“Behavioral models in insurance risk management”

AUTHORS	Evgenija Prokopjeva Evgeny Tankov Tatyana Shibaeva Elena Perekhozheva

ARTICLE INFO	Evgenija Prokopjeva, Evgeny Tankov, Tatyana Shibaeva and Elena Perekhozheva (2021). Behavioral models in insurance risk management. *Investment Management and Financial Innovations*, *18*(4), 80-94. doi:10.21511/imfi.18(4).2021.08
DOI	http://dx.doi.org/10.21511/imfi.18(4).2021.08
RELEASED ON	Thursday, 21 October 2021
RECEIVED ON	Friday, 13 August 2021
ACCEPTED ON	Monday, 18 October 2021

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
52	5	4

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Evgenija Prokopjeva (Russian Federation), **Evgeny Tankov** (Russian Federation), **Tatyana Shibaeva** (Russian Federation), **Elena Perekhozheva** (Russian Federation)

BEHAVIORAL MODELS IN INSURANCE RISK MANAGEMENT

Abstract

Behavioral characteristics attributed to consumers of insurance services are a relevant factor for analyzing the current situation in the insurance market and developing effective strategies for insurers' actions. In turn, considering these characteristics allows the insurer to be more successful in the highly competitive field, achieving mutual satisfaction in interacting with the customer.

This study is aimed to develop cognitive models of the situation (frame) "Insurance", taking into account the specifics of the Russian insurance market and systemic factors affecting participants' behavior in the market. In this regard, the study involves systemizing risks at various levels of the economic system, generalizing factors for the motivation of insurance consumers, developing descriptive and economic-mathematical models for the behavior of economic entities in risky situations.

The results obtained represent a behavioral model of interactions among insurance market entities, which determines opportunities for efficient and mutually beneficial coordination of their activities. The developed model includes the following elements: structured individual and institutional frames "Insurance"; a professional index of interest in insurance presented in the form of a mathematical model; methodology for governing the relationships among insurance participants in the digital environment.

The recommendations enable predictions of the situation in the insurance market and allow most accurately defining the consumer needs in the conditions of market changes.

Keywords frame, consumer motivation, insurance premiums, segmentation of the insurance market

JEL Classification G41, G22

Received on: 13th of August, 2021
Accepted on: 18th of October, 2021
Published on: 21st of October, 2021

Evgenija Prokopjeva, Ph.D. in Economics, Associate Professor of Khakass Technical Institute – branch of Siberian Federal University, Russian Federation. (Corresponding author)

Evgeny Tankov, Ph.D. in Philology, Associate Professor of Khakass Technical Institute – branch of Siberian Federal University, Russian Federation.

Tatyana Shibaeva, Ph.D. in Economics, Associate Professor of Khakass Technical Institute – branch of Siberian Federal University, Russian Federation.

Elena Perekhozheva, Ph.D. in Pedagogy, Associate Professor of Khakass Technical Institute – branch of Siberian Federal University, Russian Federation.

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

From the perspective of the interdisciplinary approach, insurance can be referred to as complex socio-economic phenomena whose alterations are caused by situational factors of various levels – trends in the world markets, the Covid-19 pandemic, internal policy, local taxes, etc. Therefore, the application of cognitive models in a situational analysis is relevant for the decision-making process performed by insurance market participants.

Actually, the problem under study insists on the lack of an optimal interaction between the insurer and the policyholder that would be useful and effective for both parties. The purpose of this paper is to consider the creation of a cognitive model for analyzing the situation of "Insurance" that could take into account various parameters of the specific state of affairs in the insurance industry, provide an opportunity for digital processing of available information, and offer options for the probabilistic development of the situation.

In the meantime, modeling of the construct (the frame "Insurance") is certain to be effective in analytical practices and be feasible in meth-

http://dx.doi.org/10.21511/imfi.18(4).2021.08

ods of processing big data. The paper proposes a new approach to tackling the problem of effective interactions among insurance market participants, integrating the economic and psychological features of human cooperation in contemporary market conditions.

The application of the frame allows determining the behavioral model of market participants, primarily consumers, analyzing and predicting their actions in the insurance market segment (motivation in making decisions about purchasing a product, changes in the consumption volume, etc.).

Since the problems considered belong to the multidisciplinary scientific discourse, there have been a few scientific papers devoted to this topic. That is why research involving data and methods from different scientific areas is of great interest for exploring the issue. Thus, the paper is based on the theory of frames and the stereotypical models of human behavior based on it. These questions have been studied by scientists in the field of sociology (Bruner, 1993; Hayek, 2001; Weise, 1993; Lindenberg, 1985), psychology (Pyastolov & Zadorozhnyuk, 2003; Kahneman & Tversky, 2003; Simon, 1995; Hoffman, 2003), cybernetics (Minsky, 1979), and cognitive semantics (Fillmore, 1988; Boldyrev, 2016). To examine the human motivation in the economic and financial decision-making process, the scientific works reputed to be classical in the field of economic theory are applied in the paper (Smith, 2009; Eggertson, 2001; Schumpeter, 1989; Heine, 1997); they describe, first of all, traditional rational models of human behavior. Current studies in the field of behavioral and situational economics are of considerable interest in the information society (Avtonomov & Belyanin, 2011; Kapelyushnikov, 2013; Becker, 2003; Hands, 2012; Simon, 1957; Camerer et al., 2003). Most economic entities are not inclined to make rational decisions in risky situations and are guided by other motives (personal experience, recommendations of other people, information obtained from the Internet, influences of marketers, and advertising). Behavioral actions of economic entities are considered using the insurance industry as an example. For this purpose publications on risk theory and risk management have been used (Hosseinzadehdastak & Underdown, 2012; Grima & Thalassinos, 2021; Vorontsovsky, 2021), as well as ones devoted to insurance (Chernova, 2017; Khitrova, 2012; Rusetskaya et al., 2013; Belozerov et al., 2018).

1. THEORETICAL BASIS

1.1. Framing of homo economicus activity

It should be pointed out that contemporary investigative practices characterized by synthesizing approaches are methodologically typical for various scientific disciplines. Thus, the research object can be explored taking into account its various aspects and drawing complex conclusions.

In this regard, particular economic realia can be studied more substantially, considering the socio-cultural environment that is reflected in the cognitive models of its representatives. Insurance in turn should be attributed to multifaceted socio-economic phenomena that can be investigated from the perspective of the interdisciplinary approach.

In this paper, insurance is proposed to consider as a frame. The concept "frame" came to prominence due to the works of Hoffman (2003), being viewed in a psychological and sociological domain. Frames are presented as situations based on the rules governing events and aimed at organizing and involving participants in the events (Hoffman, 2003). Frames as cognitive products are segmenting social reality. They are treated as forms of structuring life experience and communication. The interpretation of frames serves for explaining and predicting the behavior of people. Frames have become an investigation object within examining the problems of artificial intellect and linguistic studies (Minsky, 1979; Fillmore, 1988). In this study, a frame is understood as a cognitive model structuring the individual experience of a man and conveying knowledge and opinions about a certain, often repeated situation (Boldyrev, 2016).

Behavioral models are important in the economic life of citizens, as they validate decision-making in the field of lending, investment, insurance, and

other financial transactions that ultimately affect the level and quality of citizens' life.

In fact, the socio-psychological features of people's behavior are formed under the influence of various factors intrinsic to the external and internal environment. It makes sense to apply these features in different spheres of economic life to understand the motivation of consumers and other market participants to stimulate demand for certain types of services and develop definite segments of the financial market.

An important concept of the insurance industry is trust. For loyal customers, trust and commitment take priority over satisfaction, being mediators that balance a complex attitude to the product and future intentions (Garbarino & Johnson, 1999).

Conventional insurance theory is based on the tenets of neoclassical economic theory. However, it does not explain some phenomena of real insurance markets. In particular, these include perception of insurance according to the theory of utility, peculiarities of people's attitude to low-probability events, underestimating consequences of high-probability events, choice of inadequate insurance coverage.

Explicating these phenomena necessitates elaborating a behavioral insurance theory based on the theory of behavioral finance that in turn is derived from behavioral economics. There is a need for altering the paradigms of the conventional theory of insurance, which assume absolutely rational behavior appropriate to an individual, perfect composure (self-control), and egoism (Khominich et al., 2012).

It should be emphasized that the entire behavioral potential of insurance entities is associated with the peculiarities of the risk management and the choice of insurance products when interacting cognitive and emotional aspects in decision-making conditions. Thus, the influence of the emotional behavioral reaction can lead not only to the expected favorable but also to undesirable behavioral consequences and decisions that are far from optimal ones. In this case, a way of processing information and a person's perception of risk in the decision-making process become relevant factors.

People generally demonstrate irrational behavior in situations associated with uncertainty and risk. For instance, when deciding to insure themselves, they prefer low deductibles. Such decisions are based on the misconception that the lower is the deductible, the higher is the probability that the insurance company will pay in exchange for the premiums paid. At the same time, insurance is considered a form of investment. A higher premium associated with a lower deductible represents higher costs for forming the load in the structure of the insurance premium. That is caused by high administrative costs for processing indemnity insurance claims. Accordingly, an individual overpays by purchasing an insurance policy to provide protection against losses that are very insignificant and which could be quite easily compensated by the individual (Lomovtseva & Trofimova, 2015).

Individuals frequently prefer not to be insured against low-probability events having potentially high amounts of losses (natural disasters, floods, fires, etc.). Most people ignore low-probability events because they avoid thinking about possible negative consequences and act up to the principle "This will not happen to me!". Finally, the decision on high-risk insurance is highly likely to be made after a loss occurs then before that. A risky event may become more significant in people's consciousness due to misconceptions about the possibility of its reoccurrence. People worry more about the risk event and therefore they aim at investing in protection.

1.2. Behavioral characteristics of economic entities in risk situations

Investigating the behavior of economic entities in various situations having a risky nature is of particular importance in contemporary society. Models of risk behavior in the economy have been widely examined. Thus, Thaler (2017) studies the psychological aspects defining buyer's activity, and difficulties faced while making a decision on purchasing goods and services. Shaboltas (2014) considers comprehensively the category of risk and models of human risk behavior from the psychologist's point of view. Pantin et al. (2018) scrutinize the types of risks inherent in the Russian economy and methods of managing them. The risk category, types of socioeconomic risks, and techniques of risk management are discussed by Istomina and

http://dx.doi.org/10.21511/imfi.18(4).2021.08

Fedorova (2018). Behavioral models of choice in risky situations on the example of objects of investment in securities papers and other financial assets are researched by Danthine and Donaldson (2015). Kenneth (1998) considers the framework as a complex method to be used by any subject to determine a strategy for managing a risky situation. Many scientists note a close relationship between risks and insurance (Rejda & McNamara, 2014).

Behavioral models in risky situations are of great significance in modern socioeconomic systems, since negative catastrophic events regularly take place in them both at the local and global levels. In this regard, to preserve the stability of the economic system, it is important to develop behavior principles for subjects who find themselves in a particular situation and to create methods for managing risky events aimed at eliminating or smoothing out negative consequences for individual subjects as well as states. The most significant risks inherent in each level of management in the socio-economic system are shown in Table 1.

Experts identify economic, environmental, geopolitical, social, and technological risks as global risks (Ivanov, 2017). The most significant risks given the possibility to manage are global events of an economic, social, and environmental character. However, all types of risks, one way or another, entail negative economic consequences. Thus, the latest global event of a non-economic nature – the Covid-19 pandemic – has had a large-scale impact on the entire world economy and social sphere.

The influence of risk factors on economic entities manifests itself in different ways, depending on the status of the entities. Therefore, they should be divided into three groups according to the levels of risk management: individuals, organizations, and the state.

As a consequence of risk situations, these subjects reveal themselves variously according to their status, as well as the personal characteristics of specific people making managerial decisions.

Table 1. Main risks at different levels of the economic system

Source: Pantin et al. (2018), Rating Agency Expert-RA (2021).

The level of the socioeconomic system	The main risks of a medium-term and long-term character	Implementation risks
World level	climate change and an increase in the number of natural disasters	damage to property, harm to life and health
	population aging	reduction of the living standards and pension provision
	social stratification	a rise in social and political tensions
	a rise in terrorist activities	harm to life and health
	growing dependence on the cyberspace domain and failures in information systems	financial losses as a result of cybercrimes
	instability of the economic system	economic and financial crises
	the coronavirus pandemic	deterioration of human capital, economic crises
National level (on the example of Russia)	the deterioration of political relations with other countries	a decrease in the efficiency of foreign economic activity
	changes in the technological structure	lagging behind other countries in technological development
	to develop the real sector of the economy is becoming unprofitable	a decrease in the competitiveness of the national economy
	obstacles to business development due to bureaucracy	reduction in the development potential of small and medium-sized businesses
	low investment attractiveness	lack of investment potential and reduced competitiveness of the economy
	aging of production assets	reduction in the production potential
	volatility of the national currency	instability of the financial system
Local (regional) level	large scale technological disasters	damage to the economy, property, harm to life and health
	natural risks	property damage, harm to life and health
	environmental degradation	harm to citizens' health
	social stratification and polarization	a rise in social and political tensions

Table 2. Methods for managing risks at different levels

Source: Chernova (2017).

Risk management entities	Methods for risk transformation (preventive)	Methods of risk financing
Citizens	risk aversion	insurance
		creating funds and reserves
		budgetary aid
Organizations	risk aversion	insurance
	controlling the risks	budgetary aid
	outsourcing	sponsorship
		crediting
		covering losses using current income
State	regulating and controlling the risks	creating funds and reserves
		insurance

Thus, the personal factor is of great significance when analyzing the management of a risk situation, since decisions are always made by people, but the approaches applied are completely different in particular cases and related to the subjects, whether they be individuals or representatives of organizations and the state. In the second case, decisions can be either personal or collegial, and, as a rule, they are limited by legislative, regulatory, or corporate frameworks.

In the theory and practice of risk management, there is a variety of methods and approaches proposed by various authors (Hosseinzadehdastak & Underdown, 2012; Grima & Thalassinos, 2021; Saksonova & Kuzmina-Merlino, 2019; Vorontsovsky, 2021; Chernova, 2017). Their application is conditioned by the financial, organizational, and professional capabilities of the subjects involved in a risky situation. The main methods of risk management are shown schematically in Table 2.

The most universal method of risk management is the insurance method, since it allows protecting various entities against risks with minimal expenses, as well as acquiring knowledge and skills in this area.

1.3. Factors of demand for insurance services

Actually, a few studies have discussed the factors of demand for insurance services in Russian and foreign insurance science. In this regard, the investigations of Khitrova (2012), Polyakova et al. (2018), and Ghimire (2020) should be highlighted.

Dudziński (2019) considers non-monetary factors affecting the demand for insurance services. Thus, it is noted that with aging and deteriorating health a person becomes more interested in insurance protection.

In this connection, the findings of Rusetskaya et al. (2013) are noteworthy: they divide the factors affecting the consumer of insurance services into socioeconomic and psychographic ones. At the same time, in the conditions of increasing competition in the insurance market, these are psychographic factors that require close attention to and necessitate control exerted by the insurer. There are some factors to be emphasized that influence the behavioral intentions and the adoption of a positive decision by the insurance consumer: trust, perceived benefit, and favorable attitude (Weedige et al., 2019).

The reasons and factors for purchasing insurance services and refusing them have been researched by the rating agency Expert-RA (2021). Customers consider the intention of protecting their property and the obligation to purchase certain types of insurance as the main motives for acquiring insurance services.

The major causes of refusing to buy insurance services are as follows:

1) a lack of property requiring insurance protection;

2) a lack of financial opportunities to purchase an insurance policy;

3) a lack of economic benefits of buying an insurance policy;

http://dx.doi.org/10.21511/imfi.18(4).2021.08

4) an inflated price of insurance services and low insurance payments;

5) negative reviews about insurers and poor quality of service.

In the process of choosing an insurer, the following behavioral models are the most common:

1) searching and comparing the proposed conditions that result in a rational model of choosing one of the available offers;

2) focusing on the recommendations of friends and acquaintances;

3) contacting the company to have dealt with earlier and to have provided an insurance product.

When choosing an insurance company, the priority criteria for policyholders are its reliability, cost of services, recommendations, and promptness of payments. Thus, the behavioral model of policyholders in purchasing or refusing insurance services and choosing a suitable insurance company is determined by the factors affecting the demand for insurance services, which can be divided into two groups (Figure 1).

Objective factors affect the insurance market equally, so they determine insurance expediency, as well as the economic opportunities of both insurers and policyholders. Only state authorities and the financial market regulator can influence the effect of these factors. Individual entities of the insurance market cannot exert an impact on objective factors, but they should take them into account in their activities as an element of risk.

In this regard, the combination of various factors affects the motivation of consumers to purchase insurance services. The most relevant factors within this study are the subjective factors of demand for insurance services since their investigation allows to realize fundamentally the behavioral model intrinsic to certain groups of policyholders (representatives of policyholders) classified according to definite characteristics.

Both insurers, competently building an insurance strategy in today's conditions of digitalization and improving the financial literacy of policyholders, and the state represented by the regulator can define subjective factors. For example, creating an insurance culture is a national task, but the factor is subjective, as people aim at copying mass behavior, in this case, they acquire insurance policies if other people are actively involved in it.

Source: Authors' compilation.

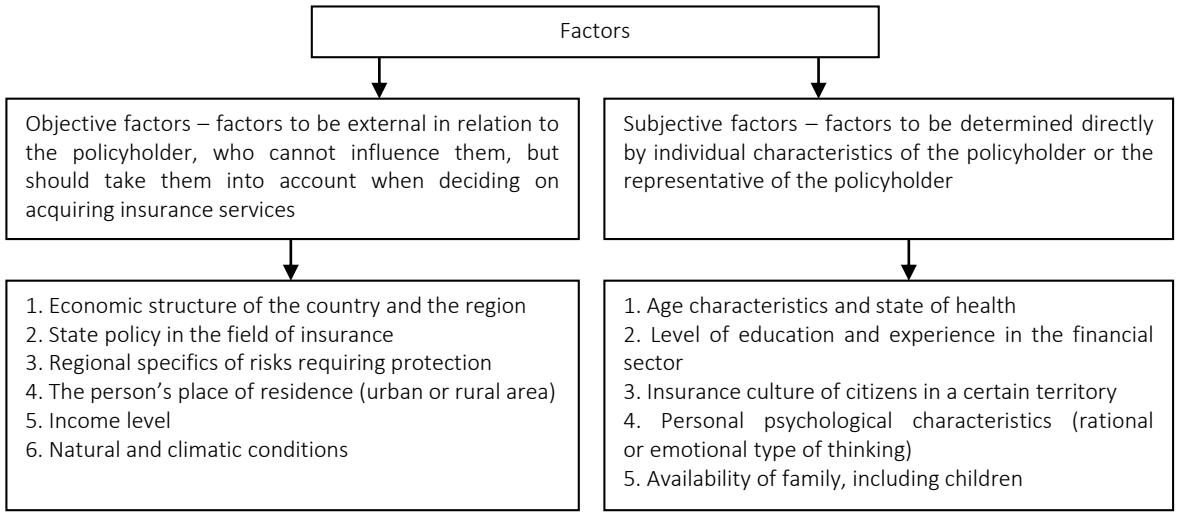

Figure 1. Factors determining the demand for insurance services

2. RESULTS

2.1. Behavioral models of economic entities in risky situations

Summarizing the theoretical research, two models of interacting economic entities in situations of uncertainty have been derived.

From the consumers' motivation viewpoint, relationships arising between the participants of economic affairs are considered from the perspective of the resource approach in combination with the "attitudinal" approach. The resource approach examines the dynamics and movement of resources between the participants of relations, and the "attitudinal" approach focuses on the position that any relationship contributes to the emerging of "attitudinal rent" applicable in all sectors of the economy.

In this respect, it is of great interest to research such interactions from the perspective of their development dynamics, taking into account a variety of objects united by a territory demonstrating stable internal relationships. The peculiarity of any interaction is a voluntary membership, therefore the number of participants is a variable value, which allows avoiding rigid determination of the functions of associations' participants. In turn, the definite approaches to governing customers' motivation can be distinguished (Table 3).

Thus, by applying a combination of the approaches, it is possible to achieve an increase in the efficiency of social interaction and motivation of consumers both in the field of using insurance mechanisms and in other sectors of the economy.

Situational behavior of economic entities involved in occurring a risk event with the participation of an insurance institution can be presented in Figure 2.

It is of great importance at each level of management to model typical risk situations significant for most subjects of economic relations, identify possible consequences and develop management decisions aimed at strengthening positive consequences and results and eliminating or reducing negative ones.

However, the main conclusion following the model is that insurance mechanisms should work effectively on the basis of supply and demand. Thus, in Russia, insurance mechanisms are not effective primarily because policyholders are extremely unwilling to purchase insurance services, and the actions of insurers' representatives are not always

Table 3. Approaches to governing interactions

Source: Authors' compilation.

Indicators	Approaches	
	organizational (resource)	attitudinal
Goal	Creation of determination centers	Creation on mutually beneficial terms
Mutual participation	Static principles of dividing labor	Voluntary associations of participants
Mutual interest	Vertical relationship	Horizontal links
Composition of participants	Constant	Variable
Internal prospects	Limitations	No limitations
Participants	Subjects of economic activities	Any agents, state and non-state entities
Interactions	Competition	Cooperation, mutual support
Resource characteristics	Rare, limited	Unique, limitless
Development priorities	Technological development	Socioeconomic development
Combining features	Formation of competitive advantages	Creation of own networks
Barriers to entry	Quite high	Low or medium
External resources	Independent	United
Safety	Self-defense	Connections and interactions
Techniques	Industrial	Based on communication and information
Prospects	Effectiveness	Innovation
Structural organization	Central link	Networking
Performance of the development vector	Collinear development	Different directions
Resulting action	Dependence on the leader of the structure	Individual development of each participant

http://dx.doi.org/10.21511/imfi.18(4).2021.08

Source: Authors' compilation.

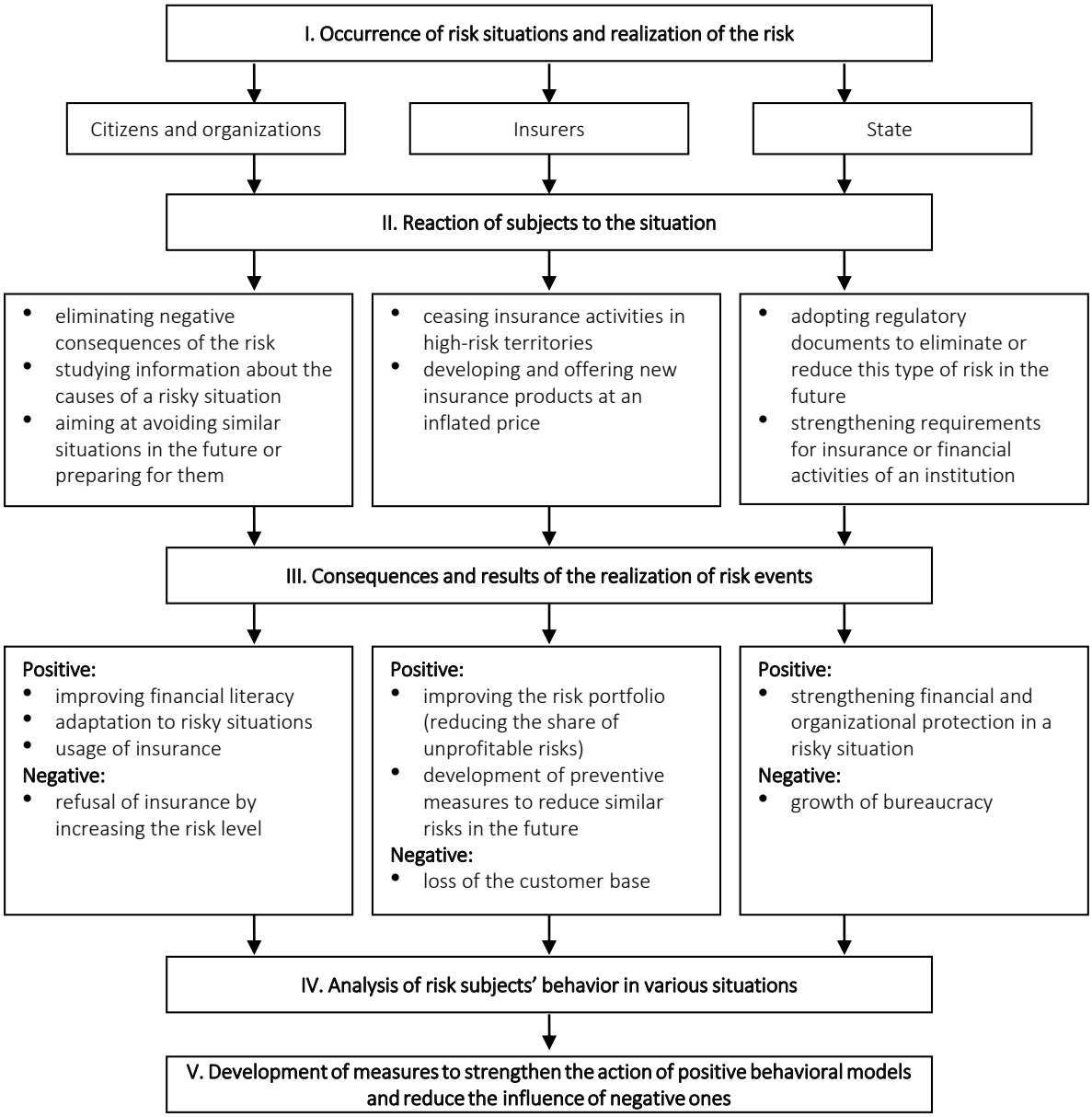

Figure 2. The model of economic entities' behavior in a risky situation

professional and aimed at satisfying the interests of the consumer.

In this regard, to comprehend the content of this problem and its causes, it is significant to start by researching consumer motivation to be implemented in demand indicators.

2.2. Demand analysis in the insurance services market

Insurance is the most important branch of the financial market since the lack of an effective insurance system or its unstable functioning hinders economic growth in the state (Pradhan & Dave, 2018). The insurance economy is becoming one of the central issues concerning economic development in modern nations. It not only illustrates new theories in practice but also has a heuristic effect when generating important macroeconomic ideas (Louberge, 1998).

At the same time, the decision-making process in the insurance sector undoubtedly has its specifics to be the object of various researches (Hsee & Kunreuther, 2000; Weedige et al., 2019). Examining

Source: Bank of Russian (n.d.).

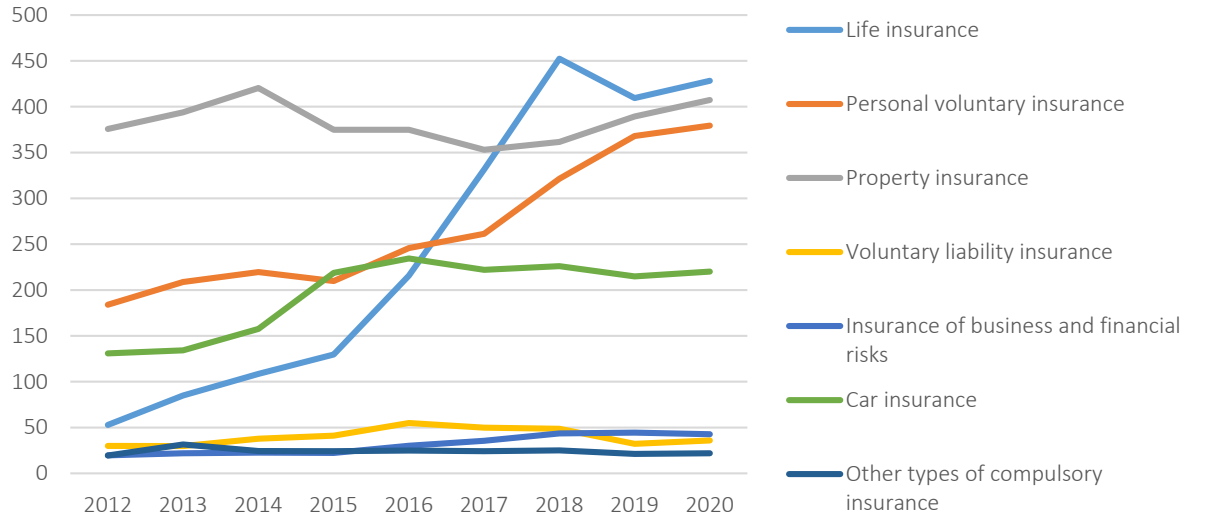

Figure 3. Dynamics of insurance premiums in Russia, billion rubles

different trends in the development of insurance markets and the demand factors for insurance services in the world practice has revealed that the motives encouraging policyholders to purchase insurance policies or refuse them may differ according to countries and regions of the world. An important condition is a cultural and social environment in which the level of financial literacy of the population in the field of insurance is being raised.

In this connection, the factors of consumer motivation could be considered on the example of insurance services in Russia as a country having a complex territorial and national structure, as well as specific natural, climatic, and socioeconomic conditions.

Over the past few decades, there has been a problem of unstable demand for insurance services in Russia. The demand is differentiated depending on the form and type of insurance, as well as intra-country location (belonging to the subject of the Russian Federation). These aspects are expressed in the following: the amount of voluntary insurance varies significantly according to the general economic situation, which provokes instability of the insurance market. Figure 3 shows the dynamics of insurance premiums in Russia in conformity with the type of insurance.

The chart illustrates that the main market segments are life insurance, personal accident insurance, and medical insurance, as well as property insurance. These voluntary insurance services exactly correspond to the main directions from the perspective of stimulating sustainable demand influenced by market conditions.

Depending on the subject of the Russian Federation, the structure of insurance premiums differs both in sectors (personal insurance, property insurance, liability insurance) and forms (compulsory and voluntary). The regional structure of insurance premiums is shown in Figure 4.

Figure 3 demonstrates the differences in the demand for insurance services in various territories of the country. This inequality is determined by dissimilarities in the standard of living in the regions, financial literacy of the population, ethnic and socioeconomic, as well as psychological factors.

In this regard, the professional index of insurance interest in dynamics was calculated in order to scrutinize the demand for insurance services. The index is based on the methodology proposed by Khominich et al. (2012). The model was modified in a definite way. Namely, some indicators based on statistical data were included in the calculation instead of initial indicators obtained by observation.

The construction of the index is presented in the form of the mathematical model consisting of

http://dx.doi.org/10.21511/imfi.18(4).2021.08

Source: Bank of Russian (n.d.).

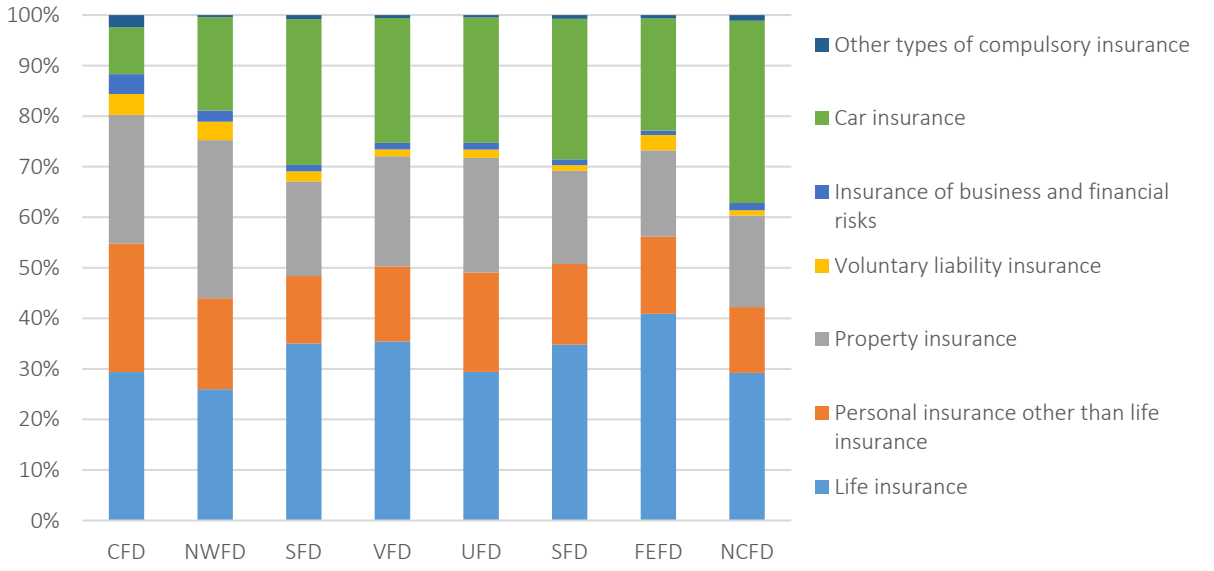

Figure 4. Structure of insurance premiums in the federal districts in 2020

some relative variables (A – H), which have a low correlation with each other and are calculated taking into account the weight of each variable:

$$I_i = \frac{A_1}{A_0}\cdot 0.129 + \frac{B_1}{B_0}\cdot 0.122 + \frac{C_1}{C_0}\cdot 0.126 + \frac{D_1}{D_2}\cdot 0.137 + \frac{E_0}{E_1}\cdot 0.121 + \frac{F_0}{F_1}\cdot 0.141 + \frac{J_0}{J_1}\cdot 0.107 + \frac{H_0}{H_1}\cdot 0.117, \quad (1)$$

where A – a number of concluded contracts concerning voluntary types of insurance; B – dynamics of collecting insurance premiums concerning voluntary types of insurance; C – dynamics of income growth; D – increase in household savings; E – dynamics of the consumer price index; F – a number of property thefts; J – a number of serious and particularly serious crimes; H – a number of accidents.

Multipliers are the weights of variables showing their significance according to the data of the sociological survey.

The dynamics of the professional index of insurance interest is presented in Figure 5.

Thus, the graph reveals an increase in voluntary insurance interest in 2015. In subsequent years there was a decline in the index, and in 2020 there was a slight trend of increasing demand for insurance services.

In order to effectively develop the insurance market involving the formation of a stable customer base, it is important to realize the motivation of potential and real insurance consumers in acquiring or rejecting the services. This information is relevant for the following categories of insurance subjects: insurance companies, regulatory authorities, and consumers of insurance services. Comprehensive investigating of socio-psychological motives typical for insurance consumers will enable regulating the insurance market on a national scale, taking into account the specifics of the regions.

A substantial element of the effective interaction between the insurer and the policyholder is market segmentation. When segmenting consumers, the insurer should consider both objective and subjective factors.

The target audience of insurance consumers schematically can be divided into three groups. Table 4 shows the complex characteristics intrinsic to different types of customers, given both objective and psychological factors.

Source: Khominich et al. (2012), Bank of Russian (n.d.), Federate Service of State Statistics (n.d.).

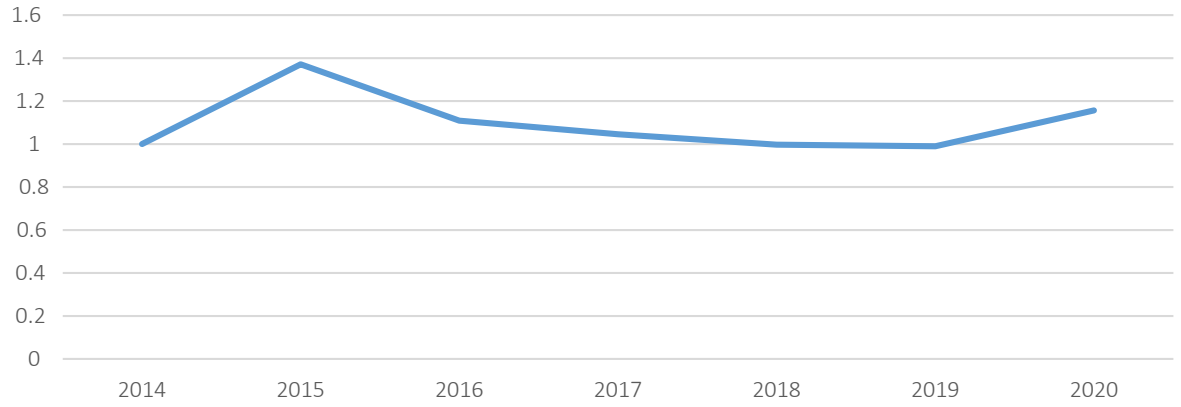

Figure 5. Dynamics of the professional index of insurance interest

Thus, *the effective customer* meets the main characteristics of a rational person. This type is a successful middle-aged person having a family who is interested in protecting against property and non-property risks. However, such a customer may or may not have a motivation for insurance. The second option is quite understandable in the conditions of an undeveloped insurance market, for example, the Russian market. If there is no motivation for insurance, the customer will use self-insurance methods.

The average customer represents the majority of policyholders. This group includes people with an average income level having different family and property statuses, as well as psychological characteristics. However, it is this segment that represents the main demand for mass insurance types, therefore it requires a smaller segmentation depending on the insurance types. Nevertheless, this category of customers may also have motivation, but may not.

The inefficient customer generally is undesirable in the sphere of insurance, since the person worsens the quality of the insurance portfolio. Such a customer makes decisions spontaneously, is influenced by the majority or advertising, does not understand the need for insurance, and often does not have the necessary income for this. The customer usually acquires insurance services as accompanying the purchase of other goods and services.

Table 4. Customer characteristics in major insurance segments

Source: Authors' compilation.

Segmentation criteria	Effective customer	Average customer	Inefficient customer
Income level	high and above average	Above average and average	Average and below average
Age	30-35 years and older	25-35 years old	Up to 25 years of age, retirement age
Family	Yes	Yes/no	No
Level of education and financial literacy	Higher education, sphere of activity: economy and business	Higher education, sphere of activity: not related to economy	Secondary special education
Place of residence (region, urban or rural area)	Regions of higher urbanization, urban area	Regions of medium urbanization, urban area	Regions of medium/lower urbanization, rural areas
Type of thinking	Rational	Rational/Emotional (subjected to external influences)	Emotional (subjected to external influences)
Motivation for insurance	Yes/no	Yes/no	No
The main types of required insurance services	real estate insurance	real estate insurance	accident insurance
	investment and life insurance	cumulative life insurance	medical insurance
	insurance of enterprises	insurance of business risks	motor transport insurance
	luxury goods insurance	insurance in tourism	microinsurance
Sales channels	individual sales	all sales channels	online sales
	professional agency channel		non-professional agency channel

http://dx.doi.org/10.21511/imfi.18(4).2021.08

It should be highlighted that the given model of segmentation is approximate and can be improved taking into account the activity specifics inherent to a particular insurer. Modern technologies in insurance based on the use of neural networks also allow detailing this model.

3. DISCUSSION

The balanced development of the modern economy definitely requires exploring consumer motivation. This is especially relevant in such complex financial products as insurance services.

The study of modern behavioral theories and the possibility of their usage for researching the situational behavior of insurance entities in risky situations has been carried out in the paper.

It should be emphasized, to make a reasonable choice of an insurer and a service, the individual policyholder (a representative of the policyholder – a legal entity) needs knowledge of the basics of financial science and risk theory, as well as the use of rational thinking. This is especially essential when using digital sales channels that require independent and informed decisions. However, modern consumers are not always able to make economically competent decisions; they are often guided by the established experience, stereotypes, and recommendations of others.

In fact, two types of frames should be distinguished: individual and institutional. In the first case, it implies structuring the personal experience of an individual (a potential policyholder), the institutional framework is formulated by the insurer and aims at tactical/strategic strengthening and developing of the organization. Being a source of business activity, the insurance organization seeks to establish a connection, optimize the mutually beneficial relations by regulating the structures of the individual and institutional framework.

It should be noted that the study contains a synthesis of methods and approaches for investigating the behavioral aspects of economic entities. These techniques are offered by various sciences, such as psychology, linguistics, sociology, economic theory, financial theory, and insurance theory. This enables the development of a comprehensive model including both descriptive and economic approaches to examining the behavior and motivation of insurance market participants, primarily policyholders.

Therefore, the advantages of the proposed model are its originality, a systematic approach, as well as the versatility of use. It is suitable for governing risks not only in the insurance sector but also in the risk management system of an enterprise or a certain territory (region). However, the model needs to be improved by integrating it with modern digital algorithms and platforms in the insurance sphere. This is a perspective for future research in this direction.

CONCLUSION

In the conditions of increasing competition, insurers, on the one hand, aim at enhancing the quality of the insurance portfolio by attracting effective customers; on the other hand, they should offer different kinds of services to satisfy the customer.

The behavioral model proposed for economic entities in a risk situation makes it possible to analyze decision-making by both citizens and institutions, including policyholders, insurers, and the state.

Based on the study of the factors determining the demand for insurance services, the customer segmentation has been carried out that takes into account the objective and subjective characteristics of the customers and allows developing insurance services according to the demands of specific customer categories.

The proposed methods and models can be most effectively implemented in the conditions of digitalization of the economy. Thus, the usage of online sales channels for insurance services allows avoiding the

negative impact of the insurer on the potential policyholder that encourages insurers to actively employ fair competition methods.

As a result, the wider application of behavioral theories along with classical economic theories will allow moving away from the traditional marketing approach that provides for stimulating demand for existing services. In the modern economy, it is possible to improve interaction with consumers only by researching their real needs and developing products and services following existent demands.

AUTHOR CONTRIBUTIONS

Conceptualization: Evgeny Tankov, Evgenia Prokopjeva.
Data curation: Evgeny Tankov, Evgenia Prokopjeva, Tatyana Shibaeva.
Formal analysis: Evgenia Prokopjeva, Tatyana Shibaeva, Elena Perekhozheva.
Funding acquisition: Evgeny Tankov, Tatyana Shibaeva, Elena Perekhozheva.
Investigation: Evgeny Tankov, Evgenia Prokopjeva, Tatyana Shibaeva.
Methodology: Evgeny Tankov,Tatyana Shibaeva.
Project administration: Evgenia Prokopjeva.
Resources: Tatyana Shibaeva, Elena Perekhozheva.
Software: Evgenia Prokopjeva, Elena Perekhozheva.
Supervision: Evgenia Prokopjeva.
Validation: Evgeny Tankov, Evgenia Prokopjeva, Elena Perekhozheva.
Visualization: Evgenia Prokopjeva, Tatyana Shibaeva.
Writing – original draft: Evgeny Tankov.
Writing – review & editing: Evgeny Tankov, Evgenia Prokopjeva, Tatyana Shibaeva.

REFERENCES

1. Avtonomov, V. S., & Belyanin, A. V. (2011). Povedencheskie instituty rynochnoj ekonomiki: k postanovke problem [Behavioral institutions of the market economy: towards the solution of the problem]. *Obshchestvennye nauki i sovremennost' – Social sciences and modernity, 2,* 112-130. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=15643895
2. Bank of Russia. (n.d.). *Strakhovanie – Insurance.* (In Russian). Retrieved from https://cbr.ru/insurance/
3. Becker, G. (2003). *Chelovecheskoe povedenie: ekonomicheskij podhod [Human behaviour: an economic approach].* Moskow: Higher School of Economics. (In Russian). Retrieved from https://ecsocman.hse.ru/text/19152235/
4. Belozerov, S. A., Chernova, G. V., & Kalaida, S. A. (2018). Sovremennye faktory razvitiya rossijskogo strahovogo rynka [Modern factors of development of the Russian insurance market]. *Strahovoe delo – Insurance Business, 6*(303), 31-35. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=35104759
5. Boldyrev, N. N. (2016). *Kognitivnaya semantika: Kurs lekcij po anglijskoj filologii: uchebnoe posobie [Cognitive semantics: A course of lectures on English philology: a textbook].* Moscow. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01002395563
6. Bruner, K. (1993). Predstavlenie o cheloveke i koncepciya sociuma: dva podhoda k ponimaniyu obshchestva [The idea of a person and the concept of society: two approaches to understanding society]. *THESIS, 1*(3), 51-72. (In Russian). Retrieved from https://ecsocman.hse.ru/text/18522613/
7. Camerer, C., Issacharoff, S., Loewenstein, G., O'Donoghue, T., & Rabin, M. (2003). Regulation for Conservatives: Behavioral Economics and The Case for "Asymmetric Paternalism". *University of Pennsylvania Law Review, 151*(3), 1211-1254. https://doi.org/10.2307/3312889
8. Chernova, G. V. (2017). *Strahovanie i upravlenie riskami: uchebnik dlya bakalavrov [Insurance and risk management: a textbook for bachelors].* Moscow: Yurayt. (In Russian). Retrieved from https://urait.ru/book/strahovanie-i-upravlenie-riskami-401000
9. Danthine, J.-P., & Donaldson, J. (2015). Making Choices in Risky Situations. In *Intermediate Financial Theory* (pp. 55-86). https://doi.org/10.1016/B978-0-12-386549-6.00003-6
10. Dudziński, P. (2019). The Effect of Nonmonetary Factors on the Demand for Insurance and Self-Insurance. *Statistical Review, 65*(1), 41-54. https://doi.org/10.5604/01.3001.0014.0525
11. Eggertson, T. (2001). *Ekonomicheskoe povedenie i instituty*

http://dx.doi.org/10.21511/imfi.18(4).2021.08

[Economic behaviour and institutions]. Moscow: Delo. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01000736608

12. Federate Service of State Statistics. (n.d.). *Glavnaya stratitsa – Main page*. (In Russian). Retrieved from https://rosstat.gov.ru
13. Fillmore, Ch. (1988). Frejmy i semantika ponimaniya. Novoe v zarubezhnoj lingvistike. Kognitivnye aspekty yazyka [Frames and semantics of understanding. New findings in foreign linguistics. Cognitive aspects of language]. *Progress, XXIII*, 52-92. (In Russian).
14. Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust and commitment in customer relationships. *The Journal of Marketing, 63*(2), 70-87. https://doi.org/10.2307/1251946
15. Ghimire, R. (2020). Situation Analysis of Insurance Services in Nepal. *Byabasthapan Journal of Management Association of Nepal, 39*(1). https://doi.org/10.2139/ssrn.3556498
16. Grima, S., & Thalassinos, E. I. (2021). Editorial: Risk Management Models and Theories. *Frontiers in Applied Mathematics and Statistics II, 7*(5). https://doi.org/10.3389/fams.2021.676404
17. Hands, U. (2012). Normativnaya teoriya racionalnogo vybora: proshloe, nastoyashchee, budushchee [Normative theory of rational choice: past, present, future]. *Voprosy ekonomiki – Economic issues, 10,* 52-75. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=17967426
18. Hayek, F. A. (2001). *Individuualizm i ekonomicheskij poryadok [Individualism and economic order]*. Moscow: Izograf. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01004799898
19. Heine, P. (1997). *Ekonomicheskij obraz myshleniya [Economic way of thinking]*. Moscow: Catalaxia. (In Russian). Retrieved from https://finance-credit.news/ekonomiki-osnovyi/ekonomicheskiy-obraz-myishleniya-per-angl-izd.html
20. Hoffman, I. (2003). *Analiz frejmov: esse ob organizacii povsednevnogo opyta [Frame analysis: an essay on the organization of everyday experience]*. Moscow: Institute of Sociology of the Russian Academy of Sciences. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01002429186
21. Hosseinzadehdastak, F., & Underdown, R. (2012). *An analysis of risk management methods*. Retrieved from https://www.researchgate.net/publication/288454922_An_analysis_of_risk_management_methods
22. Hsee, C., & Kunreuther, H. (2000). The Affection Effect in Insurance Decision. *Journal of Risk and Uncertainty, 20*(2), 141-159. https://doi.org/10.1023/A:1007876907268
23. Istomina, E. A., & Fedorova, M. Yu. (2018). *Pravovoj mekhanizm upravleniya socialnymi riskami: monografiya [The legal mechanism of social risk management: a monograph]*. Yekaterinburg: UIU RANEPA. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01009783859
24. Ivanov, O. B. (2017). Globalnye riski i tendencii sovremennogo mira [Global risks and trends of the modern world]. *ETAP: ekonomicheskaya teoriya, analiz, praktika – STAGE: economic theory, analysis, practice, 1,* 7-20. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=28930657
25. Kahneman, D., & Tversky, A. (2003). Racionalnyjvybor, cennostii frejmy [Rational choice, values and frames]. *Psihologicheskij zhurnal – Psychology journal, 24*(4), 31-42. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=17315914
26. Kapelyushnikov, R. I. (2013). Povedencheskaya ekonomika i "novyj"paternalism [Behavioral economics and "new" paternalism]. *Voprosy ekonomiki – Economic issues,* 10. (In Russian). https://doi.org/10.32609/0042-8736-2013-9-66-90
27. Kenneth, D. M. (1998). A framework for managing risky situations. *International Journal of Organizational Analysis, 6*(1), 5-31. https://doi.org/10.1108/eb028876
28. Khitrova, E. M. (2012). K voprosu o stimulirovanii sprosa na strahovye uslugi [On the issue of stimulating demand for insurance services]. *Izvestiya IGEA – News IGEA, 6*(86), 27-30. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=18273103
29. Khominich, I. P., Finogenova, Yu. Yu., Chelukhina, N. F., & Savvina, O. V. (2012). *Strahovye mekhanizmy reformirovaniya social'noj sfery: sravnitel'nyj analiz rossijskoj i zarubezhnoj praktiki: monografiya [Insurance mechanisms of reforming the social sphere: a comparative analysis of Russian and foreign practice: monograph]*. Moscow: Dashkov and Co. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=22323419
30. Knight, F. (1921). *Risk, Uncertainty and Profit.* Boston, Mass.: Houghton Mifflin. Retrieved from https://archive.org/details/riskuncertaintyp00knigrich
31. Kotlobovsky, I. B., & Sirichenko, N. V. (2017). Innovacionnye informacionnye tekhnologii dlya strahovoj otrasli [Innovative information technologies for the insurance industry]. *Finansy –Finance, 9,* 38-44. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=29969615
32. Lindenberg, S. (1985). An Assessment of the New Political Ecomony: Its Potential for the Social Sciences and for Sociology in Particular. *Sociological Theory, 3*(1), 99-114. https://doi.org/10.2307/202177
33. Lomovtseva, A. V., & Trofimova, T. V. (2015). Postroenie sistemy strahovaniya riskov kak osnovnoj metod upravleniya hozyajstvennym riskom na predpriyatiyah [Building a risk insurance system as the main method of managing economic risk at enterprises]. *Sovremennye problemy nauki i obrazovaniya – Modern problems of science and education, 1-1,* 607. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=25323861
34. Louberge, H. (1998). Risk and Insurance Economics 25 Years After. *Geneva Papers on Risk and Insur-*

ance – Issues and Practice, 23(4), 540-567. https://doi.org/10.1057/gpp.1998.47

35. Minsky, M. (1979). *Frejmy dlya predstavleniya znanij [Frames for the representation of knowledge]*. Moscow: Energiya. (In Russian).

36. Pantin, V. I., Malkov, S. Yu., & Grinin, L.E. (2018). *Osnovnye ugrozy i riski Rossii pri perekhode k novomu mirovomu poryadku i puti ih minimizacii: Strategicheskij analiz [The main threats and risks of Russia in the transition to a new world order and ways to minimize them: A strategic analysis]*. Moscow: Uchitel. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01009658252

37. Polyakova, A. A., Kozhenchikova, N. Yu., & Dudareva, A. B. (2018). Sovremennye tendencii funkcionirovaniya rynka strahovyh uslug Rossii [Modern trends in the functioning of the insurance services market in Russia]. *Upravlencheskoe konsul'tirovanie – Management consulting, 10*. (In Russian). https://doi.org/10.22394/1726-1139-2018-10-70-83

38. Pradhan, S., & Dave, A. (2018). *Sigma 4/2017: In Insurance: Adding Value to Development in Emerging Markets* (Report). Swiss Re Institute. Retrieved from https://www.swissre.com/institute/research/sigma-research/sigma-2017-04.html

39. Pyastolov, S. M., & Zadorozhnyuk, I. E. (2003). Psihologicheskij proryv v ekonomicheskoj teorii [Psychological breakthrough in economic theory]. *Psihologicheskij zhurnal – Psychology Journal, 24*(4), 29-30. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=17315913

40. Rating Agency Expert-RA. (2021). *Ratings*. (In Russian).

41. Rejda, G. E., & McNamara, M. J. (2014). *Principles of Risk Management and Insurance*. Boston: Pearson. Retrieved from https://www.pearsonhighered.com/assets/preface/0/1/3/5/0135180864.pdf

42. Rusetskaya, E. A., Kozel, I. V., & Rusetsky, M. G. (2013). Preimushchestva psihograficheskogo segmentirovaniya rynka strahovyh uslug [Advantages of psychographic segmentation of the insurance services market]. *Finansovaya analitika: problemy i resheniya – Financial analytics: problems and solutions, 15*(153), 48-55. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=18952759

43. Saksonova, S., & Kuzmina-Merlino, I. (2019). The principles of creating a balanced investment portfolio for cryptocurrencies. In I. Kabashkin, I. Yatskiv, & O. Prentkovskis (Eds.), *Reliability and Statistics in Transportation and Communication*. https://doi.org/10.1007/978-3-030-12450-2_68

44. Schumpeter, J. (1989). *Istoriya ekonomicheskogo analiza. Istoki [The history of economic analysis. Origins]*. Moscow. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01000852015

45. Shaboltas, A. V. (2014). Risk i riskovannoe povedenie kak predmet psihologicheskih issledovanij [Risk and risky behavior as a subject of psychological research]. *Vestnik Sankt-Peterburgskogo universiteta – Bulletin of the Saint Petersburg University, 12*(3), 5-16. (In Russian). Retrieved from https://www.elibrary.ru/item.asp?id=21942937

46. Simon, G. (1995). *Teoriya prinyatiya reshenij v ekonomicheskoj teorii i nauke o povedenii. Teoriya firmy [The theory of decision-making in economic theory and the science of behaviour. The theory of the company]*. Saint Petersburg: Economic School. (In Russian). Retrieved from http://eos.ibi.spb.ru/umk/2_4/6/6_P1_R1_T1.html

47. Simon, H. (1957). *Models of Man: Social and Rational*. New York: Wiley. Retrieved from https://www.scirp.org/reference/ReferencesPapers.aspx?ReferenceID=243519

48. Smith, A. (2009). *Issledovanie o prirode i prichinah bogatstva narodov [Research on the nature and causes of the wealth]*. Moscow: EKSMO. (In Russian). Retrieved from https://search.rsl.ru/ru/record/01004177590

49. Thaler, R. (2017). *Novaya povedencheskaya ekonomika. Pochemu lyudi narushayut pravila tradicionnoj ekonomiki i kaknaetomzarabotat [New behavioural economics. Why people violate the rules of the traditional economy and how to make money on it]*. Moscow: Eksmo. (In Russian). Retrieved from https://eksmo.ru/book/novaya-povedencheskaya-ekonomika-pochemu-lyudi-narushayut-pravila-traditsionnoy-ekonomiki-i-kak-na-e-ITD804670/

50. Vorontsovsky, A. V. (2021). *Upravlenie riskami: uchebnik i praktikum dlya vuzov [Risk Management: textbook and workshop for universities]*. Moscow: Yurayt. (In Russian). Retrieved from https://urait.ru/book/upravlenie-riskami-450664

51. Weedige, S., Ouyang, H., Gao, Y., & Liu, Y. (2019). Decision Making in Personal Insurance: Impact of Insurance Literacy. *Sustainability, 11*(23), 6795. https://doi.org/10.3390/su11236795

52. Weise, P. (1993). Homoeconomcus i Homosociologicus: monstry socialnyh nauk [Homo economcus and Homo sociologicus: monsters of social sciences]. *THESIS, 3,* 115-130. (In Russian). Retrieved from https://ecsocman.hse.ru/data/082/836/1231/3_2_4weise.pdf

http://dx.doi.org/10.21511/imfi.18(4).2021.08