www.ICA2014.org

LEARN
INTERACT
GROW

Operational Risk Effect on Insurance Market's Activity

Darja Stepchenko, Irina Voronova, Gaida Pettere
Riga Technical University, Latvia

CONTENT

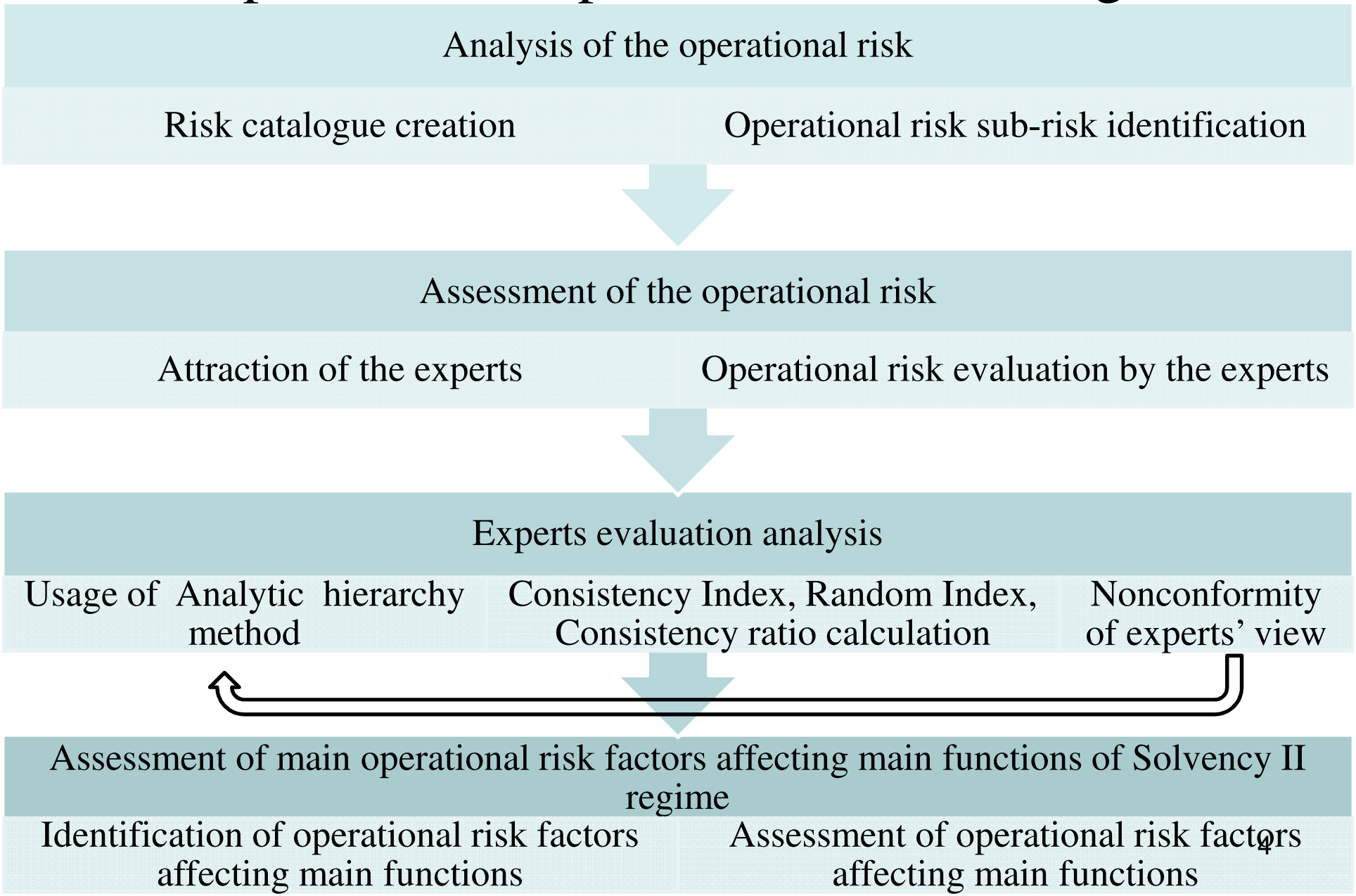
1. What Is the Aim of Operational Risk Assessment?
2. Expert Evaluation Within Analytic Hierarchy Process
3. Influence of the Main Sub-Risk on Main Functions of Solvency II Regime
4. Evaluation of Main Risk Factors Affecting Solvency II Functions
5. Costs of Operational Risk Management

Conclusions

1. What Is the Aim of Operational Risk Assessment?

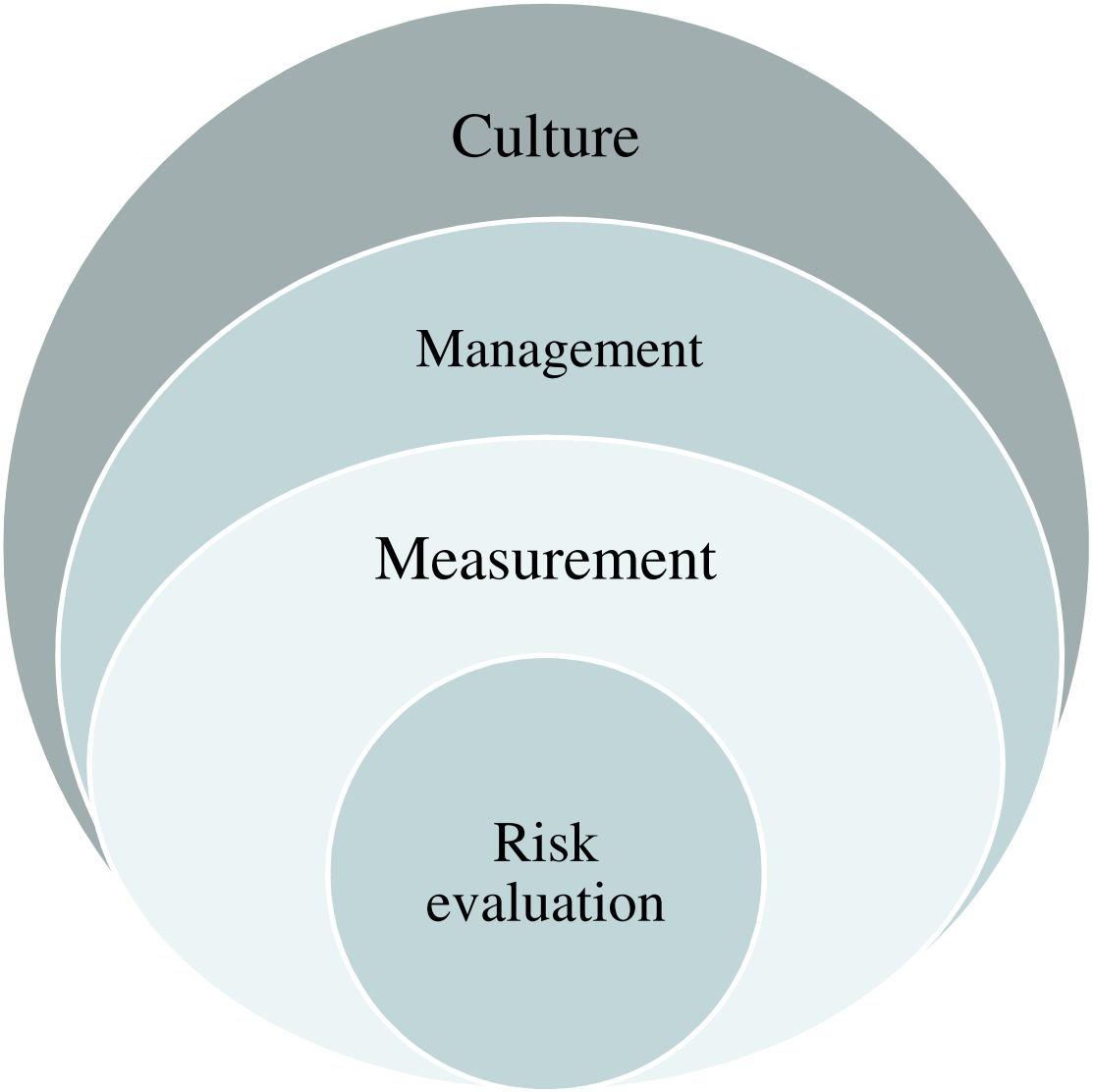
Management of the operational risk within the framework of Solvency II in Latvia is under development, since it requires risk catalogue development and loss database establishment with respect to operational risk events occurrence.

Description of the Operational Risk Management



First Stage of Operational Risk Culture Development in Baltic Insurance Company

Operational risk evaluation covers all processes, reporting and strategies procedures that should be comprised in order to identify, monitor, measure, manage and report the risks on continuous basis.



Analytical Hierarchy Process: Saaty Hierarchy Method (1)

Analytical Hierarchy Process is a theory which comprises expert evaluation measurement by means of pairwise comparisons according to derive priority scales. It is the scales that measure intangibles in relative terms.

Saaty, Thomas L.Decision Making for Leaders , RWS Publications, Pittsburgh, 2001.

Analytical Hierarchy Process: Saaty Hierarchy Method (2)

Saaty hierarchy method can be used as an important component for the risk culture development in insurance market of Latvia in a short term period. The introduced approach establish the initial process of risk evaluation in insurance companies for next 2-3 years.

Saaty, Thomas L.Decision Making for Leaders , RWS Publications, Pittsburgh, 2001.

Description of Analytical Hierarchy Process Evaluation

	Importance definition	Description
1	Equal importance	Two risks contribute equally to the objective
3	Moderate importance	Experience and judgement slightly favour one risk over another
5	Strong importance	Experience and judgement strongly favour one risk over another
7	Very strong	A risk is favoured very strongly over another; its dominance is demonstrated in practice
9	Extreme importance	The evidence favouring one risk over another is of the highest possible order of affirmation
2, 4, 6, 8	Compromise between the above values	Sometimes one needs to interpolate a compromise judgement numerically

Algorithm For Proposed Operational Risk Management Structure

Step 1	• Identify operational risk sub-risk and create risk catalogue
Step 2	• Attract the internal experts of different functions of your insurance company
Step 3	• Ask internal experts independently evaluate operational risk sub-risk, using Saati scale
Step 4	• Calculate the importance of each sub-ŗisk, using geometric mean of each
Step 5	• Check the conformity of calculated results with calculation of consistency index (*CI*), or consistency ratio (*CR*) and random index (*RI*)
Step 6	• If consistency ratio is less than 10% that you can say about the conformity of experts' view
Step 7	• If consistency ratio is more than 10% that you can say about the nonconformity of experts' view. Additional experts' evaluation is needed
Step 8	• Assess the main risk factors affecting main functions, using same experts evaluation
Step 9	• Make conclusions about main risk factors and the most important operational risk sub-risk
Step 10	• Create activity plan for operational risk possible harm elimination

Identified Operational Risk Sub-Risk

ID	Operational risk subrisk
1	Organizational risk
2	Reputational risk
3	Business disruption and system failure risk
4	Human resources risk
5	Client, products and business practices risk
6	Compliance risk
7	Execution, delivery and process management risk
8	External fraud risk
9	Information technology (IT) risk
10	Model risk

Key employees from actuarial, risk management, audit and control functions of Latvian insurance companies have participated in the survey.

Description of Experts Involved in the Survey

Competence

Actuarial function:

Not less than 2 years of professional experience

Associate and full member of Latvian actuarial association

Audit function:

Not less than two years of professional experience

Participation in external audit

To be certified internal auditor

Risk management function:

Not less than 2 years of professional experience

To be certified in assurance risk management

Control function:

Not less than 2 years of professional experience

Participation in planning process

Experts Evaluation Using Analytic Hierarchy Process

Operational risk subrisk	Operational risk subrisk										Importance
	1	2	3	4	5	6	7	8	9	10	
1.Organizational risk	1	0.5	2	0.3	0.5	1	2	2	0.3	2	0.08
2.Reputational risk	2	1	2	0.3	2	0.5	2	4	0.5	1	0.10
3.Business disruption and system failure risk	0.5	0.5	1	0.3	2	1	4	2	1	2	0.09
4.Human resources risk	4	3	4	1	4	2	5	4	0.5	4	0.23
5.Client, products and business practices risk	2	0.5	0.5	0.3	1	2	0.5	2	0.3	2	0.07
6.Compliance risk	1	2	1	0.5	0.5	1	2	2	0.3	2	0.09
7.Execution, delivery and process management risk	0.5	0.5	0.3	0.2	2	0.5	1	0.5	1	0.5	0.05
8.External fraud risk	0.5	0.3	0.5	0.3	0.5	0.5	2	1	0.3	0.5	0.04
9.Information technology (IT) risk	4	2	1	2	4	4	1	4	1	4	0.20
10.Model risk	0.5	1	0.5	0.3	0.5	0.5	2	2	0.3	1	0.06

Comparison of Pairs Using Analytic Hierarchy Method (2)

Consistency Index = 0,1463

1) Consistency Ratio = 9,82%
2) Consistency Ratio = 9,24%

1) Random Index = 1,49 (according to Saaty, Thomas L. Decision Making for Leaders , RWS Publications, Pittsburgh, 2001.)
2) Random Index = 1,584 according to the formula

Consistency ratio is less than 10% that can say about the evidence of the conformity of experts' views.

Influence of the Main Sub-Risk on Main Functions of Solvency II Regime

Audit function

- Lack of knowledge of insurance company's processes
- Lack of competence in insurance company's audit
- Lack of knowledge of Solvency II requirements
- Manual mistake in calculations
- Not appropriate education
- Management influence on audit
- High workload
- Changes in personal

Actuarial function

- High workload
- Lack of knowledge in reserving
- Lack of knowledge in profitability calculations
- Manual mistake in calculations
- Management influence on actuarial function
- Incorrect performance of Liability adequacy test
- Changes in personal
- Lack of knowledge in IT systems

Risk management function

- Management influence on risk management
- Lack of knowledge in Solvency II requirements
- Lack in competence in risk assessment and management
- Changes in personal
- Incorrect interpretation of ORSA requirements
- High workload
- Manual mistake in calculations
- Problems with time-management

Identification of Main Factors Affecting Audit Function

Audit function factors	W	P	Pi
Lack of knowledge of insurance company's processes	8%	70%	6%
Lack of competence in insurance company's audit	22%	20%	4%
Lack of knowledge of Solvency II requirements	14%	40%	6%
Manual mistake in calculations	5%	90%	5%
Not appropriate education	18%	30%	5%
Management influence on audit	4%	90%	4%
High workload	6%	70%	4%
Changes in personal	11%	30%	3%

W – importance ratio
P – probability of a risk occurrence
Pi – separate probability of a risk occurrence because of the factor

Identification of Main Factors Affecting Actuarial Function

Actuarial function factors	W	P	Pi
High workload	9%	80%	7%
Lack of knowledge in reserving	16%	50%	8%
Lack of knowledge in profitability calculations	16%	50%	8%
Manual mistake in calculations	4%	85%	3%
Management influence on actuarial function	7%	90%	6%
Incorrect performance of Liability adequacy test	11%	60%	6%
Changes in personal	18%	40%	7%
Lack of knowledge in IT systems	19%	40%	8%

W – importance ratio
P – probability of a risk occurrence
Pi – separate probability of a risk occurrence because of the factor

Identification of Main Factors Affecting Risk Management Function

Risk Management function factors	W	P	Pi
Management influence on risk management	5%	90%	4%
Lack of knowledge in Solvency II requirements	9%	60%	6%
Lack in competence in risk assessment and management	5%	80%	4%
Changes in personal	28%	40%	11%
Incorrect interpretation of the ORSA requirements	22%	40%	9%
High workload	18%	70%	13%
Manual mistake in calculations	9%	60%	5%
Problems with time-management	22%	30%	6%

W – importance ratio

P – probability of a risk occurrence

P_i – separate probability of a risk occurrence because of the factor

Main Risk Factors Affecting Solvency II Functions

Function	Factor	Evaluation
Audit function factors	Lack of knowledge of insurance company's processes	6%
	Lack of knowledge of Solvency II requirements	6%
	Manual mistake in calculations	5%
	Not appropriate education	5%
Actuarial function factors	Lack of knowledge in reserving	8%
	Lack of knowledge in profitability calculations	8%
	Lack of knowledge in IT systems	8%
Risk Management function factors	High workload	13%
	Changes in personal	11%
	Incorrect interpretation of the ORSA requirements	9%

Costs of the Operational Risk Management

Main General Conclusions (1)

- The introduced approach of the operational risk management can be used as a short-term method (for 2 years maximum) for countries with inappropriate statistical database and low level of operational risk management culture.
- The presented approach does not require any specific preparation or extra financial resources, instead, it gives the opportunity to increase the level of key employees knowledge in operational risk management.

Main General Conclusions (2)

- Cost of operational risk management involves not only budget of operational risk management, but also direct costs of insurance companies.
- The identified risk factors affecting operational risk sub-risk (human resources risk) occurrence probability is mainly connected with lack of knowledge in some fields of insurance.

Thank you!

Contact Details

Darja Stepchenko
Riga Technical University
Telephone number: +37122146683
E-mail: daria.stepchenko@gmail.com

Irina Voronova
Riga Technical University
Telephone number: +371 67089486
E-mail: irina.voronova@rtu.lv

Gaida Pettere
Riga Technical University
Telephone number: +371 29463236
E-mail: gaida@latnet.lv