CHAPTER VII. FEATURES OF RISK PERCEPTION IN THE TOURISM SECTOR

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Abstract. *Numerous studies confirm the importance and growing role of tourism – especially in EU countries, where tourism is considered a strategic priority. This is due to the growing demand for tourism services and the potential for the relatively rapid accumulation of tourism potential, which has a multiplier effect on many economic sectors. For these reasons, tourism is particularly important for the less prosperous EU Member States, especially in the context of recession. Risk and the perception of risk play a major role in the development of tourism. This paper aims to disclose how tourism risk is perceived, which scholars analyze tourism risk, and how tourism risk can be classified.*

Keywords: *risks; tourism; tourism risk perception; tourism risk characteristics.*

Introduction

Tourism is one of the great success stories of our time. The industry only began to grow significantly in the 1960s, and in the last 50 years tourism has seen an unparalleled increase in revenue and outbound tourism. International tourist

arrivals reached 25 million in 1950, 698 million in 2000, and 935 million in 2010. In 2023, according to the World Tourism Organisation (Chakraborty, 2024) 1.3 billion tourists will travel abroad – 44% more than in 2022, and 88% of the 2019 number. International tourism levels in 2024 are also projected to be slightly higher than pre-pandemic levels, thanks to recovery in Asia. Numerous studies confirm the importance and growing role of tourism, especially in EU countries. As one of the largest and fastest-growing economic sectors, tourism makes a significant contribution to GDP, jobs, export promotion, and prosperity, which is part of the EU's objectives and is naturally linked to its policies in various areas. Tourism is considered a strategic priority in most EU countries. This is due to the growing demand for tourism services and the potential for the relatively rapid accumulation of tourism potential, which has a multiplier effect on many economic sectors. It is also well-known that tourism can be described as the industry with the highest growth rate and the most significant potential for job creation worldwide. For these reasons, tourism is particularly important for the less prosperous EU Member States, especially in the context of recession. Risk and the perception of risk also play a major role in the development of tourism. In tourism, like in business, it is impossible to predict everything in advance, so there is inevitably an element of risk. This paper thus aims to analyze tourism risk as it is perceived in different research studies. **The object** of the study is the perception of tourism risk, leading to the following **study objectives**:

1. to analyze risk concepts;
2. to reveal the perception of tourism risk;
3. to analyze the specific features of tourism risk.

7.1. Risk classification and specific features of the tourism sector

Risk analysis is a major focus of international research. There have been a number of theoretical, methodological, and practical studies on risk analysis, but

tourism risk has not received significant attention from economists in practice. According to Moutinho (1993), risk can be defined as "a function of uncertainty and consequence." Schiffman and Kanuk (1991) highlighted two important characteristics of perceived risk: uncertainty and consequences. Further, they suggested that perceived risk is the uncertainty faced by consumers while buying, when unable to anticipate the results of their buying decision.

Gegužis (2003) and Banevičius (2020) pointed out that risk can take many forms, which can have disastrous consequences for tourism businesses. When it comes to knowing and exploring risk and uncertainty, it is necessary to choose which form of risk to explore. There are many forms of risk (economic, social, physical, etc.) and many more sub-forms. The concept of economic risk is strongly influenced by the extent to which the institutionalized sector is recognized, the actions of which are designed to reduce uncertainty and risk in the creation of public goods such as laws, regulations, research, and regulatory bodies. Depending on the prevailing ideology, the pendulum of the concept of economics swings from the identification of the market with the economy, while ignoring the role of the state, to the complete absolutization of the state and disregard for the power of the market.

An analysis of the literature shows that people tend to perceive risk differently (Bhati et al., 2021; Sönmez & Graefe, 1998a). Some scholars (Raval & Fichadia, 2007) argue that risk can be viewed as the subject of potential loss or damage, where the subject can be an individual, group, organization, system or resource, the theft of data, or the unauthorized use of information.

Kerzner (2013) argues that risk arises from a lack of knowledge about future events, especially those events that have a negative impact on businesses – so-called adverse events. Perceived risk is defined by some scholars (Mowen & Minor, 1998) as "a consumer's perception of the occurrence of adverse actions and the assessment of the likelihood that these actions will occur."

While scholars cannot agree on a universal definition of risk, two strands of risk concepts can be identified. Some scholars associate risk with uncertainty, while others categorically separate uncertainty from risk and associate risk itself with the probability of an event. Most authors (Lisauskas, 1996; Martinkus & Beržinskienė, 2005) describe risk as the probability of potential losses. Meanwhile, other researchers (Campbell et al., 1988; Kancerevyčius, 2006) refer to risk as a lost or missed opportunity. Perceived risks are diverse and can be categorized according to different characteristics.

In business, risk is inevitable, because the problem of risk exists even when opportunities are known or can be identified. The possibility of a risky situation requires targeted assessment, management, and loss minimization. All businesses are exposed to risk in one way or another, and the assessment and effective management of these risks determines their performance. As the political events in Egypt and Syria, the Icelandic volcanic eruption, and the economic events in Cyprus have shown, risk is particularly important in the tourism sector. It is therefore important to identify which risks are prevalent in a particular business or company. Mačerinskienė and Sakhanova (2011) pointed out that risk is a permanent part of any human activity, including economic and financial. It is possible to take decisions in advance to reduce risk, but it is not possible to avoid it altogether. Moreover, risk drives economic and financial activity, and companies tend to take more risks at certain times and take more risks at others.

Gronskas et al. (2006) describe risk as an economic danger that threatens damage to the participants of industrial commercial activities.

When defining business risk, we need to distinguish between two meanings:

1. The risks and uncertainties inherent in the market economy itself, which can lead to losses for businesses. This is the objective meaning of business risk – that there is a probability of winning or losing in the market.
2. The subjective meaning of business risk, which gives an indication of how market participants react to business risk – i.e., whether they are risk-takers

or are risk-averse – thus describing different attitudes towards business risk. The subjective meaning of business risk is revealed by individuals' different reactions to the probability of winning or losing (Gronskas et al., 2006), and entails one of two options:

1) risk aversion – accepting lower incomes with less risk.
2) a tendency to take risks in order to generate higher income with a higher probability of losing.
3) indifference or neutrality to economic risk.

Entrepreneurs have to choose between a low probability of high revenues and a high probability of low revenues. Without risk, business would not be efficient, but the pursuit of maximum results leads to risky business actions. Active participants do not shy away from reasonable risk, while passive participants fear uncertainty.

According to Pridotkienė (2009), country risk can be classified into three groups:

- political risk;
- financial risk;
- economic risk.

In her view, scholars are right to distinguish between political events and political decisions enshrined in law when analyzing political risk. Political events are particularly relevant for tourism development because they can be sudden and unforeseen, whereas political decisions that change the business environment can be gradual. This makes it easier to adapt to a country's political decisions. A country's financial risk also has an impact on the tourism sector, as the ability of a national economy to generate sufficient foreign currency to pay its largest foreign debts and sustain its interest rates indicates the likelihood of default on a country's financial obligations due to fluctuations in its economic performance. A country's economic risk is related to the volatility of macroeconomic activity, which is often expressed in terms of real GNP or GDP. An unstable macroeconomic

environment can lead to instability in the earnings of the companies and financial institutions located there, thereby increasing their risk exposure.

Gegužis (2003) points out that among the most important problems faced by economic agents are predicting how the economy will develop tomorrow, where to invest money, whether to invest at all, which industry will decline, which will expand, whether prices will rise and so on, to the extent that the answers are determined. For the institutionalized sector, the question is what measures to take to reduce uncertainty. To this end, it is important to know economic uncertainty and the risks that arise from it. In this case, we turn to science.

Vasarevičienė (2009) argues that the concept of risk is usually perceived in a negative sense. Risk used to be referred to as uncertainty, but now it is defined as measurable uncertainty. Others argue that risk occurs when the probabilities of various possible outcomes are known, and uncertainty occurs when the probabilities of the various possible outcomes are unknown. Risk is further defined as the likelihood and frequency of an event or loss due to a range of threats, including danger to people and damage to resources.

Before examining the specificities of the risks associated with tourism activities, it is important to derive a precise definition of risk. As we can see, risk can have different meanings in different contexts. Therefore, we will narrow the focus to the analysis of risk in relation to the tourism sector.

Overall, however, there is currently a lack of comprehensive research on the economic analysis of tourism risk issues.

Tourism has become a very dynamic and at the same time risky sector in both national and global economies. The essence of tourism is that it requires many economic and personal relationships between actors, which can be damaged for objective or subjective reasons. A situation involving risk can arise from a combination of factors, at any time and in any place.

In the 20th century, tourism began to influence the economies of successive

countries. Today, the tourism industry is a highly efficient and highly profitable sector of the global economy. The tourism industry includes the industries that will determine the overall development of the global economy in this century. Tourism is one of the top five industries in the global ranking system for exports of goods and services. This extraordinary growth in the tourism industry is accompanied by a high level of risk, which is unsurprising as, according to the general rules of economics, the growth of a sector is always accompanied by an increase in economic risks.

According to many studies, the term "risk" refers to the potential for losses in various areas of activity (loss of material and financial resources, loss of income and unforeseen additional costs, etc.). In other words, the basic premise for examining risk in any economic system is its identification with a quantitative or price risk. In this context, the content of tourism risk covers all threats to entities and objects in tourism sectors. These risks concern infrastructures, the tourism industry, and tourists themselves. Tourism risk threats can regulate the level of tourist activity very strongly. Tourism risk is quantified as the potential magnitude of material and financial losses resulting from the interaction of tourism enterprises with tourists. However, losses and risks can only be incurred by the tourist themselves (separately from other actors in the tourism sector) during the preparation of, during, or after their trip. In this sense, risks are manifested as consumer risks, but they are all directly or indirectly linked to tourism. For example, the risk of buying a low-quality product becomes a tourism risk if the product is a targeted tourism product and is involved in tourism consumption.

In the applied area of tourism risk research, the concept of perceived risk has been defined in many different ways. Priest (1990) defined it as the potential to lose something of value. Fuchs and Reichel (2011) described risk as the "consumer's perception of the overall negativity of a course of action based upon an assessment of the possible negative outcomes and the likelihood that those outcomes

will occur." Reisinger and Mavondo (2006) described risk as "a possibility of danger, harm or loss; and a chance or hazard." Tsaur and Wang (2007) defined risk as "the possibility of various misfortunes which might befall a group package tourist in the process of traveling or at its destination." Finally, Le and Arcodia (2018) even proposed that risk should be defined as the sum of negative outcomes and the probability of their occurrence.

The perceived risks of tourism have received particular attention in the academic literature. Roehl and Fesenmaier (1992) identified seven groups of perceived risks that tourists face when travelling: financial (the trip will cost more and/or will not be worth the money paid), psychological (unmet expectations), social (negative impact on social status or lack of positive impact), satisfaction, time (wasted time, wasted holidays), physical (epidemics, accidents, etc.), and equipment (inadequate preparation for the trip, breakdown of cars and other equipment). Simpson and Siguaw (2008) identified health risks (infection, poisoning, or accidents), crime, transport (malfunctioning), quality of service, travel environment, fear, financial concerns, damage to property, and concern for others. Thus, perceived tourism risks include a wider range of environmental factors and travel-specific accident risks, and are therefore even broader than the generic perceived risk classifications and require separate attention from researchers.

In the context of scientific analysis, the identification of tourism risks and losses is limited. Tourism risk can be seen as a phenomenon that relates not only to the likelihood of failure, loss, and damage, but also to the likelihood of success and the possibility of achieving a positive impact. In other words, risk can, in some cases, be a favorable factor in tourism development. This can be expressed in two ways. Firstly, increased risk can be used by tourism businesses to increase their profits. In the current climate, forms of tourism such as extreme adventure are growing in popularity. Despite their individuality and complexity, such tours bring significant benefits to organizers. In other cases, tourism companies can

act as venture capitalists. When examining the academic literature on perceived risk, it can be observed that a large part of the classifications of perceived risk are similar and cover the main categories, such as physical/health, psychological, performance, and financial (Roehl & Fesenmaier, 1992; Simpson & Siguaw, 2008). There is no single, universally accepted classification of perceived risk in the tourism literature (Fuchs & Reichel, 2006). However, the tourism sector is characterized by a wider variety of perceived risks, as in addition to the usual consumer perceived risks associated with purchasing, additional risks related to the destination and tourism activities also emerge. While risks such as financial risk and performance risk are fairly universal in general consumer behavior, they also appear in tourism and the sector-specific classifications of the majority of authors.

Researchers studying tourism consumer behavior (Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; Fuchs & Reichel, 2006) assume that consumers perceive risks when purchasing a tourism service and take measures to reduce them. Perceived risk is defined as the consumer's general perception of negativity based on an assessment of possible negative outcomes and the likelihood that these outcomes will occur. Researchers point out that tourism products are particularly exposed to factors such as bad weather, unfriendly locals, the possibility of a strike by airport staff, inadaptability to local food, terrorism, crime, political unrest, disease, and natural disasters. These factors increase the level of perceived tourism risk.

Therefore, researchers agree that if risks are not controlled and managed, the development of the industry and job creation will not be achieved. This is evident from the work of various researchers who have identified risks in the tourism industry. Shaw (2010) proposes to classify risks into natural risks, crime risks, health and safety risks, political risks, socio-demographic risks, technological risks, and economic risks.

Previous studies by other researchers have identified only four main tourism risk factors: terrorism (Aziz, 1995; Bar-On, 1996; Leslie, 1999; Richter & Waugh 1986; Enders et al., 1992; Sönmez, 1998; Sönmez & Graefe 1998a, 1998b; Sönmez et al., 1999;); war and political instability (Gartner & Shen 1992; Hollier 1991; Ioannides & Apostolopoulos 1999; Pizam et al., 2002; Richter 1992, 1999; Seddighi et al., 2001; Teye, 1986; Wall, 1996); health problems (Carter, 1998; Cossens & Gin, 1994; Lawton & Page 1997); and crime (Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997).

Table 1. Risks related to tourism activities

Source: based on Shaw (2010); Wolff et al. (2019)

Risk category	Examples
Natural	Natural disasters (floods, etc.)
	Weather and climate conditions
	Climate change
	Environmental factors
Crime	Fraud
	Hijacking
	Acts of terrorism
Health and safety	Infectious diseases
Political factors	War
	Political instability
	Strikes
Economic	Funding gaps
	Currency exchange rates
	Rising oil and fuel prices
	Economic downturn (local and global)
	Financial crises
	Transport
	Transport development
Technological	Information technology
	Reservation systems
	Computer programs

Socio-demographic	Age and gender
	Family life
	New/old markets
	New routes

Roehl and Fesenmaier (1992) were among the first researchers to study tourism risk. They asked respondents about the types of holiday risks and what risks they had experienced on their last holiday. The types of risks they identified were equipment risk (the likelihood of mechanical failure during the trip), financial risk, physical risk, psychological risk, social risk, satisfaction risk, and time risk. Using factor analysis, the researchers identified three main risks: physical equipment risk, holiday risk, and route risk. Although the survey instrument developed by Roehl and Fesenmeir (1992) includes numerous risk parameters, each parameter is measured by only one question, which often covers more than one concept. For example, equipment risk, defined as "the risk of mechanical equipment or organizational problems during a holiday," has within it two seemingly separate issues to be considered: mechanical failures and organizational problems. Their study covered two main types of risk: physical risk, which refers to the possibility of injury and illness, i.e., the impact on a person's health; and equipment risk, which refers to the risk arising from the malfunctioning of equipment, such as inadequate telecommunication facilities or unsafe vehicles.

However, the researchers only looked at two dimensions and did not include the studies by Roehl and Fesenmeir (1992) mentioned above. Mitchell (1998) focused on risk perception at the time of purchasing a holiday package, identifying 43 risk samples. Maser and Weiermair (1998) investigated risk from a variety of perspectives through empirical analysis. In their research, the risks assumed included travel-related illnesses, crime, natural disasters, accidents, hygiene, hazards arising from various means of transportation, culture/language barriers, and the uncertainty of destination-specific regulations and laws. Sönmez and Graefe

(1998b) examined the risks associated with international travel and the general level of safety.

The relationship between tourism and terrorism gained international prominence at the 1972 Munich Olympics, when a Palestinian Black September attack on Israeli athletes killed eleven people and was shown on world television to an audience of almost 800 million (Sönmez & Graefe, 1998a). Since then, international tourists have been aware of the connection. One of the most infamous terrorist attacks against tourists occurred in Egypt in 1997, when 71 tourists were killed near Luxor. Indeed, tourists are often special targets for terrorist organizations. In Egypt, as Aziz (1995) explains, tourism represents capitalism, and it is noticeable that attacks on tourists are marked by ideological opposition to Western values. It is therefore important to consider the specificity of perceived risks in local tourism when studying tourism risk. Perceived risks in both domestic and international tourism can be influenced by circumstances. For example, the terrorist attack in 2001 severely affected the US tourism sector in terms of tourists' perceived risks, and domestic tourism suffered even greater losses than outbound tourism. Similarly, the COVID-19 pandemic highlighted the influence of perceived risk on travel decisions (Karsokienė & Dromantienė, 2021). Travel has declined sharply, and tourism destinations have come to be expected to take measures to ensure the safety and hygiene of tourists (Bhati et al., 2021; Jęczmyk et al., 2023; Zenker & Kock, 2020) and to maintain social distancing (Seong & Hong, 2021; World Tourism Organization, 2021).

In other areas of the world, where tourism is state sponsored, an attack on tourists may symbolize action against the government (Richter & Waugh,1986; Sönmez, 1998). As a result of the terrorist attack in the United States on 11 September 2001, the flow of foreign tourists wishing to visit North America reduced by 6.8%. Due to terrorism, political instability, and war, tourism destinations can also be affected – for example, after Tiananmen Square in China erupted in

conflict in 1989, some 11,500 tourists cancelled their visits to Beijing (Gartner & Shen 1992). Similarly, the Gulf War in 1990 caused a massive diversion of tourists away from the Middle East (Hollier, 1991). War and political instability can also affect neighboring countries that are not directly involved in the conflict. For example, Zambia's thriving tourism industry was completely isolated following the US State Department's communiqué on Zimbabwe, Zambia's neighbor (Teye, 1986).

The COVID-19 pandemic has particularly impacted the future of tourism across the globe in the form of risk perceptions associated with travel (Yadav et al., 2024; Matiza, 2020). According to Yang et al. (2020), tourism demand is inversely proportional to the spread of COVID-19. The uniqueness of the global pandemic is that it affected the tourism businesses of diverse countries such as China, Germany, Iran, Italy, France, Spain, the USA, and the UK (WTTC, 2020). However, Europe is generally seen as reasonably safe in terms of health-related risks (Banevičius, 2020). Cossens and Gin (1994) found that perceived health risks from food and water quality are higher in Africa and Asia than in Europe and Australia. A common perception among tourists is that they are easy targets for criminals. Some of the reasons for this phenomenon may be that tourists: tend to have large sums of money; often engage in risky behavior (frequenting nightclubs, consuming alcohol, going to strange places, etc.); do not know the local language or understand signs; and lack local help (Pizam et al., 1997).

Researchers have a wide range of perspectives on tourism risks. Based on consumer behavior, some (Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991) point out that consumer perceived risk can come in several forms: physical (physical damage to the consumer due to the functioning of the product), financial (risk of losing the money invested in a product), performance (the product will not work as expected), social (the purchase will not meet the standard of the selected group), psychological (the product will not be

in line with consumers' image), and time (the consumption of the product will take too long, and the consumer will have to make a choice about what to spend their time on). Other researchers observe that once a consumer has experienced a certain degree of risk, consumer behavior changes from postponing the purchase to deciding to minimize the degree of risk (Assael, 1995; Mowen & Minor, 1998; Roselius, 1971; Schiffman & Kanuk, 1991) – for example, developing brand loyalty, seeking information, buying a popular brand, or buying expensive or inexpensive brands. These strategies can increase confidence in the outcome of the purchase and, in the event of failure, reduce risk exposure. It should be noted that perceived risk has an impact on the consumer even if it does not actually exist. Conversely, an overlooked risk will not influence consumer behavior even if it is real and tangible.

The place of risk in society is identified by Beck (1992), who considers that risk is very important in tourism practice. As Giddens (1991) argues, in today's society the risk factor is becoming increasingly important. This is not to say that in many areas of life risks are increasing, as, especially in the developed world, risks are gradually decreasing over time. There is a further view that the concept of risk includes almost everything we do.

There is a very common assumption that risk is accepted in the organization of leisure activities, because no one believes that all recreational activities can be done without risk. In fact, the degree of risk in many types of recreational activities is clearly higher, and people are prepared to accept a much higher level of risk than they would at work, or as a result of the operation of an industrial facility (Plog, 1991). This definition suggests that risk can be portrayed as the attraction of certain activities, resulting in leisure entertainment and tourism.

In the context of the scientific debate, the identification of tourism with risks and losses is limited. The analysis of the scientific literature allows for a more precise understanding of tourism risk. Tourism risk can be studied as a phenomenon

that is related not only to the likelihood of failure, loss, or damage, but also to the possibility of success in obtaining a positive outcome. In other words, a risk situation can in some cases be a favorable factor for tourism development.

Researchers (Seddighi et al., 2001) have shown that perceptions of the risks associated with international tourism vary according to nationality, finding that the level of risk perception varies when assessing travel in six Western European countries. This discussion suggests that in order to better assess risk perception among international tourists, it is necessary to take into account tourists' experience, age, gender, and nationality.

The International Classification of Tourism Risk Factors (WTO, 2021) includes four main areas in relation to the safety of tourists:

- The social environment outside the tourism sector.
- The tourism sector and its infrastructure.
- Personal risk factors of tourists.
- Natural and environmental risks.

According to the researchers, tourism risk can be expressed in two ways. The first is where tourism companies use increased risk to maximize profits. It can then be argued that forms of tourism such as adventure and extreme tourism are becoming more popular. Despite their individuality and complexity, these forms of tourism bring significant profits to tourism enterprises. Alternatively, a tourism company can act as a venture capitalist. Traditional venture capital funding is linked to high-production technologies that allow science-intensive products to be brought to market. However, the main objective of venture capital funds is to increase the capitalization of a company that has managed to implement an innovative idea, thereby securing for itself a significant market advantage over potential competitors. The tourism sector can do without the help of venture capital funds. Raising capital without specialized venture capital firms can be done in the traditional way, i.e., through credit. In this case, the main driver of venture

capital remains unchanged: it is innovative and has a high correlation between potential profit and risk. Therefore, any tourism enterprise providing a new service to the market, be it a travel agency, a hotel, or a carrier, can be the subject of venture capital financing. The situation in which the tourism company itself acts as an investor in projects with increased risk is no exception to this model. On the other hand, the use of risk is linked to the deliberate choice of individual tourist destinations and types of tourism which are dangerous to life, health, and financial well-being. The most common are caving, mountaineering, and skiing trips, as well as trips to regions involved in military, social, and religious conflicts. The risks here are not determined by economic factors, but by the social and psychological attitudes and dispositions of individuals. In other words, alongside reasonable risk there is also selfless risk, i.e., risk for risk's sake. Extreme tourism is a form of risk-taking, or a form of self-realization.

Many economic studies on risk show that it is now an important condition for generating income. Risk is an integral part of economic processes, existing independently of the perception of existence. The abandonment or neglect of risk analysis at the micro level will at best reduce the profitability of any business entity, and at worst lead to its insolvency.

Risk acts as a constraint on a business, focusing the entrepreneur's attention on actions that ensure the maximum exploitation of opportunities. If a company's guiding principle is to avoid risk, it will end up taking the biggest and least effective risk of all: the risk of doing nothing. This description can be fully applied to the tourism sector. The activities of any tourism company include finding new partners and investors, accessing new markets, and developing innovative tours and itineraries. All of this leads to a higher level of individual risk.

Damulienė (2011) points out that the processes of globalization and integration and the resulting consequences have not bypassed the tourism industry. In the 21st century, the sector increasingly faces problems that not only affect the

decisions of entrepreneurs within a given nation state, but also change the agendas of the governments of these countries. Damulienė therefore identifies the following as potential risks and consequences:

- Changes in the Earth's climate. The world is witnessing an upward trend in the number and severity of storms, floods, earthquakes, volcanic eruptions, and other calamities. Many experts believe that, unless far-reaching measures are taken in the near future, changes in the world's terrestrial climate and their impact on weather and nature will lead to serious risks. Tourism is one of the economic sectors most keenly affected by climate change and natural disasters. As scientific evidence of imminent global warming grows, tourist attractions could change dramatically.
- Terrorism and violence. The events of 9/11 in the US, the events in Russia (Moscow and Beslan), the Breivik massacre in Norway, etc., have not only changed the national defense doctrines of the world's most powerful countries, but have also changed the tourism business. Terrorist actions sow fear. As a result, more and more tourists are choosing countries with a lower risk of terrorist incidents. In addition, more and more people are choosing to travel by bus, car, or even bicycle instead of flying.
- Global diseases. The increase in international travel to countries with different climates and hygiene requirements increases the risk of contracting various diseases. In many of the developing countries frequented by tourists, 50% of all mortality is caused by infectious diseases.

The greater the mobility of people (e.g., during tourist trips), the faster a virus can spread worldwide. SARS, AIDS, the new generation of the H1N1 influenza virus, and other epidemics are not only fueling the emergence of a new health paradigm, but are also having a real impact on the entire tourism industry.

Therefore, Damulienė concludes that such global challenges affect the tourism sector of many countries, including Lithuania: in regions where there is a threat of terrorism or global diseases, tourist flows are significantly reduced, and even the development of tourism infrastructure may be halted. Conversely, the supply

of tourists increases in safer, more tourist-friendly and attractive countries. This can lead to a change in the centers of attraction for tourists. Tourist attraction centers may also shift due to climate change.

According to the experts of the World Tourism Organisation (WTO, 2021), inbound tourism risks can arise in four areas. These are:

1. Human-environment interactions in the non-tourism sector.
2. Tourism and related trade sectors.
3. Individual traveler (personal risk).
4. Physical or environmental risks (natural, climatic, epidemics).

Human-environment interactions risk making tourists victims of:

- crime (theft, pickpocketing, assault, fraud, deception);
- indiscriminate and targeted violence (e.g., rape, harassment);
- organized crime (extortion, human trafficking, rape);
- terrorism and unlawful interference (attacks on state institutions and vital interests), hijacking, and hostage-taking;
- wars, social conflicts, and political and religious unrest;
- lack of public and institutional protection services.

Various operations in the tourism sector and tourism-related sectors such as transport, sports, and retail can put visitor flows, their safety, and their economic interests at risk.

In this case, risks may arise from:

- inadequate security of facilities (fire, construction errors, lack of anti-seismic protection);
- poor sanitation and disrespect for the environment;
- protection against unauthorized interference, crime, and a lack of tourism infrastructure;
- fraud in commercial transactions;
- non-compliance with contracts;
- strikes by workers.

Individual travelers can pose a safety and security risk, according to experts

from the World Tourism Organisation, because of:

- dangerous sports and leisure activities, dangerous driving;
- travel for sick people;
- causing conflicts with local residents, misbehaving with local communities, or breaking local laws;
- illegal or criminal activities (e.g., drug trafficking);
- visiting dangerous places;
- loss of personal belongings, documents, and money due to negligence.

Finally, physical or environmental damage can occur if travelers:

- do not know the physical characteristics of flora and fauna;
- are not medically prepared for travel (vaccinations, prophylaxis);
- fail to take the necessary precautions or hygiene measures when consuming food.

As pointed out by some researchers (Wilks & Moore, 2003), physical and environmental risks are mainly related to personal risks, but are not intentional – i.e., arising from travelers' lack of knowledge, or from ignoring potential risks due to their ignorance of the results. Indeed, it is now emerging that overseas visitors could be most vulnerable in unfamiliar environments because of their participation in unfamiliar activities.

Ruževičius (2008) points out that the impact of tourism on animals should also be highlighted, as holiday resorts are usually located in areas that are particularly attractive to nature or adjacent to unique protected areas, such as coastal regions. Intensive and widespread tourism is a threat to sensitive ecosystems and may be one of the causes of the extinction of plants, animals, or micro-organisms.

Other experts (PATA, 2003) have argued that tourism risks should be considered in terms of natural and man-made events. Research shows that this approach is acceptable and very timely, as many natural phenomena often occur on a large scale and can quickly escalate from a crisis to a disaster. Researchers from the Asia Pacific Travel Association provide various comparisons of why tourism

risks need to be considered from a natural and human perspective (see Table 2).

Table 2. Tourism risks by type of cause

Source: based on PATA (2003); Yadav et al. (2024).

Natural phenomena	Avalanche	Earthquake	Fire
	Flood	Hurricane	Mudslides
	Epidemic	Audra	
Man-made events	Acts of terrorism	Fire	Personal harassment
	Adventure sports	Hijacking	Political action
	Air crash	Industrial actions	Riot
	Attack	Kidnapping	Surface transport accidents
	Fire/building collapse	Murder	War
	Civil/political unrest	Hostage-taking	
	Cruise ship/ferry accident	Mechanical/ system failures	

Wilks and Moore (2003) suggest that tourism risk should be analyzed in terms of potential shocks, categorized as direct or indirect events with short, medium, or long-term consequences for individuals, communities, regions, and countries. This approach is used in Australia. The authors point out that certain risks may arise or be exacerbated by others involved – e.g., public liability insurance as a result of the 9/11 terrorist attacks. However, they consider that a common factor in this categorization is that tourism risks have a direct or indirect impact on the industry. Moreover, the researchers consider that in describing potential risks to the tourism industry, it is important to demonstrate in practice the difference between risk, crisis, and disaster management. Risk, according to Wilks and Moore, is the probability that something that happens will affect an objective. All risks have a tendency to become unmanageable and, if uncontrolled, can lead to a crisis, but if tourism risks are analyzed within a certain framework, a crisis can be prevented (see Figure 1).



Figure 1. Probability of events

Source: Wilks & Moore (2003)

Experts from the Asia Pacific Travel Association and the WTO acknowledge that it is impossible to draw up a comprehensive list of all the risks that could escalate into crises, but it is possible to identify the most likely areas of risk. Indeed, many traditional risk classification systems have proved controversial, and researchers and experts have therefore recommended the use of the risk management model developed in Australia (Wilks & Moore, 2003). Saayman and Snyman (2005) explain that tourism risks can be divided into internal and external (i.e., domestic and international). Domestic risks relate to crime and various transport risks depending on the destination. External risks relate to natural disasters, diseases, hijacking, terrorism, the national economy, and politics taking place outside the destination but affecting travel to the destination.

Studies have shown that it is appropriate to divide risks into two groups, domestic (national) and external (international). Domestic risks are manifested through the host country, in this case Lithuania, and are generally of a negative nature, which may negatively affect tourism flows to the country. External or international risks are risks that occur outside the host country and can have a negative impact on tourism flows to the chosen country. Therefore, it can be argued that when risks are not controlled and managed, economic growth will not be achieved.

This view is based on the work of various authors who have identified the risks associated with tourism and the tourism industry (see Table 3).

Researchers have identified the following specific features of tourism risk:

- Tourism risk refers to the damage caused not only to tour operators and travel agents, but also to other businesses and tourists themselves, as well as to flora and fauna and historical and cultural heritage.
- The economic damage caused by adverse events can occur not only in the present, but also in the future, and this should be taken into account when planning the activities of a tourism enterprise and when drawing up tourism development concepts and programs at the national and regional levels.

- In some cases, tourism risks include risks to the life and health of tourists, which is why recreational businesses need to be subject to particularly stringent requirements.
- Tourism risks are shaped by various sources of risk – not only financial and economic and linked to the activities of businesses, but also those that are natural, beyond the control of humans and tourism operators. These risks may be interlinked.
- Tourism risk assessment and management must be based on the use of knowledge in specific fields, drawing on the results of research in related sciences (law, ecology, health, information technology, etc.).

The specificity of Lithuania's tourism sector is, on the one hand, manifested in the fact that Lithuania has large natural tourism potential. On the other hand, despite state support for the tourism sector, the Lithuanian tourism industry remains low-competition and high-risk, and opportunities and emerging areas to attract growing tourism flows are under-exploited. The risk of remaining on the periphery of international markets for tourism goods and services remains, and the impact of the global financial crisis requires the tourism sector to adapt to new economic conditions and to find ways to neutralize macro- and micro-economic risks in tourism development.

Thus, the classification of tourism risks brings together different risk groups derived for different reasons and with different degrees of detail. The risk identification steps presented show the multiplicative effect of risks associated with the identification of different tourism risks in relation to each other.

Table 3. Risks related to tourism

Source: compiled by the authors

Tourism risks	Authors
Natural phenomena	
Natural: • natural disasters; • weather and climate conditions; • environmental factors.	Holden, 2008; Page, S. J., & Duignan, M., 2023; George, 2023; PATA, 2003; Seddighi, et al., 2001; WTO, 2021, Wilks, 2003; Wilks & Moore, 2003. Ruževičius, 2008.
Man-made events	
Crime: • fraud; • terrorism; • hijacking; • hostage-taking; • kidnapping.	Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997; Pizam et al., 2002; Maser & Weiermair, 1998; Gartner & Shen, 1992; Teye, 1986; Sönmez et al., 1999; Aziz, 1995; Bar-On, 1996; Leslie, 1999; Richter & Waugh, 1986; Enders et al., 1992; Sönmez & Graefe 1998a, 1998b; Sönmez, 1998; Damulienė, 2011.
Political: • war; • political instability; • strikes; • riots.	Gartner & Shen, 1992; Hollier, 1991; Ioannides & Apostolopoulos, 1999; Pizam et al., 2002; Richter, 1992, 1999; Seddighi et al., 2001; Teye, 1986; Wall, 1996.
Economic: • lack of funding; • exchange rates; • rising oil and fuel prices; • economic and financial crisis; • transport development (transport accidents).	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; George, 2008; Cooper, 2023; Raval & Fichada, 2007.
Technological: • information technology and computer applications; • reservation systems.	Raval & Fichada, 2007; Shaw, 2010; Wilks & Moore, 2003.
Physical: • breakdowns in plant and equipment; • infrastructure.	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; WTO, 2003; Wilks & Moore, 2003; Roehl & Fesenmaier, 1992.

Socio-demographic: • age and gender. • racial discrimination. • family life; • psychological.	Assael, 1995; Engel et al., 1995; Mowen & Minor, 1998; Schiffman & Kanuk, 1991; Žilinskas, 2011.
Health and wellness: • infectious diseases; • adventure sports; • inadequate food and water.	Cossens & Gin, 1994; Carter, 1998; Lawton & Page, 1997; Brunt et al., 2000; Dimanche & Leptic, 1999; Ellis, 1995; Garcia & Nicholls, 1995; Hall et al., 2004; Moore & Berno, 1995; Pizam et al., 1997; Pizam, 1999.

The concepts of business risk that have been analyzed and summarized show that it is appropriate to divide risk into two groups: domestic (domestic) and external (international). However, if risks are not controlled and managed, economic growth cannot be achieved. Various studies have shown that there is a lack of comprehensive research on the economic analysis of tourism risk issues.

7.2. Models for the economic evaluation of tourism risk

Most scholars refer to tourism risk assessment as part of tourism risk management. Therefore, further tourism risk assessment will be carried out in the context of risk management. It is useful to manage and know how to assess risks. Effective risk management and assessment helps to minimize the negative and maximize the positive consequences of risks, and to make appropriate decisions. In economic terms, good decision-making has the greatest economic impact.

7.2.1. Models for assessing business risk

Businesses use a variety of risk management and assessment models, which can be more general in nature as they are applied in a variety of circumstances. These models are not business-specific, and can therefore be more easily adapted and modified to suit the risk assessment of the inbound tourism sector. Risk assessment models typically use a variety of factors: some may rely solely on

statistical data, while others rely on more subjective elements. In general, however, most of the factors used in models are quantitative. However, financial institutions often combine quantitative and qualitative components, which may include judgements and subjective assessments. Factors used in business risk assessment models typically take into account the condition of the borrower, industry characteristics, and conditions and macroeconomic factors. Other factors may include the subjective assessments of a firm's competitive advantages, management credibility, political risk, and environmental risk. These factors often require caution in determining the risks involved as they are difficult, if not impossible, to quantify or objectively categorize.

Risk management starts with the identification of a company's operational characteristics. It is important to determine not only the nature of the activity, but also the scale, seasonality, complexity, and problematic nature of business operations. "Risk management is the identification of potential risks and the development of plans to minimize the impact of a risk event on a project" (Mačiulytė-Šniukienė et al., 2022). Kancerevyčius (2006) refers to risk management as the process of identifying, monitoring, assessing, and controlling all of the risks faced. Older literature refers to risk management as a continuous process that allows companies to balance the operational and economic costs of safeguards and to increase capacity (Stoneburner et al., 2002).

Risk management covers all areas of a company's activities in order to detect adverse events. Modern risk management has changed somewhat due to a number of factors, including:

- the shift from hazardous physical work to knowledge-intensive work;
- a broader view of the organization in the context of its various stakeholders;
- the growing importance of projects as a framework for planning and delivering work in organizations;
- the central role of technology and its inherent uncertainty;
- with ever-increasing competitive pressures to reduce delivery times,

organizations are starting to plan and execute their activities with incomplete information;
- growing unrest in the business environment;
- rapid increases in business and project complexity;
- the continuing trend towards globalization and the resulting emphasis on virtual businesses and teams;
- increasing regulatory burdens on companies (Raz & Hillson, 2005).

All of these and other factors have led to a growing number of scientific papers on the analysis of operational risk management. This field is growing steadily, but the fundamentals of risk management remain the same.

In everyday practice, companies are exposed to many types of risks, but the purpose of all of them is the same: to provide a sound basis for decisions in assessing the acceptability and necessity of risks. Although the objective of risk management is clear, it can be achieved in a variety of ways. Risk management models have been developed to standardize this process and facilitate the implementation of risk management processes in organizations.

An analysis of the different models will show that they are not too dissimilar from one another, but some have drawbacks in that they cannot be applied to inbound tourism.

Valsamakis et al.'s risk assessment model

Valsamakis et al. (2004) argue that risk assessment is an ongoing process and cannot be viewed in isolation as a single event (see Figure 2). In the authors' view, the process must start with risk identification, because in the implementation of risk controls (both business and event risk), risk assessment is a key feature before the financial consequences of the risk can be assessed. In order to manage risks, they must first be identified before risk management programs can be developed.

The model presented by Valsamakis et al. (2004) is more suitable for managing the risks arising from financial losses. This model can be used to assess inbound tourism risk, but this would not be the best use case because not all events are

assessed.

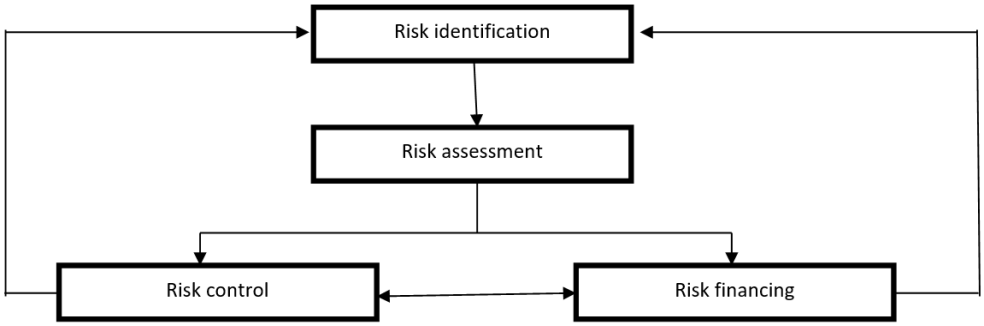


Figure 2. Risk assessment model according to Valsamakis

Source: Valsamakis et al. (2004)

Burke's risk assessment model

The risk assessment model proposed by Burke (2000; Figure 3) clearly shows the logical sequence of integrating each element and connecting the whole. The objectives defined in this model are seen as the risk tolerance of the business, and indicate whether the business is prepared to accept the impact of business risk.

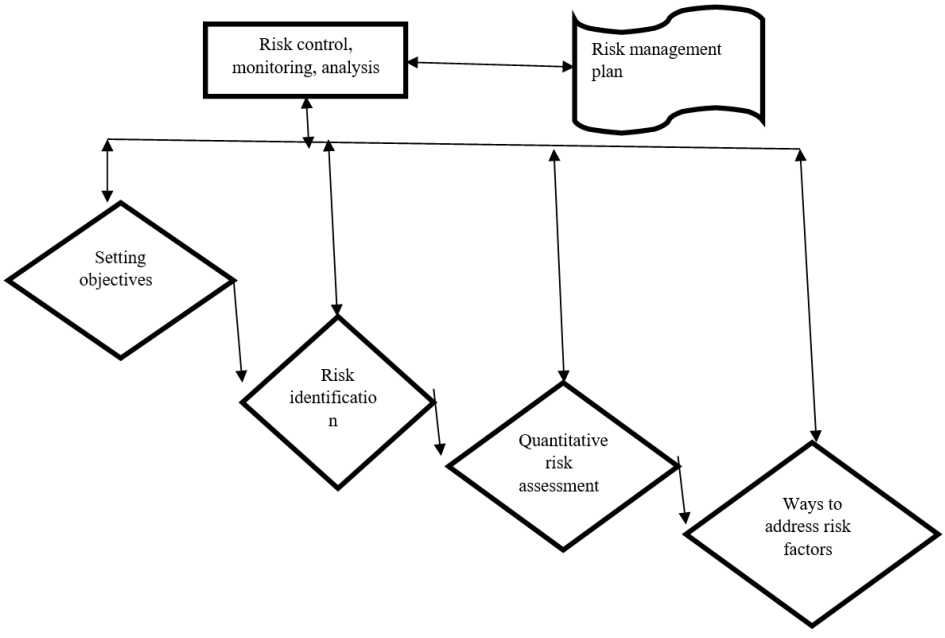


Figure 3. Risk assessment model according to Burke

Source: Burke (2000)

Risk identification, quantitative risk assessment, and risk responses, together with control and monitoring (surveillance), form the risk management plan, which becomes a formal document detailing how the business will manage and respond to the risks identified. In this model, the focus on risk assessment is already greater, with a quantitative risk assessment as a separate step.

Gray and Larson's risk assessment model

The risk assessment model proposed by Gray and Larson (2006; Figure 4) is similar to that of Burke, although some steps are different.

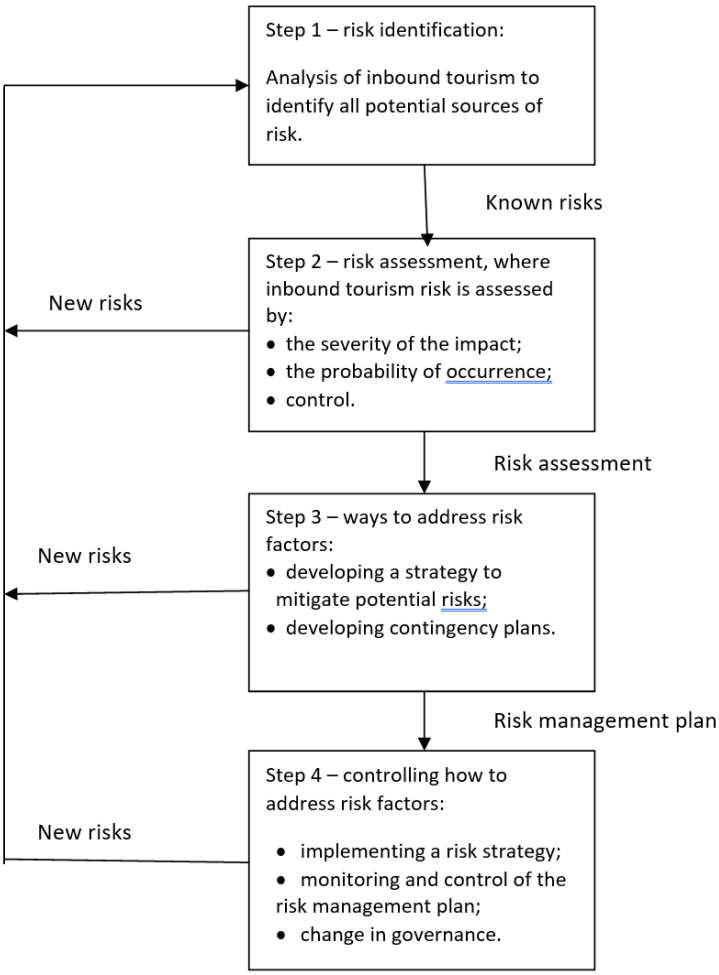


Figure 4. The risk assessment model of Gray and Larson

Source: Gray & Larson (2006)

The difference between the Gray and Larson model and the Burke model is that Burke sets objectives, because it is not always clear what the objective is. Another key difference between the two models is that Burke begins with risk control, whereas in Gray and Larson's model this is the last step. Gray and Larson's model also explains what should happen at each stage of the process.

Osborne's risk assessment model

The risk assessment model proposed by Osborne (2012; Figure 5) is simple but effective, involving 5 steps that could be applied to businesses of all sizes, including inbound tourism risk assessment.

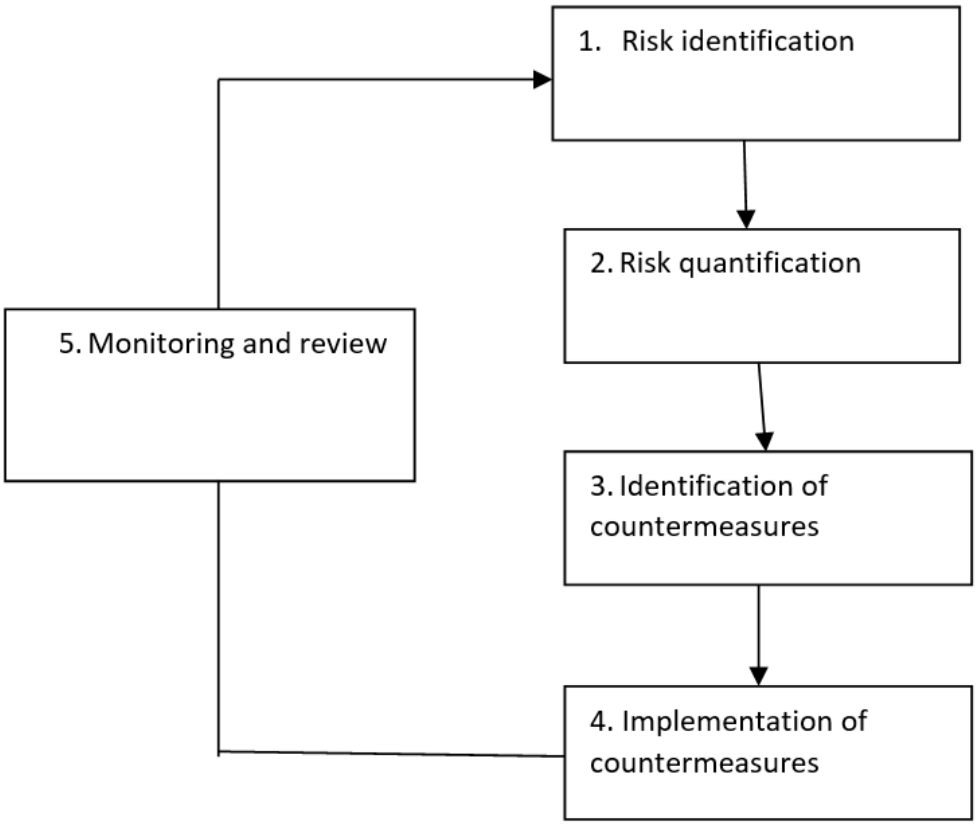


Figure 5. Osborne's risk assessment model

Source: Osborne (2012)

Osborne believes that before any useful action can be taken to address a risk,

it is necessary to identify the risks that are being faced (step 1). The second step is to quantify the risk by defining the likelihood and impact of the risk occurring. Next, the researcher proposes the identification and implementation of countermeasures to reduce, control, or eliminate the risk. To complete the risk assessment process, effectiveness needs to be monitored and evaluated. Osborne's proposed five-step risk management process is simple but effective, and has been shown to work regardless of the type or size of the business enterprise.

Osborne (2012) considers that risks can vary depending on the type of business, but identifies the most important as follows:

- strategic risks:
  - business planning and future directions;
  - strategic goal setting;
  - business growth;
  - new markets/products/services;
  - mergers/takeovers/alliances.
- operational risks:
  - supply of components or raw materials;
  - production;
  - distribution;
  - service delivery;
  - operator errors;
  - pollution/contamination/environmental impact.
- financial/commercial risks:
  - cash movements;
  - sales;
  - customer retention;
  - contracts.
- regulatory/statutory risks:
  - violation of regulation;
  - non-compliance with laws/contractual requirements;
  - forfeiture of operating license;

  - legal actions.
- health and safety risks:
  - accidents in the workplace;
  - serious injury or death;
  - disappearance.
- personnel risks:
  - disability or temporary incapacity of top-level staff;
  - inadequate skills;
  - employment and employability;
  - violence in the workplace.
- technological risks:
  - collapse of IT;
  - viruses, attempted data leaks;
  - factory/equipment failures;
  - data loss.
- project risk:
  - failure to meet agreed deadlines;
  - increased cost/resource requirements;
  - business non-compliance;
  - project failure.

Table 4. Risk impact assessment

Source: Osborne (2012)

Impact assessment	Possible definitions of impacts	Examples of impacts
1 Low Slight Minimum	Inconvenience, but no noticeable impact on business.	Short-term loss of staff, minor customer dissatisfaction, minor financial impact.
2 Medium Small Unsustainable	The complexity of the activity, requiring a lot of resources and time to manage it.	Minor damage, few customer complaints, significant loss of staff, minor financial impact.

3 Significant High Primary	Highly visible, relevant, and/or sustainable business issues.	Significant damage, high customer dissatisfaction, reputational damage, significant loss of staff.
4 Heavy Catastrophic	A threat to a business segment or to the viability and survival of a business.	Death, severe reputational damage, brand damage, revocation of operating license, significant financial impact.

The risk impact assessment presented by Osborne can also be used for the risk assessment of inbound tourism (see Table 4), using a scale from 1 to 4.

A scale of 1 to 4 is also proposed to assess the probability of an event occurring (Table 5). There are certain risks that have a particularly low probability and should therefore be considered more in terms of impact than probability. This approach is supported by the fact that many recent catastrophic events have never happened before, and their occurrence was therefore unthinkable to many. However, this did not stop them from happening.

Table 5. Examples of probability estimates and definitions

Source: Osborne (2012)

Probability estimation	Possible definitions of probability
1 Small Unbelievable	It should not happen, or has not happened in the last 20 years. It is almost inconceivable, but it cannot be completely ruled out. A probability of 1%.
2 Medium Possible	Should occur or has occurred once in the last 10 years. Possible, but more likely not to happen. Less than 50:50 chance.
3 High Likely	Should happen or has happened several times in the last 10 years. More likely to happen than not. More than 50:50 chance.
4 Almost certain Inevitable	Likely to occur or has occurred once per year. It is hard to imagine it not happening. High (above 80%) probability.

By using a scale, in this case from 1 to 4, it is possible to start assessing the risk of inbound tourism. This is simply a matter of reviewing each of the risks identified and deciding whether it is possible to assess the impact of each. Once the probability assessment has been carried out, a risk matrix can be constructed. In the risk matrix, we can assign a risk assessment to each risk based on a combination of probability and impact. When a numbering system is used, it is straightforward to multiply the 2 variables (e.g., multiplying probability risk by 3 and exposure risk by 2 would give a risk assessment score of 6). However, it should be appreciated that these numbers are for convenience only, and that a probability level of 4 is not necessarily 4 times more likely than a probability level of 1, or twice that of a probability level of 2. At the same time, a probability level of 4 is not 4 times worse than a probability level of 1. In fact, the increase in likelihood or effect between level 1 and level 4 could be 20, 50, or even 100 times. The key idea is to see where the risk decreases in the risk matrix. The risk matrix helps to assess the significance of an identified risk based on the likelihood and impact of the actual risk. Depending on the scale of assessment chosen, risk matrices of different types and sizes can be created. The simplest form uses a 3x3 grid, but a 4x4, 5x5, or even 6x6 grid can also be used, depending on how complex or simple the assessment warrants. When carrying out a risk assessment of the inbound tourism sector, it is important to identify the most significant risks – in other words, those that are most likely to happen and those that will have the most serious consequences. The important point is that the risks that are of interest and that need to be acted upon are those that fall in the top right corner, and those that are of least concern fall in the bottom left corner. Osborne used a 4 x 4 matrix (Table 6), with a simple numbering system from 1 to 4 and probability and impact axes.

Table 6. Example risk matrix

Source: Osborne (2012)

Probability					
	4 (complex)	4	8	12	16
	3 (high)	3	6	9	12
	2(medium)	2	4	6	8
	1 (low)	1	2	3	4
		1 (low)	**2 (medium)**	**3 (high)**	**4 (complex)**
			Impact		

Using a risk matrix (or in this case, simply multiplying the probability and impact values), it is possible to assign risk values to each identified risk. A summary of the risk assessment for the risks under consideration is given in Table 7.

Table 7. Identified risks with assessments

Source: Osborne (2012)

No.	Risks	Probability	Impact	Rating
Commercial				
1	1 risks	1	2	2
2	2 risks	3	3	9
3	3 risks	4	1	4
Activities				
4	4 risks	3	3	12
5	5 risks	3	1	3
6	6 risks	4	2	8
Financial				
7	7 risks	1	1	1
8	8 risks	2	3	6
	And so on.			

Risk assessment (a combination of likelihood and impact) is the effective evaluation of each significant, identified risk. As presented earlier, the most significant risks are those that fall in the top right corner of the risk matrix, which is where we focus our attention the most (see Table 7).

Once tourism risks have been assessed, it is possible to decide how to deal with them by prioritizing them according to risk values. The first focus is on the significant risks, which fall in the top right corner of the risk matrix. Less significant risks can be considered and addressed if they are sufficiently straightforward and cost-effective. Moving towards the bottom-left corner, risks that can be accepted are encountered.

Osborne proposes that risks should be divided into 4 categories, depending on the likelihood of the risk and their impact (if any). Which category a particular risk falls into depends on the choice and implementation of measures to reduce the likelihood or impact (or both) to a level that is acceptable. Figure 6 shows risk management depending on the significance of the risk.

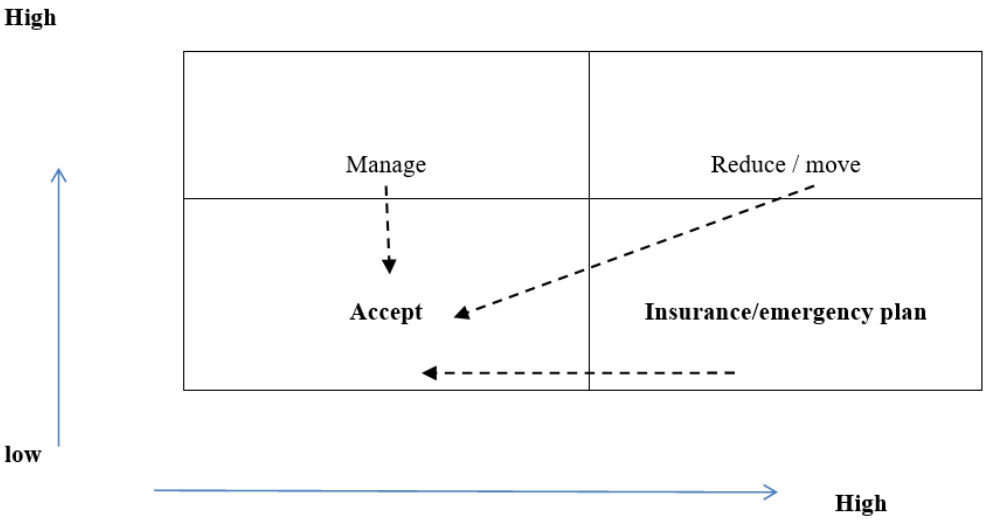


Figure 6. Risk management

Source: Osborne (2012)

If the likelihood of a risk is low and its impact is small, it may be a sensible decision to do nothing and accept it. There may be cases where, although the likelihood or impact is high, it is not cost-effective or even feasible to implement countermeasures, e.g., where the cost of resolving the risk is higher than the potential loss. In this case, the only viable option is to accept the risk. The fact that

many risks cannot be completely eliminated means that there is always some level of residual risk, even after mitigation measures have been implemented. The ultimate goal of an effective risk management program is to reduce all risks to a level that is acceptable. Risks with a higher probability but low impact can be managed through improved processes, documentation, training, and monitoring. If the probability is low but the impact is high, actions must be developed to avoid it. The final process in the risk management phase is to monitor and evaluate the results of risk reduction measures.

However, the risk assessment model presented by Osborne is also flawed in that it is not specifically tailored to assessing inbound tourism risks, but is more general in nature. On a more positive note, it is possible to use experts to assess risks and to give different weights to the risks selected.

Passenheim's risk assessment model

According to Passenheim (2010), risk assessment has so far focused on avoiding the repetition of mistakes made in the past. Standard conditions can change quickly, such as the competitive environment or the price of raw materials. In the researcher's view, risk assessment requires an understanding of the company's objectives, but also of its strategy and culture. The risk assessment of a company or sector is a procedure that minimizes the adverse effect of potential financial losses when:

- identifying potential sources of loss;
- assessing the financial consequences of losses;
- controls are used to minimize actual losses or their financial consequences.

The aim of all risk monitoring is to maximize the value of each individual activity within a company or branch. The potential benefits and risks of all factors associated with these activities must be neatly documented. If all employees are aware of the importance of risk assessment processes, the possibility of success will increase, while at the same time failure will become unlikely. Passenheim

(2010) breaks down the risk assessment process into 4 stages:

1. risk identification;
2. risk analysis;
3. responding to risk;
4. risk control.

Risk identification is the first and most important step, as it sets the stage for subsequent actions. Passenheim proposes using the income/cost approach for risk identification (see Figure 7), as he considers that the starting point is the cost, the middle point is the tools and techniques used, and the end point is the result (income).

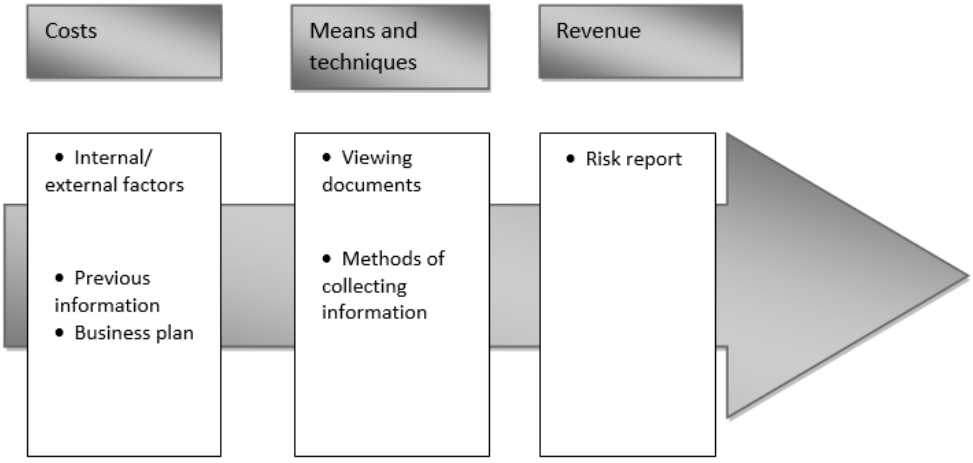


Figure 7. Risk identification

Source: Passenheim (2010)

Passenheim further proposes that external factors should be considered as a description of the environment, while internal factors should be attributed to the company. As typical external factors, he presents:

- economic conditions;
- social, legal trends;
- political climate;
- competition – international and domestic;
- demand volatility;

– criminal or terrorist activities.

Typical internal factors include:
– internal culture;
– personnel capacity/number;
– capacity;
– systems and technology;
– procedures and processes;
– communication efficiency;
– leadership effectiveness;
– degree of risk.

Previous information could relate to company or industry assessment projects, existing experience, development, failures, and risks experienced, which are useful for identifying risks. The structure of the risk analysis shows a description of the risks already known, arranged by category and their characteristics in vertical branches. This shows all risks and their possible consequences.

Passenheim believes that it is appropriate to carry out a SWOT (strengths, weaknesses, opportunities, threats) analysis, which can be used to identify potential risks. The advantage of SWOT is that it is simple and relatively inexpensive, except for the time required to process it. In research, SWOT helps to generate new ideas.

Passenheim identifies the requirements that a risk assessment must meet:
– **Objectivity**: information about a given market must be considered and objective. In particular, risks related to the price of a product on the market or stocks can be found very easily.
– **Comparison**: risk assessment must lead to comparability of results. Therefore, companies must use consistent and standardized data collection methods.
– **Quantification**: it must allow the company to detect deviations from its objectives.
– **Interdependencies**: in practice, this is the hardest part of risk management.

Passenheim's risk assessment methodology suggests filling in an assessment form (Figure 8).

Project objective	1	2	3	4	5
	Very low	Low	Medium	High	Very high
Price	Slight price increase	< 10% price increase	10%–20% price increase	20%–40% price increase	>40% price increase
Time	Slight increase in time	< 5% time increase	5%–10% increase in time	10%–20% increase in time	>20% time increase
Scope of the project	Barely noticeable reduction in volume	Small areas affected	Main volume locations affected	Reduction in volume is unacceptable to the buyer	The project is worthless
Quality	Barely noticeable deterioration in quality	Only a very demanding application has an impact	Quality reductions require approval	Reduction in quality is unacceptable to the buyer	The project is worthless

Figure 8. Passenheim's risk assessment form

Source: Passenheim (2010)

To make risk analysis more convincing and to show the importance of certain risks, a company or experts can use a matrix. The matrix shows two aspects of the risk: the impact that will occur and the probability of an event. A commonly used matrix has five areas, each with a different probability and impact. Thanks to the management of this matrix, it is possible to priorities risks in order to establish which need special attention. Prioritization also helps to adopt or anticipate reasonable measures.

The fuzzy sets risk assessment model

Sun et al. (2008) proposed a risk assessment model for fuzzy sets. The main advantage of this approach is that it allows experts and engineers to express their views on risk. Their study shows that this method is both objective and accurate. The model consists of an objective level, risk sources, risk drivers, and alternatives.

At the objective level, the purpose of the risk assessment is explained, the risk factors are grouped depending on their source, and each source of risk is given several factors. Once the model has been developed, the following principles must be followed:

- The systemic principle. The system is designed with the reality of the project in mind, so that the reliability of the assessment is guaranteed.
- Quantitative and qualitative factors – both of which are taken into account so that objectivity and agility can be ensured during the evaluation.
- The principle of independence. Overlapping factors must be avoided in the identification of factors.
- The principle of simplicity. Detailed factors must be chosen because it is convenient for the experts.

The risk management standard of Australia and New Zealand

Australia and New Zealand have adopted a risk management standard (Standards Australia and Standards New Zealand, 1999) that specifies how risks should be controlled and applies to risks associated with the tourism industry. This standard places a strong emphasis on risk assessment (see Figure 8).

The AS/NZS 4360: 1999 standard specifies that the five basic steps of risk management (Figure 9) must be implemented in a consistent manner, and risks must then be continuously assessed through monitoring and analysis and through information dissemination and consultation. This standard is applicable to tourism risk assessment. The first step of the risk management process focuses on the environment in which any tourism organization or destination operates. Key elements include internal and external stakeholders. As stated in the standard, without the support of the government, the next steps are not possible, and therefore various government structures need to be involved in the risk management process and the responsibilities of the various stakeholders must be identified. The final element of the first step is the development of risk assessment criteria. Decisions have to be made on what risks are considered acceptable and will be

tolerated, and what risks are unacceptable and will be addressed. In the second step, a comprehensive list of risks to be managed is developed. This list is used to make decisions at various levels. A good example is the risk map in London, which is a business guide in a world of uncertainty. Countries are ranked according to two types of risk – political and security. For potential investors and global companies involved in tourism-related activities, these risk assessments can have far-reaching consequences.

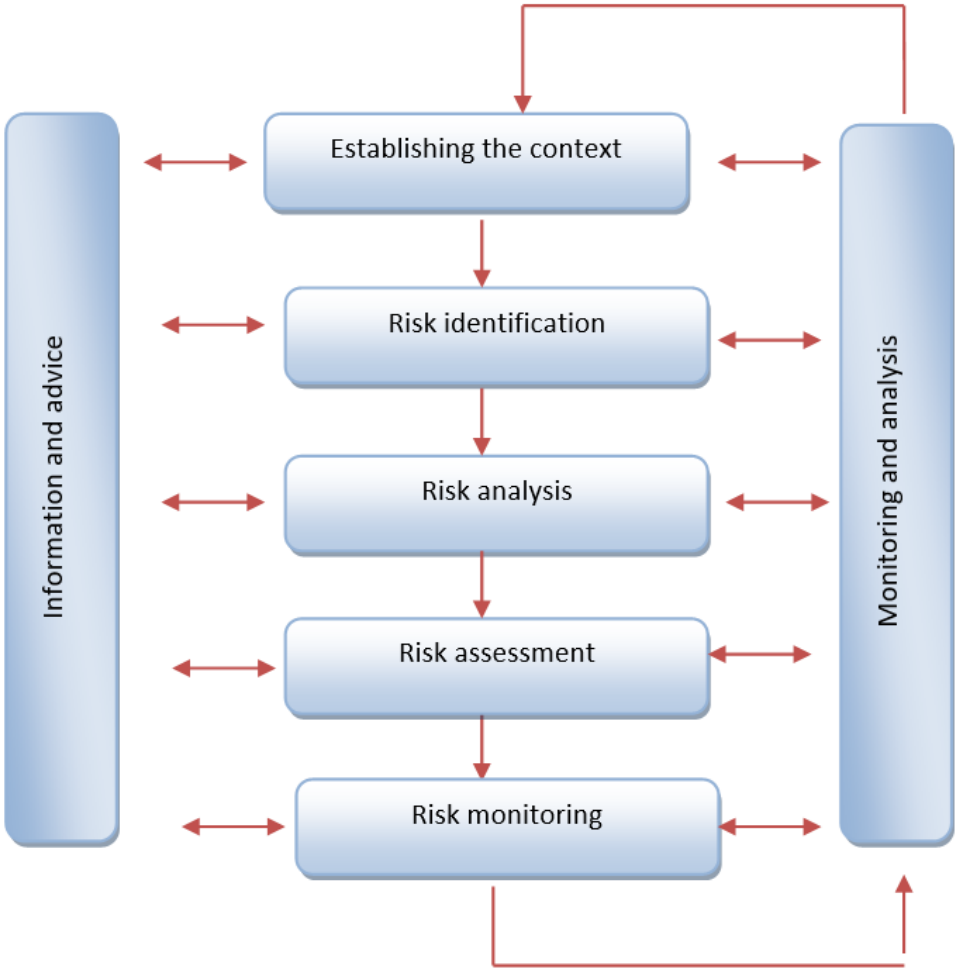


Figure 9. Risk management

Source: Australian/New Zealand Standard for Risk Management

The risk management analysis stage involves assessing the risks identified and their impact on businesses or tourists. Minor and acceptable risks are distinguished from major risks that need to be managed. The standard way to carry out such assessments is to determine the likelihood, frequency, or probability of a risk occurring, along with its consequences and impact. There are many ways to classify risks for analytical purposes. Any decision involves a risk, whether it is the risk of environmental damage, the risk of financially unfavorable investments, the risk that a competitor will make a better decision, etc. By taking risks, a business may suffer financial losses or other disadvantages. The degree of risk can be calculated using a simple formula:

$$Risk = Probability \times Consequences \quad (1)$$

Risk is therefore a function of the probability that a risk element will occur and the consequences that will follow if that risk element occurs. Consequences can be measured in monetary terms, but are usually expressed as an index. For example, the management of a tourism service company or a tourist has to choose between five different strategies, from A to E. Each has its own defined risk element. For each risk element, the following factors can be assessed:

- the probability that a risk element will happen;
- the consequence if such a risk element were to occur.

Table 8 provides a method for estimating the losses associated with the realization of the risk element.

Table 8. The assessment of harm or risk-related impacts

Source: Australian/New Zealand Standard for Risk Management

Level	Rating	Detailed description
1	Irrelevant	No injuries, small financial loss
2	Small	First aid, immediate announcements in the local press, moderate financial losses
3	Medium	Requires medical treatment, information in the local press and externally, significant financial losses

4	Large	Capital damage, loss of productive capacity, off-site press, major financial losses
5	Catastrophic	Deaths, toxic substances with harmful effects, huge financial losses

The assessment of the likelihood of damage is shown in Table 9.

Table 9. Likelihood of damage

Source: Australian/New Zealand Standard for Risk Management

Level	Rating	Detailed description
1	Almost guaranteed	Expected to occur in many cases
2	Likely	Probably occurs in many cases
3	Possible	May occur over a period of time
4	Unlikely	May occur at certain times
5	Rare	May occur only in exceptional circumstances

Assessments can be used to create a risk matrix. An example is given in Tables 10. The letters indicate the values of a particular risk as follows: E – extreme risk, urgent action is required; H – high risk, senior management attention is required; M – medium risk, management responsibility must be stated; and L – low risk, routine management procedures.

Table 10. Risk analysis matrix

Source: Australian/New Zealand Standard for Risk Management

		Scores	Implications				
	Scores		Irrelevant damage	Minor damage	Average damage	Large damage	Catastrophic damage
		1	**1**	**2**	**3**	**4**	**5**
Probability	Almost guaranteed, probability >80%		1	2	3	4	5
	Likely, probability 60%–79%	**2**	2	4	6	8	10
	Possible, probability 40%–59%	**3**	3	6	9	12	15
	Unlikely, probability 10%–39%	4	4	8	12	16	20
	Rare, probability <10%	**5**	5	10	15	20	25

Table 11. Risk analysis matrix in alphabetical form

Source: Australian/New Zealand Standard for Risk Management

Probability	Implications				
	Irrelevant damage	Minor damage	Average damage	Large damage	Catastrophic damage
Almost guaranteed, probability >80%	H	H	E	E	E
Likely, probability 60%–79%	M	H	H	E	E
Possible, probability 40%–59%	L	M	H	E	E
Unlikely, probability 10%–39%	L	L	M	H	E
Rare, probability <10%	L	L	M	H	H

The risk assessment determines the level of risk, i.e., what can be accepted and what needs to be addressed, based on the risk criteria defined above. For each tourism destination and for each national government, decisions about whether or not a risk is acceptable are set against a background of social, economic, and political priorities. In some cases, a tourism destination may be exposed to a risk but may not have the resources to avoid the risk. In cases where a country is a member of certain organizations, it may seek assistance from them. This could include the WTO or associations such as the Pacific Asia Travel Association (PATA). For example, the WTO organizes tourist safety and security seminars and conferences in Africa, Warsaw, Russia, Central America and the Middle East. PATA has provided support to the Asia-Pacific countries in the taskforce program.

Risk processing is concerned with the likely choice of operator and tourist destination. The best way to visualize this process is through a risk assessment matrix. Depending on the potential risks and their severity and frequency of exposure, the risk management strategies of tourism operators and destinations are generally divided into four categories (see Figure 10).

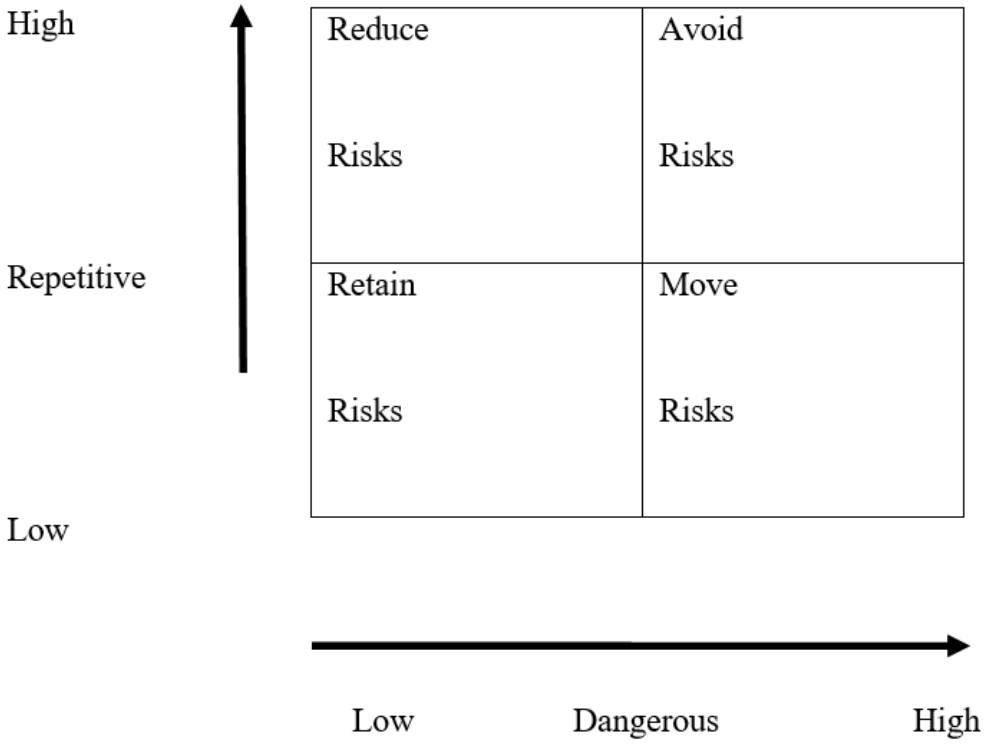


Figure 10. Risk assessment matrix

Source: Wilks & Moore (2003)

If the frequency of problems/risks is low and their intensity is also low, many organizations and destinations maintain or accept a certain level of risk. At the other extreme, where the frequency and intensity of risk is potentially high, the most responsible solution to avoid risk is to withdraw the service or exit the market. Where the magnitude or consequences of the risk are high (e.g., customer injury or death, loss of property, or storms or cyclones) but such events do not occur very frequently, tour operators have traditionally relied on insurance to transfer their risk to a third party. Figure 11 shows, in order of risk severity and frequency, some of the potential risks faced by destinations.

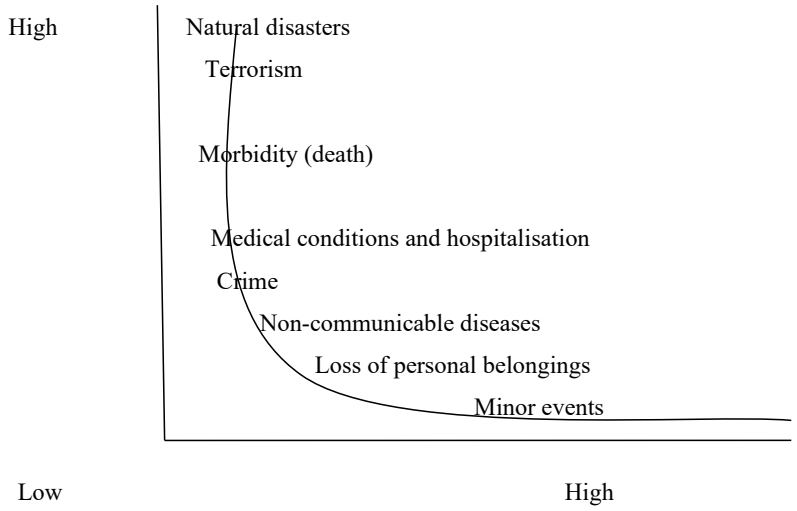


Figure 11. Continuity of tourist health and safety: severity and frequency of events

Source: Walker & Page (2013)

In most cases, crises do not occur. The Australian/New Zealand Standard notes that risk aversion can lead to:

- decisions to avoid or ignore risks, regardless of the information available and the cost of the risk;
- leaving critical decisions to other parties.

The Corporate Finance Institute offers a range of models for assessing tourism risk. According to the Corporate Finance Institute (Spendelow, 2024), risk rating models are tools used to assess the probability of default. The concept of a risk rating model is deeply interconnected with the concept of default risk and is a key tool in areas such as risk management, underwriting, capital allocation, and portfolio management. Risk rating models use several factors and implement a set of rules to assess the default probability of borrower or debt security. The models generally use these factors and rules to generate a numerical or symbol-based rating that summarizes the level of default risk of the borrower or debt security involved. Risk rating models generally use a variety of factors as inputs. Some risk

rating models may be purely based on statistical evidence, while others may rely on more subjective elements. Generally, most of the factors used in the models are quantitative. However, financial institutions often combine quantitative factors and qualitative components that may involve judgment and subjective assessments. The methodology used to develop the risk rating model can give more weight to judgment or statistics. Risk rating models also use additional categories of risk factors:

- political risks, which consider aspects such as the risks of war, the rule of law, and the reliability of institutions, to name a few;
- environmental risks related to the potential consequences of pollution or destruction of the natural environment due to the company's activity. They can cause financial consequences and even adverse regulations that can limit or disrupt a company's operations.

An example of a scorecard-based risk rating model is shown in Figure 12.

Example of a simple scorecard		
Risk component	Factor	Weighting
Borrower's Financial health	Current Ratio FCF Margin	30%
Industry Characteristics	Barriers to Entry	10%
Macroeconomic factors	State of Business Cycle	10%
Competitive Strength	Customer Retention	20%
Management's Reliability	Skill and tenure	20%
Political Risks	Country Risk	10%

Figure 12. Risk assessment model

Source: Spendelow (2024)

A risk rating model should only be used if it is accurate enough. Validating the model means assessing whether the risk rating generated by the model is consistent enough with the actual outcomes. A good risk rating model should not underestimate the risks, as this would generate unexpected losses and costs of recovery. Nor should it overestimate the risks, as this would lead to noncompetitive bidding and loss of potential profits.

7.2.2 Tourism risk assessment models

The tourism sector is highly vulnerable to shocks due to wars, financial market turmoil, pandemics, geopolitical crises, and terrorist attacks, which can lead to the poor performance of stock returns in the tourism sector (Kim & Marcouiller, 2015; Seraphin, 2017). Kumar (2023) analyzed the influence of economic policy uncertainty, geopolitical risk, uncertainty in the financial market, and crude oil prices on the travel and leisure sector in Europe. The author also considered the significance of the transmission of risk from these uncertainties to the travel and leisure sector in Europe. The tourism industry is highly vulnerable to uncertainties and macroeconomic shocks, and the impact of these can also be observed in the returns of travel and leisure firms (Kim & Marcouiller, 2015; Seraphin, 2017). Uncertainties in the market also impact the behavior of asset prices (Avery & Zemsky, 1998). Long-term investors and portfolio managers consider the fair price of a stock based on the discounted cash flow approach (Kaplan & Ruback, 1995). In an environment of high geopolitical and economic policy uncertainty, tourists may be hesitant to travel abroad because of wellbeing and safety reasons (Demir & Gozgor, 2020). According to Kumar (2023), higher uncertainty associated with the financial market, geopolitical scenarios, and economic policies results in increasing systematic risk in the market, and thus increases the cost of equity which may lead to a downward fall in the fair value of stocks. This may impact investors and portfolio managers in postponing their investment

decisions related to including travel and leisure stocks in their portfolios. Baker et al. (2016) proposed the measurement of economic policy uncertainty, which is estimated using the frequency of newspaper articles related to wars, financial market crashes, political events, terrorist acts, recessions, etc., to cover near-term and longer-term concerns. Caldara and Iacoviello (2018) proposed the measurement of geopolitical risk based on newspaper articles, defining it as "the risk associated with wars, terrorist acts, and tensions between states that affect the normal and peaceful course of international relations." The measure of geopolitical risk incorporates news related to geopolitical threats, war threats, nuclear threats, terrorist threats, war acts, and terrorist acts.

The analysis of different processes, strategies, and models shows that there are several that can be applied to the tourism industry (see Figure 13).

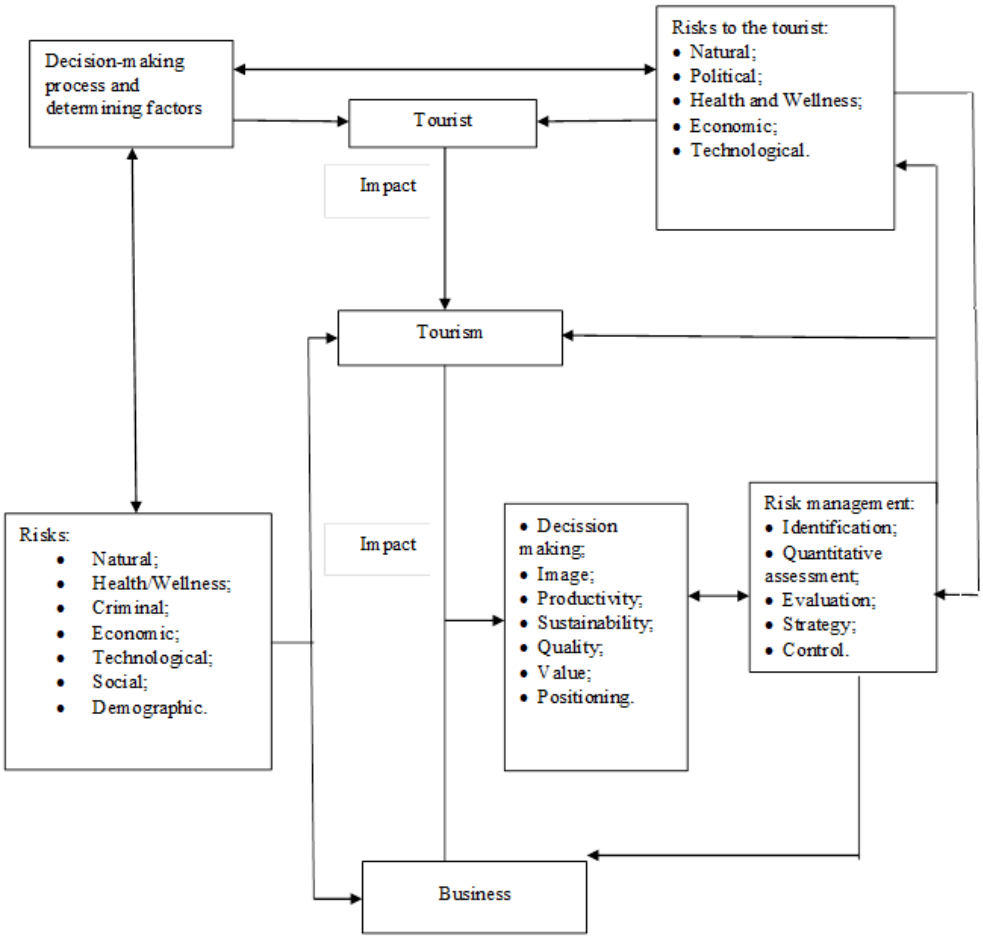


Figure 13. Risk and risk management in the tourism industry

Source: Shaw (2010)

Research shows that risks affect not only businesses in the tourism industry, but the industry as a whole. Their impact can be positive or negative, and they must be harnessed. Thus, the best strategy needs to be chosen through the effective use of risk assessment.

As a socio-economic phenomenon involving the movement of people and financial resources, tourism is clearly exposed to a range of risks. The impact of different risks varies, and it is therefore difficult to assess the consequences of risks for the tourism industry. For example, it is easy to identify the conditions of

a financial crisis, but it is very difficult to predict the consequences and the exact content of events. Tourism-specific risks are identified by specific attributes, one of which may be the tourism product.

According to a number of academic studies, the term risk refers to the risk of potential losses in different areas of activity (loss of material and financial resources, loss of income and unforeseen additional costs, etc.). In other words, in any economic system, the main reason for analyzing risk relates to the quantification or evaluation of risks. In this context, tourism sector risk covers all potential threats to tourism operators and facilities. These threats include infrastructure, the business and tourism industry, and tourists themselves.

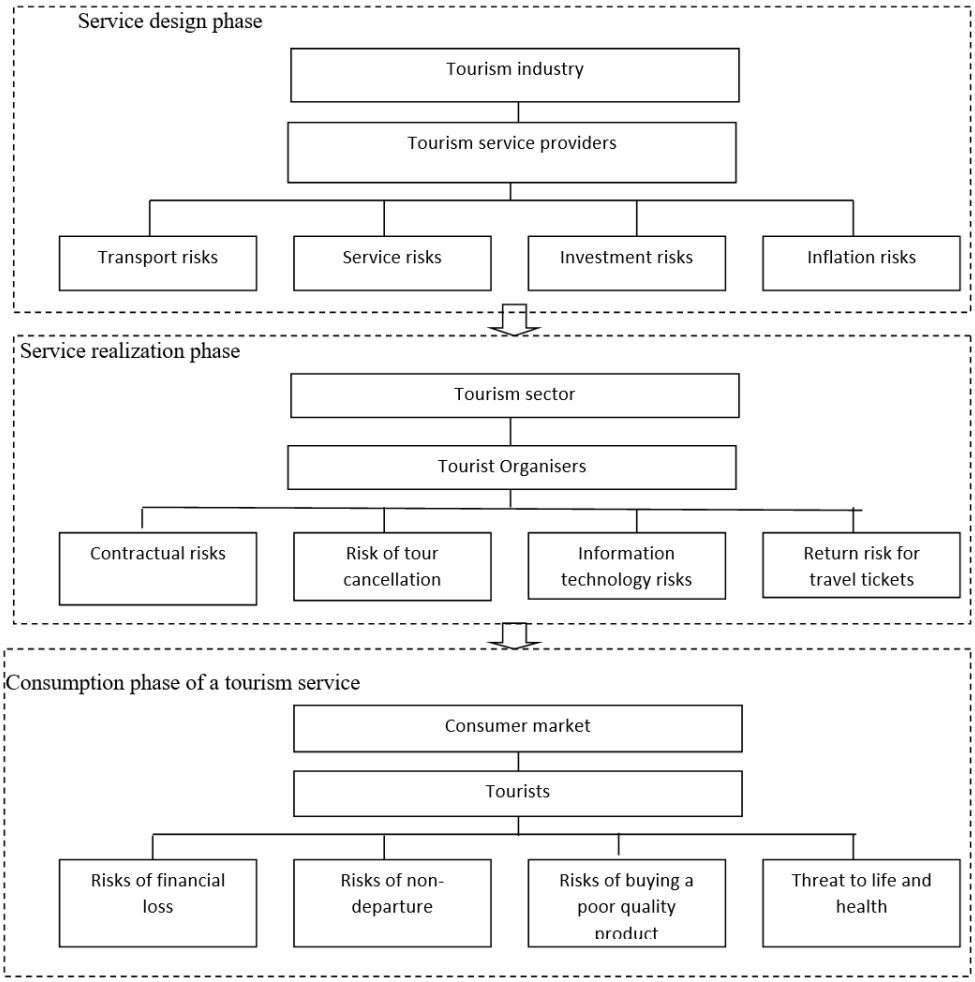


Figure 14. Identification of risks according to the organizational phases of a tourism service

Risks can be highly regulated by the level of tourist activity. In quantitative terms, tourism risk is defined as the potential magnitude of material and financial losses incurred by tourism enterprises and their relationships with tourists. This is the description given by most scholars.

The analysis of tourism risk assessment models shows that it is appropriate to use a process approach to classify tourism risks, which is linked to the stages of tourism product identification. It would be logical to link risk identification to

the stages of tourism service provision (see Figure 14). Each stage is dominated by specific risk groups. For example, in the service design phase, the risks in the infrastructure of the tourism industry are dominated by the risks associated with the disruption of the various actors involved in tourism service provision. A characteristic feature of such risks is their uncertainty in the tourism sector – i.e., they can emerge and develop independently of the tourism object and the consumer. For example, transport risk is an element of tourism risk only if the transport undertaking is a unit of the tourism industry. Organizational risk, i.e., the risk of non-performance of contractual relations, plays a significant role in the design and marketing phase of a tourism service.

7.2.3. Methodological principles for risk assessment in the tourism sector

As several studies have shown (PATA, 2003; Wilks & Moore, 2003; Reichel et al., 2007; Hotia et al., 2007; Sun et al., 2008; Navickas & Malakauskaitė, 2009; Šakienė & Zovytė, 2009; Shaw, 2010; Labanauskaitė 2011; Žilinskas, 2011; Oroian, 2011; Fotiou, 2012), tourism risks and threats can be analyzed from several perspectives: from the perspective of the tourist, from the perspective of the destination (inbound tourism), and from the perspective of regulators. Depending on the chosen dimension, risks are analyzed differently. Similarly, the development of a risk assessment methodology can be carried out from several perspectives: the consumer, tour operators, and regulators. The difference in positions is due to the fact that the holidaymaker is only interested in the risks affecting their holiday area, in a given season, at fixed dates and with limited choice of services. Tour operators have to take into account the risks of various tourism programs involving the diverse interests of large groups of people. If the assessment of tourism risk by the consumer (tourist) is limited by the interactions between the tourist and the tourism complex, then the tour operator needs to assess the socio-economic risks of tourism and economic activity, including those which are not addressed by the

tourist. For example, the natural risks-technical systems risks or investment risks-inflationary risks interactions are a matter for the tour operator or the investor, but not for the tourist themselves. The tourist assesses the presence and intensity of risks in direct contact with the tourism complex and the tourism company, considering the spatio-temporal localization of socio-economic risks.

Tourism risk assessment requires detailed investigation. Therefore, the previous chapters have offered a detailed examination of different methodologies for tourism risk assessment, summarized the most important ones, highlighted the processes of risk identification, analyzed forms of risk assessment, and provided examples of risk matrices.

Based on the approaches synthesized by economic theories, a methodology for the economic assessment of tourism risk can be presented, which will be used to identify and assess tourism risks in the Lithuanian inbound tourism sector, both from the perspective of the service provider and the consumer.

The research methodology for the economic evaluation of tourism risk consists of several steps:

1. developing a principled research framework showing the main factors influencing tourism risk;
2. analyzing the macroeconomic environment of inbound tourism in Lithuania and identifying the impact of the macroeconomic environment on tourism risk;
3. identifying tourism risk factors, drivers, and interactions between them;
4. conducting tourism risk assessments on the part of the tourism supplier and the consumer;
5. conducting a risk assessment of an integrated inbound tourism complex using an index system;
6. developing recommendations for tourism risk management services from the perspectives of both the supplier and consumer.

The risk management methodology places a strong emphasis on risk assessment. As already mentioned, risk management consists of several steps, one of

the main ones being risk assessment. The stages of risk management cannot be ignored when developing a risk assessment methodology, and each stage of risk management is linked to an assessment. To further differentiate risk assessment, the phases can be broken down into: formulating the objectives of the study, defining the indicators for risk assessment, identifying common and personal risks, and interpreting the results.

Various scientists (Luobikienė, 2005; Rudzkienė, 2010; Tidikis, 2003) point out that the elements of scientific research are object, tasks, tools, procedures, and product. When considering tourism risk assessment from this point of view, it can be said that the research task is to determine the degree of vulnerability of tourism systems due to the action of negative risk factors, as well as the possibility of confrontation with possible internal and external risks. The object of the assessment is risks and their interaction in the tourism complex. The tools and procedures are the risk assessment techniques obtained and summarized, while the product is the assessment process itself, presented as the implementation of the methodology in different dimensions of tourism programs.

The risk assessment methodology places a strong emphasis on the entity. Each assessment shows the relationship of the subject to the selected object. The outcome and content of the assessment depends on the chosen position of the subject in the assessment. Thus, the assessment of one or another indicator may be subject to different interpretations, although the meaning of the indicator is always unambiguous at the time of identification. As an example, a charter flight is delayed by 3 hours. In this case, there can be no other meaning. However, this event is perceived differently by different actors: for tour operators, it is a current problem that does not pose a significant threat to the development and marketing of the tourism product. For the tourist, however, such a delay can be a source of financial and moral risk if the charter flight is timed to coincide with other activities (connecting to another flight, meeting relatives, visiting transit sites, etc.).

Therefore, it can be argued that each economic assessment of tourism risk is specific to a given entity, and subjectivity cannot be avoided in this case. On the other hand, the subject-object relationships in the subject-object system, which relate to the risks to tourists, infrastructural facilities, and tourism businesses, are objective and regular. If an assessment is made on the basis of such links, it is objective. However, the risk assessment has a subjective-objective character: in relation to a particular tourist, tourist enterprise, or tourism complex as a whole, it is subjective. Tourism risk affects a wide range of actors and the assessment may depend on who the actor is in the first place, since the relationship between object and actor will always be different. However, revealing existing patterns and relationships in the evaluation makes it independent of the researcher. Therefore, the subject in a tourism risk economic assessment can be either the tourism system or its individual parts or elements. However, the subject of the study in a tourism risk assessment is not the objects or entities, but their relationships. From a practical point of view, this situation is not principled, since the assessment procedure is directed towards the final result of identifying the overall risk. From a methodological point of view, this is important because the assessment is a reflection of the relationship between people and their environment. If a person is not outside the system being assessed, but rather becomes part of it, the final result is an incomplete assessment. This is because, in such a case, only the interests of the subject in question are taken into account, and objective regularities remain in the background.

Tourism risk assessment must take particular account of the links between sites and actors. This can be explained by the fact that tourism is an inter-sectoral system comprising natural, cultural, technical, and economic systems. Therefore, this work will focus on the tourism complex.

Due to the economic links between tourism enterprises, the specialized literature treats tourism enterprises as tourism complexes. In Latin, *complexus* means

a combination, and is defined in the most general sense as a collection of objects forming a single whole. In scientific terms, the introduction of the term tourism complex allows the tourism industry to be studied in a complex way, taking into account the interrelationships and interdependence of all elements and processes.

The tourism complex is understood as a system consisting of four subsystems: tourists, tourism resource infrastructure, technical systems, and tourism enterprises. Each subsystem has its own functions and characteristics. Tourist risk refers to the political, social, economic, and personal risks related to age, health, medical, and other risks that arise in preparation for, during, and after the trip. The main characteristics of these risks are the level and nature of the impact on the individual tourist, as well as the potential consequences for the tourist's health and economic well-being. These risks may be economic or of a different nature (psychological, emotional, aesthetic), and may arise from objective or subjective factors.

Infrastructure risks for tourism resources are composed of objective risks of the destruction of natural complexes and historical-cultural assets. The specific parameters of these risks represent the level of vulnerability of such objects to adverse natural and social factors, and their degree of instability of functioning.

Technical systems (tourism infrastructure) are designed to provide tourists and staff of tourism businesses with everyday amenities, and to meet people's specific needs for health, leisure, and active recreation. Therefore, the risks of such systems are related to the disruption of the comfort and safety of the whole life support system, as well as the disruption of the functioning of engineering, structural transport, wellness, and other systems. From a risk management point of view, the main characteristics of infrastructure facilities are the level of safety of the technical systems during operation.

Tourism enterprise risks are classified according to the groups of enterprises providing tourism services. In this case, two groups of enterprises can be

distinguished: typical enterprises, i.e., those maximally involved in the tourism industry; and related enterprises, i.e., those producing accompanying goods and providing accompanying services.

As a tourism enterprise produces a specific product (goods or services), the risk of the tourism product plays a key role in risk management.

If the entity being assessed has prior knowledge of the description of tourism systems, as well as the characteristics of potential tourism risks, the assessment can be greatly simplified. In this case, the requirements for the tourism complex can be expressed in the form of risk norms. The whole assessment procedure is then based on a comparison of the risk indicators with risk norms.

However, assessment procedures become more complex if the situation is unknown. The main challenge then becomes determining the causes, nature, and scale of the impact of the risk on the development of the tourism system. The assignment of numerical values becomes a separate task of the integrated assessment.

The economic assessment of tourism risk is carried out in 2 stages: the development of the methodology and its testing in practice, where there is a sequence to each stage, as shown in Table 12.

Table 12. Elements of the steps in the economic assessment of tourism risk

Elements	Phase 1	Phase 2
Task	Development of risk assessment methods for tourism complexes	Tourism complex risk assessment
Object	Knowledge of risk assessment theory and methodology	Specific types of tourism risks
Measures and procedures	Methods and tools for developing a risk assessment methodology	Presentation of tourism risk indicators
Product	Risk assessment methodology and guidance on its use	Evaluation tables, charts, comments

Risk assessment is carried out through a system of qualitative and quantitative

indicators. The selection of indicators is linked to the requirements for risks in tourism systems. These requirements form the basis for the list of indicators.

The methodological plan should try to identify the optimum number of indicators. It should be noted that the quantification of loss in the engineering-technical and cultural-historical spheres is straightforward, but the quantification of loss in the social sphere, such as the death of a human being, poses certain difficulties. The identification of risk indicators is only meaningful if a scale is provided with which to make the relevant assessment. The essence of developing a risk assessment scale is to find patterns in the transition from risk measurement to risk assessment. The measurement and evaluation processes reflect the unity of two sides of the same phenomenon: measurement is the quantitative side, and evaluation the qualitative side.

Key steps can be outlined in the risk assessment of a tourism complex, and the principled research design thus includes the following aspects of the research:

1. formulating the aims and objectives of the study;
2. disclosing the relationship between tourism risk and the assessment entity;
3. developing a risk assessment model;
4. developing and ranking a risk indicator system;
5. developing a risk indicator system and selecting the number of stages, ranges, and weighting factors;
6. developing risk assessment scales for tourism complexes;
7. developing methodological guidance and a study program for risk assessment;
8. gathering and organizing empirical information using statistical and expert tools;
9. obtaining risk assessment data;
10. presenting the results of the study and making recommendations for risk management

However, before this study can be carried out, it is necessary to describe the methodology in detail and to develop a specific survey instrument. The risk

assessment of a tourism complex consists of a number of indicators that describe the impact of one or another threat. It is therefore appropriate to carry out the assessment using a matrix. The rows of the matrix describe the elements of tourism risk and the columns describe the types of tourism activity. The intersection of the rows and columns will reflect the impact of the respective risk element on one or other type of tourism.

In order to establish a typical risk assessment matrix, the research methodology needs to identify the main types of tourism, assess the impact of various adverse factors, and select the inherent risk elements that are necessary for the risk assessment of the tourism complex.

The analysis of the classification of tourism in section 1 showed that four main types of inbound tourism activities can be identified:

- medical tourism;
- summer/wellness and winter/wellness;
- extreme sports;
- sightseeing tourism.

It should be noted that any granularity in tourism activities complicates risk assessment. The introduction of each new group requires the calculation of additional indicators. If the risk components are detailed, it is necessary not only to select the components in full, but also to classify them according to the variety of activities in the course of developing the matrix. For example, natural hazards, which directly affect health tourism, increase the vulnerability of tourism infrastructure and fundamentally adjust consumer preferences. In sports tourism, on the other hand, natural hazards act as stimulating factors.

According to the risk analysis carried out in the first section, the risks of the tourism complex can be described in a general way, consisting of the following components:

- natural;
- organizational-economic;

- socio-economic;
- techno-economic.

The grouping of the risk factors to be assessed according to the diversity of impacts is related to the degree of spatial distribution. For example, natural hazards have a wide-ranging impact on the development of tourism activities, while investment risks are localized, i.e., in infrastructure facilities during the preparation and implementation of the project in tourism areas.

The sequence for developing a typical risk matrix consists of three steps:

- preparation of a report on risk components and main tourism activities;
- report detailing the nature and severity of risk impacts;
- creating an evaluation matrix.

The breakdown of the risk components in the matrix is given in Table 13. It should be noted that the set of specific and additional tourism risk variables may change depending on the target destination and the scale of the assessment. The larger the target, the more aggregated the selection has to be, as in this case the most important threats to the tourism industry and to tourists themselves have to be covered. Depending on the chosen assessment section, the detailed risk assessment needs to be both more complete and more specific.

Table 13. Breakdown of risk components by type of tourism activity

Risk components	Types and indicators of inbound tourism
Natural	Medical
Natural threats	Provision of medical equipment
Threats caused by human activity	Degree of amenity of the area
Environmental accidents and disasters	Quantity and cyclical nature of recovery procedures
	Supply of mineral water and therapeutic mud
Organizational-economic	*Wellness*
Transport accidents and delays	Comfort of fixed holiday bases
Failures in tourist services (accommodation, catering, etc.)	Reliability of engineering and technical elements of tourism infrastructure

Violations of economic ties between tourism businesses	Level of attractiveness of tourism programs
Internal threats to tourism businesses	Diversity of natural and cultural-historical complexes
Material damage to tourists	Accessibility by transport and visa options
Socio-economic	*Extreme sports*
Social instability at destination	Uniqueness of natural complexes
Political-ideological constraints	Intensity of physical activity
Threats from terrorism and military conflict	Natural barriers
Economic crises	Organization of the tourist route
	Nature of medical-sanitary formalities
Techno-economic	*Sightseeing*
Utilities accidents	Concentration of natural and cultural monuments
Failure of sanitary, medical, sports equipment	Enriching tourism programs with excursions
Tourist and staff life support system failures	Comfort of transport, accommodation and meals
Relocation of supply systems	Provision of communication networks and engineering structures
Database problems	Nature of passport-visa formalities

The evaluation of the tourism complex through the matrix above changes the sequence of the evaluation steps. The development of common assessment principles is necessary not only for the development and improvement of risk assessment methodologies, but also for the development of risk assessment methodologies for specific tourism systems. The content of such methodologies may vary depending on the objectives of the study, the empirical basis, the instrument, and other objective and subjective factors that influence the results and mechanism of tourism risk assessment.

In order to analyze the macroeconomic environment of Lithuanian tourism and its impact on tourism risks, it is first necessary to carry out PEST and SWOT analyses of the Lithuanian state policy towards inbound tourism and to identify the main external and internal, as well as individual or subjective, risks of the inbound tourism complex through a survey of experts.

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