diagonal (a1 – f6) of the risk matrix. This corresponds to a shift in the decision point along the curve of the Pareto optimal set in the direction of risk reduction (Figure 1). The amount of possible income also decreases. Production risks (5) are in the zone of tolerance, so no special activities are required to reduce them. It is necessary just to maintain the normal course of the entire technological cycle.

Financial risks (4) are in the danger zone. To improve the situation, it is necessary either to reduce the magnitude of risk, or to reduce the amount of potential damage from large to medium. Since financial risks are mainly associated with customers, in order to reduce these risks, it is necessary to improve work with customers: to select clients more carefully, to stipulate in contracts for the performance of work all possible nuances, force majeure situations, penalties, possible changes in exchange rates, etc. Very large potential damage with a sufficiently high magnitude of risks (up to 0.6) can be caused by changes in legislation (10), in particular taxes. Entrepreneurs, all the more alone, cannot influence in some way directly legislative processes. However, they can indirectly influence the adoption of laws in modern conditions by lobbying the interests of associations of enterprises. The creation of associations of micro and small enterprises, their participation in the social and political life of society can help micro and small enterprises reduce the magnitude of risks (10) and the amount of possible damage. All the considered risks of the hazardous group (4), (5), (10) should be constantly monitored and controlled by the managers of enterprises.

The remaining risks are located in a safer area of the risk matrix, to the left and above the zone of tolerance (a6 – f1). The risks of innovation (6) are of particular interest. As stated earlier, the heads of micro and small enterprises in Latvia tend to be very cautious about risks. This fully applies to the risks of innovation associated with the introduction of any innovation in production. On the one hand, the introduction of innovations makes it possible to improve the quality and quantity of products, and to increase the company's profit. It should also be noted that a particular innovation process may not be sufficiently or at all familiar to the heads, and it carries unacceptable risks for them. Therefore, the heads of enterprises are afraid of risking the existing state of affairs in the hope of obtaining large profit.

Innovation is very important for the development and modernization of production. Obtaining any guarantees, for example, the availability of a special fund for innovations when introducing innovations would allow the heads of enterprises to act more confidently when implementing innovations (Kochetkov, Sventitskaya 2016). In this situation, the risks of the group under consideration must be shifted closer to the zone of

tolerance in the direction of the second diagonal (a1 – f6) of the risk matrix. This procedure corresponds to a shift in the decision point along the curve of the Pareto optimal set in the direction of some increase in risks (Figure 1). At the same time, the amount of the expected income increases (Malikhin 1999).

Transport risks (8) belong to the group of small risks (up to 0.3) and small amount of potential damage. They are not particularly problematic. Usually, both the delivery of raw materials and finished products during transportation are insured. Thanks to transportation insurance, entrepreneurs receive compensation for damage in cases of emergencies. Political (1), social (2) and environmental (9) risks belong to the group of very small risks (up to 0.1). Large amount of damage can be caused by political risks. Therefore, they need to be considered and analysed when concluding contracts with customers of products and suppliers of raw materials. The other two risks (2) and (9) have an average amount of potential damage. All these risks, like others, should be in the focus of the managers of enterprises so that they can respond to them in a timely manner when the situation worsens. It is not possible or very difficult to influence these risks (1), (2), (9) in order to reduce them to a minimum or close to zero.

Technical risks (7) and commercial risks (3) have, respectively, "large" and "very large" extent of potential damage. However, the probability of an undesirable result in both cases is very small (up to 0.1). Taking into account the possible fairly large damage, it makes little sense to shift these risks (3) and (7) to the zone of tolerance in order to increase income because of the increased risks. It is better to keep them at the current level. Therefore, it is necessary, as indicated earlier, to carefully work with customers, choosing reliable and proven clients. To ensure minimum technical risks (7), one should strictly adhere to the production technology and activate the work of technical control at the enterprise.

The risks existing in Latvian micro and small enterprises exacerbate the problems in the market sector of the economy (Kocetkovs, Sventicka 2020). The risks of changes in legislation have the greatest value (the risk is large – up to 0. 6). Financial and currency risks are of the same magnitude. These financial risks negatively affect the ability to obtain loans and settle tax payments. It is known that innovation is most often associated with the acquisition of new equipment, new technologies. Risks here are average, accounting for up to 0.4. Many entrepreneurs are risk-averse and reluctant to innovate. This negatively affects the competitiveness of their enterprises. Small risks (up to 0.3) include transport and production risks. They can also cause certain difficulties in the work of enterprises. These difficulties are overcome mainly owing to the experience, literacy of the management of enterprises (timely insurance of goods during transportation, compliance with the technology of production processes, etc.).

The study did not address the force majeure situation with the Covid-19 pandemic. The impact of this pandemic on the global and the Latvian economy, the national economy and society is negative and very multifaceted (Onyshchenko, Sivitska 2020; Nurakynova 2020). International borders are closed, export and import of raw materials and finished products are stopped. This leads to the closure of many enterprises and the entire sectors of the economy, an outflow of labour, unemployment, etc. Thus, in Latvia, from 2016 to 2019 inclusive, the annual GDP growth averaged 6.27% (Central Statistical Bureau of Latvia 2021a). In 2020, compared to 2019, the GDP

due to Covid-19 decreased by 3.6%. In the period from 2016 to 2019, the unemployment rate in Latvia decreased from 9.6% to 6.3%, with an average of 1.1% per year. In 2020, it increased by 1.8% (by 11.8 thousand people) compared to 2019, to 8.1% (Central Statistical Bureau of Latvia 2021b). To reduce the negative impact of the consequences of the pandemic in Latvia, it will be very important to have the correct consistent response of the government and the Central Bank to "warm up" the economy after the end of the crisis. It is necessary to provide support to the leading sectors of the national economy, small and micro entrepreneurship in the resumption of normal economic activity, rationally using the considerable funds allocated by the European Union for economic recovery after the pandemic.

To compare the situation with risks in small businesses in Latvia with other countries, a similar survey was conducted at several enterprises in Lithuania and Estonia (8 enterprises each). According to the survey results, it can be stated that in Estonia the situation with risks, at least in the surveyed enterprises, is the most favourable for doing business: the magnitude of risks is very small, it does not exceed 3–4%. In Lithuania, the situation with risks, according to the survey, is somewhat worse than in Estonia. In most of the surveyed enterprises (6), the situation is similar to that in Estonia. In other enterprises, the situation, in the opinion of their management, is similar to that in Latvia: many risks are classified into groups from small to large risks (>10 to 60%). On the whole, it can be concluded that the situation with risks in Lithuania is better than in Latvia.

According to the authors of the present study, the insufficiently favourable situation with risks in micro and small enterprises in Latvia has a negative effect on the growth of production: Latvia lags behind Lithuania and Estonia in this indicator. Industrial output in Latvia in July 2021 increased by 8.4% compared to the same month in 2020, in Estonia – by 9.9%, in Lithuania – by 15% (Eurostat 2021). Sufficiently large risks in Latvia force entrepreneurs to be overly cautious, hinder the introduction of novelties, innovations, and lead to lagging behind competitors in the modernization of production.

Conclusions

A vast majority of enterprises in Latvia are micro and small enterprises. Their managers and owners try to run their business carefully, avoiding the existing risks. Entrepreneurs who prefer to take risks for the sake of immediate gain are extremely rare. As a rule, the managers and owners of enterprises themselves monitor risks, providing an integrated approach to them, and develop options for responding to risks, thus choosing the most optimal one. Practically all managers of enterprises are involved in these activities. There are many risks in Latvia that affect the activity of micro and small enterprises. Risk management at enterprises is carried out in different ways, depending on the risk appetite of the heads of enterprises. Methods of individual examination and scenario analysis have been used to identify and rank risks. The 10 main risks for micro and small enterprises in Latvia have been identified and analysed. Based on the results of expert assessment, a risk matrix has been built and the zone of tolerance to risks has been determined.

More than half of all risks are characterised by large and very large potential damage. The greatest threat (the probability of an event is more than 0.4 to 0.6) is represented by financial risks and risks of changes in legislation. The remaining risks of this group (large and very large risks) – political, commercial, production and technical risks – in terms of their probability (magnitude of risks) are classified as very small (up to 0.1) and small (more than 0.1 to 0.3). Accordingly, the magnitude of the threat from them is much less than that of the first two risks. The other four types of risks are classified as groups of small and medium potential damage. The group of small amount of potential damage comprises the innovation risks (more than 0.3 to 0.4) and transport risks (more than 0.1 to 0.3). The group of medium potential damage includes social and environmental risks, which are very small in magnitude (up to 0.1).

The most dangerous risks (financial and related to legislative changes) are located below and to the right of the zone of tolerance in the risk matrix. To reduce the threat from financial risks, it is necessary to improve work with customers, to take into account all possible situations in contracts with them. This will shift these risks to the zone of tolerance. The creation of associations of micro and small enterprises, their participation in the social and political life of the country will create conditions for lobbying the interests of entrepreneurs in the field of lawmaking and will help reduce the threat from relevant risks.

Of the group of other risks that are above the zone of tolerance in the safe area, innovation risks are the most important ones. Innovation is urgently needed to develop production and increase the competitiveness of enterprises. With this in mind, and sometimes overcaution among entrepreneurs when introducing innovations, it would be useful to create innovation guarantee funds for micro and small enterprises. This will give entrepreneurs more confidence in the successful implementation of innovations and increasing competitiveness. Technical and commercial risks are characterised by a very significant amount of possible damage with a very small magnitude of the risks themselves (up to 0.1). It is desirable to keep these risks at the current level: to work carefully with suppliers of raw materials and customers of products, to monitor strict adherence to production technology. Social, transport and environmental risks are classified as small (from 0.1 to 0.3) and very small (up to 0.1). But all of them should also be under constant monitoring by the managers of enterprises.

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