

RIGA TECHNICAL UNIVERSITY
Faculty of Engineering Economics and Management
International Business and Customs Institute
Department of International Business, Transport Economics and
Logistics

Artūrs ZEPS
(Doctoral stud. ID No 09PSTUD02)

**STRATEGIC SOLUTIONS FOR SUSTAINABLE
DEVELOPMENT AND INTERNATIONAL
EXCELLENCE OF ORGANIZATIONS**

Summary of the Doctoral Thesis

Branch: Management
Sub-branch: Business Management

Scientific supervisor
Dr. habil. oec. Professor
Remigijs POČS

Scientific consultant
Dr. habil. sc. ing. Professor
Leonīds RIBICKIS

RTU Press
Riga 2016

Zeps A. Strategic Solutions for Sustainable Development and International Excellence of Organizations. Summary of the Doctoral Thesis. – R.: RTU Press, 2016. – 46 lpp.

Printed in accordance with the Decision of the Department of International Business, Transport Economics and Logistics of RTU, Faculty of Engineering Economics and Management issued on 30th March, 2016, Minutes No. 22314-2/3

ISBN 978-9934-10-847-1

**DOCTORAL THESIS
PROPOSED TO RIGA TECHNICAL UNIVERSITY
FOR THE PROMOTION TO THE SCIENTIFIC DEGREE
OF DOCTOR OF ECONOMICS**

The Promotion Thesis to qualify for the degree of Doctor of Economics of the Republic of Latvia is presented for public defense on 9th September 2016, at 10:00 o'clock at Riga Technical University, Faculty of Engineering Economics and Management, 6 Kalnciema Street, Room 309.

OFFICIAL REVIEWERS

Professor *Dr. oec.* Elīna Gaile-Sarkane.
Riga Technical University, Latvia

Professor *Dr. oec.* Andrejs Čirjevskis
RISEBA University, Latvia

Professor *Dr. oec.* Asta Savanevičiene
Kaunas University of Technology, Lithuania

DECLARATION OF ACADEMIC INTEGRITY

I hereby confirm that I have worked out this Dissertation that has been submitted for review to Riga Technical University for the promotion to the degree of Doctor of Economics (*Dr. oec.*). This dissertation has not been submitted to any other university in order to receive any scientific degree.

Artūrs Zeps(Signature)

Datums:

The Doctoral dissertation is written in English, and consist of an introduction, four parts, conclusions and recommendations, literature review, 6 annexes, 21 table, 47 figures and 8 formulas, the total page count is 165. The Bibliography contains 171 references.

GENERAL REVIEW

Strategy for an organization is a guideline that sets the path for development in the future and allocates measurable targets to afterwards diagnose whether the objectives have been met. Many organizations fail to use strategy as a tool to plan their future or implement just the first part of strategic planning – develop the strategy, disregarding the implementation part. Thus, it is possible to create a strategy that is not implementable, moreover, employees do not gain any benefits. In such a way from the beginning the document that is destined to fail is created. Many managers in retrospect think what was wrong and why the strategy did not work and help their organizations to grow. This highlights the importance of considering both correct strategy development process and well-considered strategy implementation from the beginning of the planning process.

To develop a strategy, organizations must think not only about the process itself, but also about many different factors that can and will affect the result. Such factors are involvement of employees from the beginning, defining clear and measurable tasks and many more. Thus, the process of strategy development must be well managed and guided. If the management fails to do that, the newly developed strategy document will be just another forecast or regulation with no real substantiation or tools for implementation.

In addition, if an organization does not think about proper strategy implementation process, everything that has been done in the process of strategy development will be meaningless. Management has to introduce tools, incentives and procedures to regulate and motivate implementation of the strategy. The process of bringing the strategy to life might be more challenging than previously considered. Management for reaching sustainable development of the organization has to control the implementation process and adjust the strategy if necessary.

Strategy as a path for development is important for all kinds of organizations. However, there is one kind of organizations that in the recent years have experienced a dramatic change in the scope of market and faced the challenge of internationalization, which are in urgent need of a clear strategy. These organizations are universities. They act autonomously, thus they are able to plan their budget and strategy on their own, but are strongly influenced by the governmental regulations and funding. Still, for many universities becoming international and reaching excellence in this field remains a challenge, since students that live in the respective country are no more tied to the universities of that country, they can study anywhere in the world. Additionally, in many countries, as well as in Latvia, the number of local students decreases because of the bad demographic situation. These are just few challenges that have to be faced by universities due to the changes in local and international environment. Therefore, the only solution for universities is to plan their development, follow the global market and benchmark themselves not only locally, but also internationally or at least regionally and define clear competitive advantages and development path through strategy.

There is no general strategy development methodology universities can use, especially if they are specialized in some specific niche, for example, research and innovation universities. Of course, universities can apply strategy development and implementation methodology used by business organizations. However, universities are different from business companies – they have their own autonomy, academic and scientific personnel play a major role in decision making and they are primarily not profit oriented. Universities need to apply specific practices in strategic planning and

implementation process tailored for the needs of higher education institutions. Many authors have analyzed different elements and phases of strategic planning as well as looked into the setting of internal structures and creation of incentives for university personnel to foster implementation of strategic planning, but the problem is that there are is common methodology of strategy creation and implementation with detailed description of elements that should be taken into account throughout the entire process.

The present Doctoral Thesis provides solution to the issue topical for many organizations – how to create and implement the strategy. It analyzes the process and factors that affect the result and provides suggestions on how to structure the strategy development path. On top of that, the Doctoral Thesis provides analysis of the rapidly changing environment in which higher education institutions operate and discusses in detail specific factors and challenges in strategy development and implementation process that the university has to deal with.

The aim of the Doctoral Thesis is to create a methodology for strategy development and implementation that could be applied at different organizations to improve organization's long-term development and promote international excellence and to approbate it on the example of a higher education institution.

The tasks of the Doctoral Thesis are:

- Explore the process of strategy development and implementation in organizations and define the most important factors affecting this process;
- Analyze the practical experience of strategy development and implementation in Latvian organizations;
- Elaborate the strategy development process in universities, defining prerequisites for establishing the strategic settings to reach sustainable development and international excellence;
- Create a methodology for strategy development and implementation for research and innovation universities, incorporating meaningful factors that influence the process and define approaches how to enforce positive outcome from these factors;
- Approbate the strategy development and implementation methodology within Riga Technical University.

The Object of the Doctoral Thesis is organizations that utilize strategic planning in their development, are eager to create strategy with clear implementation tools and sets processes according to the targets.

The Subject of the Doctoral Thesis is a strategy development and implementation process in organizations.

Research Limitations and Constrains. Within the scope of the Doctoral Thesis, the main focus was made on analyzing strategy development and implementation process at the universities. Theoretical and practical analysis and survey of large and medium-sized Latvian organizations covered different types of legal entities. The lessons learned through the survey were transformed to the environment of Baltic research and innovation universities and approaches to strategy implementation and control mechanisms were employed to approbate strategy implementation process at Riga Technical University.

Theoretical Framework of the Research. Overview of literature by Latvian and foreign authors on strategic management and planning. Applied qualitative systematic review of theories on strategy development. The theoretical and methodological

framework of the research is based on the works of such authors as *Andrew S. G., Birnbaum B., Blahová M., Blakely G.L., Borkus I., Caune J., Charles W.L.H., Christensen C. M., Collins J. Piana D. L., Collins, J. C., Courtney H., Donovan T., Doran G. T., Dzedons A., Enz C.A., Gaile-Sarkane E., Gareth R. J., Gareth R.J., Grover R.A., Hamel G., Hax A. C., Higgins, J.M., Johnson G., Kaplan R.S., Kirkland. J., Knápková A., Knox A.B., Lane M. S., Lapina I., Majluf N. S., Martinec C. L., McBride P.E., Mejicano G.C., Mintzberg H., Niehoff B.P., Norton D.P., Ozolins M., Porras, J. I., Porter M. E., Prahalad C.K., Rumelt R. P., Underbaake G., Vincent M.* and others.

Methodological Framework of the Research. Within this Doctoral Thesis, the author applied such qualitative, quantitative and mixed research methods as mathematical and statistical data analysis, factor analysis, general linear model ANOVA analysis and other methods of economic science. Additionally, research of the data from the survey on strategy development process and usage of strategic planning in Latvian organizations was used to gain data on strategy implementation in the organizations. Expert method was utilized and focus group interviews organized to gain insights in the strategy development process from the perspective of different level Latvian organization managers.

Scientific Novelty of the work:

- Comprehensive literature analysis on different approaches to strategy creation and implementation, as well as factors that influence strategic planning and strategy implementation process;
- Strategy development and implementation practice in Latvia based on surveyed large and medium Latvian organizations has been evaluated;
- The process of applying the concept of sustainable development and valorization to the strategy of the university has been introduced;
- Process description for choosing the appropriate typology of the university has been developed;
- Comparison of strategies of 4 Baltic research and innovation universities has been made;
- The methodology for strategy development and implementation for research and innovation universities has been developed, defining the strategy adjustment process and setting incentives within the organization;
- Based on the settings of the university's management and employee contribution the strategy and action plan for Riga Technical University have been created.

Hypothesis. Methodology of strategy development and implementation is crucially important to establish and implement the strategy of a university adjusting internal processes, governance and structure as well as introducing appropriate control mechanisms and incentives.

Thesis Statements:

- Successful development of a strategy and higher motivation during the implementation phase can be achieved if employees are involved in the process of strategic planning;
- Clear formulation of mission, vision and targets and development of an action plan with detailed tasks for the units, expected results and deadlines are crucial for strategy to be successful;
- Following the change of external factors and establishment of performance based financial system along with regularly performed control over targets and tasks can increase effectiveness of strategy implementation;

- Appropriate methodology should be applied to create a strategy for research and innovation universities and ensure effective implementation process.

The Approbation and Practical Use of Research Results. The theoretical and practical results of the research were presented at the Advisory Council of RTU during the meetings with representatives of the Parliament of Latvia and the Ministry of Education and Science, as well discussed in Latvia and other countries at the conferences and confirmed with the publications in the scientific editions. Results of the research were approbated in Riga Technical University, Employers' Confederation of Latvia, RTU Cesis Affiliation, RTU Development Fund and RTU Alumni Association during strategy development and implementation process in these organizations, as well within the project "EU Policies Impact to the Transformations of the Higher Education and Research System in Norway and Latvia." Research results were discussed in Latvia and other countries during scientific conferences and published within various scientific journals and proceedings.

Publications:

- Zeps, A., Iljins, J., Ribickis, L. Increasing potential of valorization in technical Universities through internationalisation. In: The 7th International Multi-Conference on Complexity, Informatics and Cybernetics Proceedings Volume I, United States of America, Orlando, 8–11 March, 2016. Orlando: 2016, 216–220.
- Zeps, A., Ribickis, L. Setting Innovations as a Strategic Aim for Technical Universities. *Journal of Business and Economics*, 2016, Issue No. 3. ISSN 2155-7950.
- Zeps, A., Ribickis, L. Strategy development and implementation – process and factors influencing the result: Case study of Latvian organizations. *Procedia – Social and Behavioral Sciences*, 2015, Volume 213, pp. 931–937. ISSN 1877-0428. Available from: doi:10.1016/j.sbspro.2015.11.507.
- Zeps, A., Ribickis, L. Strategy Development Process in Higher Education Institutions. In: 8th International Scientific Conference "Business and Management 2014": Proceedings, Lithuania, Vilnius, 15–16 May, 2014. Vilnius: 2014, pp. 727–734. ISBN 978-609-457-652-2. e-ISBN 978-609-457-651-5. ISSN 2029-4441. e-ISSN 2029-929X.
- Zeps, A., Ribickis, L. Development of Research and Innovation University in Latvia. In: Proceedings of the 55th International Scientific Conference of Daugavpils University, Latvia, Daugavpils, 10–12 April, 2013. Daugavpils: Akadēmiskais apgāds „Saule”, 2014, pp. 394–401. ISBN 978-9984-14-665-2.
- Zeps, A. Process and Importance of Setting a Sustainable Development as a Strategic Target for Technical Universities. In: 5th International Scientific Conference "Management of Technology Step to Sustainable Production": Book of Abstracts, Croatia, Novi Vinodolski, 29–31 May, 2013. Zagreb: Croatian Association for PLM, 2013, pp.61. ISSN 1848-9591.
- Zeps, A., Ribickis, L. Development of Research and Innovation University in Latvia. No: Abstracts of 55th International Scientific Conference of Daugavpils University, Latvija, Daugavpils, April 10–12, 2013. Daugavpils: Daugavpils University, 2013, pp. 96. ISBN 978-9984-14-612-6.
- Ribickis, L., Zeps, A. 3rd Generation University's Role in Creating Talents for Country's Development. No: Proceedings of the Euro-Asia Economic Forum 2013 (EAEF 2013), Ķīna, Xian Quijang, September 26–28, 2013. Xian Quijang: 2013, pp. 210.

- Ribickis, L., Zeps, A. Role of Advisory Council in Developing Competitive Technological Universities. *Baltic Rim Economies, Quarterly Review*, 2013, No. 7, pp. 22. ISSN 1459-9759.

Conferences:

- The 7th International Multi-Conference “On Complexity, Informatics and Cybernetics: IMCIC 2016”, 2016, March 8–11, Orlando, Florida, USA, paper “Increasing Potential of Valorization in Technical Universities through Internationalization”
- The 20th International Scientific Conference “Economics and Management 2015, ICEM” 2015, May 6–8, 2015, Kaunas, Lithuania, paper “Strategy development and implementation – process and factors influencing the result: Case study of Latvian organizations”
- Vilnius Gediminas Technical University, the 8th International Scientific Conference “Business and Management 2014”, May 15–16, 2014, Vilnius, Lithuania, paper “Strategy development process in Higher education institutions”.
- Euro-Asia Economic Forum 2013 conference “From Concrete Collaborations to Mutual Booming”, September 26–28, 2013, Xian, China, paper “3rd Generation University's Role in Creating Talents for Country's Development”
- University of Zagreb, the 5th International Scientific Conference “Management of Technology – Step to Sustainable Production”, May 29–31, 2013, Novi Vinodolski, Croatia, paper “Process and importance of setting a sustainable development as a strategic target for technical Universities”.
- Baltic Management Development Association, the 11th Annual Conference “The Role of Management Empowering Innovations and Creativity”, May 9–10, 2013, Lithuania, paper “Developing University’s strategy to foster innovations and creativity”.
- Daugavpils University, the 55th International Scientific Conference, April 10–12, 2013, Daugavpils, Latvia, paper “Development of research and Innovation University in Latvia”.

The Content and Volume of the Doctoral Thesis. The Thesis consists of four chapters:

- 1. Theoretical Aspects of Strategy Development and Implementation;**
- 2. Evaluation of Strategy Development and Implementation in Latvian Organizations;**
- 3. Strategy Development and Implementation in Universities;**
- 4. Strategy Development Process for Research and Innovation Universities.**

The volume of the Thesis is 165 pages, not including appendixes. The thesis contains 21 tables, 47 figures and 8 formulas, as well as 6 appendixes that explain and illustrate the content of the research. In the process of elaboration of the paper 171 bibliographic sources and Internet resources have been used, all information sources are listed in the bibliography.

In Chapter 1 the author of the Doctoral Thesis performs theoretical analysis of strategy development and implementation process elaborating the process elements and significance of different strategy constituents. The author of the Doctoral Thesis also provides analysis of theoretical research done by different authors on most important strategy development and implementation elements.

In Chapter 2 analysis of the survey data done by the author of the Doctoral Thesis indicates factors influencing strategy development and implementation, summarizing the most commonly used elements of strategy documents in the Latvian companies. Based on the survey results, various strategy creation and implementation practices used by different types of organizations are defined.

In Chapter 3 the author of the Doctoral Thesis analyzes the theory of strategy development process in higher education institutions. Examples of the application of university development concepts within the strategy are provided. The author explores the possibility of creating a research and innovation university in Latvia.

In Chapter 4 the author of the Doctoral Thesis describes the methodology of strategy creation and implementation process for research and innovation universities and provides analysis of control mechanism developed for strategy implementation and offers strategy adjustment approaches according to the internal and external factors. The fourth part also contains assessment of the developed methodology of strategy development and implementation approbated at Riga Technical University.

In the final section of the Doctoral Thesis the most important conclusions obtained as the result of research as well as proposals are presented.

MOST RELEVANT SCIENTIFIC RESULTS OF THE RESERACH

1. THEORETICAL ASPECTS OF STRATEGY DEVELOPMENT AND IMPLEMENTATION

Strategy is the path through which organization plans to achieve excellence and reach certain goals in further development. Some organizations just try to define their competitive advantages, while others apply full spectrum of strategic tools. Finding organization’s niche, defining long-term objectives and tasks along with the allocation of necessary resources is the process of setting the strategic priorities. Through the implementation of the strategy an organization can find new ideas to improve its already existing chosen path in future.

Another important element that helps in the process of strategic planning is application of appropriate management theory. There are three core management theories that could be applied to strategic planning process – classical management theory, neoclassical management theory and modern management theory.

By defining the appropriate management theory, the organization can set the base lines for the whole strategy development process, since management theory defines the main focus of the organization– structures and strict responsibilities, employees and internal motivation or both elements will be balanced and equally important.

Porter states that competitive strategy is about being different.¹ That means that to create a strategy organizations first have to state where will their difference from other competitors be and create a niche. In order to analyze, which factors are crucial in strategy development process, the author of the Doctoral Thesis gathered opinions of different authors regarding strategy development process. Summary of the factors that were mentioned to be the most important in the strategy development process can be seen in Table 1.1.

Table 1.1. Main factors that influence strategy development process

(Source: Compiled by the author)

Author \ Factor	Formulated vision	Formulated mission	Formulated values	Analysis of internal and external environment	Analysis of strengths and weaknesses	Analysis of customer needs	Definition of competitive advantages	Employee involvement	Synergy between boards and executives	Developed action plan for strategy implementation	Effective leadership in strategy development
1	2	3	4	5	6	7	8	9	10	11	12
Blakely Gerald L., Martinec Cindy Lee, Lane Michael S. ²											×
Bryant Adam ³										×	
Collins Jim, Piana David L. ⁴	×	×	×	×			×				

¹ Porter M. E., What Is Strategy? Harvard Business Review, November–December 1996, 2–22

² Blakely G.L., Martinec C. L., Lane M. S., Management development programs: the effects of management level and corporate strategy, Human Resource Development Quarterly, Spring 1994

³ Bryant A., The challenge of creating a unified organizational strategy, The New York Times, July 12, 2013

⁴ Collins J. Piana D. L., Strategy development is a process, not a retreat, Nelson Strategic Consulting, January 13, 2015

Table 1.1. continued

1	2	3	4	5	6	7	8	9	10	11	12
Christensen Clayton M., Donovan Tara ⁵				×	×	×					
Edinger Scott ⁶										×	
Fawcett Stephen B., Negy Jenette ⁷	×	×		×				×			
French Wendell ⁸				×	×	×				×	
Greenstein Gail, Plunkett Daniel, Street Nancy ⁹		×								×	
Guillot Pete ¹⁰				×	×					×	
Ingley Coral, Mowbray Denis ¹¹									×		
Kaplan Robert S., Norton David P. ¹²						×				×	
Knox Alan B., McBride Patrick E., Mejicano George C., Underbaake Gail ¹³										×	×
Mintzberg Henry ¹⁴				×	×	×	×		×		×
Porter Michael E. ¹⁵							×			×	×
Radomska Joanna ¹⁶				×	×						
Rains Juliet, Williams T. Craig ¹⁷	×	×								×	
Rumelt Richard P. ¹⁸	×	×								×	
Vincent Mark ¹⁹				×	×			×			
TOTAL	4	5	1	8	6	4	3	2	2	10	4

Based on the results of the analysis seen in Table 1.1., it can be concluded that the **developed action plan for strategy implementation** is the most crucial factor in the strategy creation process. The next factors most often mentioned by the authors include **analysis of internal and external environment and analysis of strengths and weaknesses**. Although the majority of authors indicate that during strategy development process it is crucial to analyze the internal and external environment, determine the strengths, weaknesses, opportunities and threats, as well as to create an appropriate action plan, strategy creation process is much more complicated.

Based on the conclusions of the author of the Doctoral Thesis concerning the analysis of elements that should be included in the strategy development process and the analysis of factors that influence strategy development process it is possible to accordingly adjust the sequence of strategy development process initially created by Jones and Hill as it can be seen in Figure 1.1.

⁵ Christensen C. M., Donovan T., The process of strategy development and implementation, Harvard Business School Working Paper, No. 00-075, April, 2000.

⁶ Edinger S., Three Cs of implementing strategy, The Forbes, 2012.

⁷ Fawcett S.B., Negy J., Developing successful strategies: Planning to win, The Community Tool Box, 1996.

⁸ French W., Organization development objectives, assumptions and strategies, California Management Review, winter, 1969, 23–34.

⁹ Greenstein G., Plunkett D., Street N., A strategy for success: performance-based human resource development, Human Resource Planning, 1994, 43–61.

¹⁰ Guillot P., Strategy development process – good decisions are more important than great ideas, Centerfirst Consulting LLC, October 29, 2013.

¹¹ Ingley C., Mowbray D., Collaboration or confrontation: The characteristics of the board and executive that can influence strategy development, 3rd Annual International Conference on Business Strategy and Organizational Behaviour, 2013, 160–166.

¹² Kaplan R.S., Norton D.P., Having trouble with your strategy? Then map it, Harvard Business Review, September–October 2000, 167–176.

¹³ Knox A.B., McBride P.E., Mejicano G.C., Underbaake G., Organization Development Strategies for Continuing Medical Education, The Journal of Continuing Education in the Health Professions, 2001, 15–23.

¹⁴ Mintzberg H., Strategy-Making in Three Modes, California Management Review winter, 1973

¹⁵ Porter M.E., From competitive advantage to corporate strategy, The McKINSEY quarterly, 1988, 35–66.

¹⁶ Radomska J. Operational risk associated with the strategy implementation, Management, 2014

¹⁷ Rains J., Williams T.C., Linking strategy to structure: the power of systematic organization design, Organization Development Journal, Summer, 2007, 163–170.

¹⁸ Rumelt R. P., Evaluation of strategy: theory and models, Business Policy and Strategic Management. 3rd edition. New York: McGraw-Hill, 1980.

¹⁹ Vincent M., Ten attributes of an effective strategy development process, Strategic Planning Insight Plus, 2015.

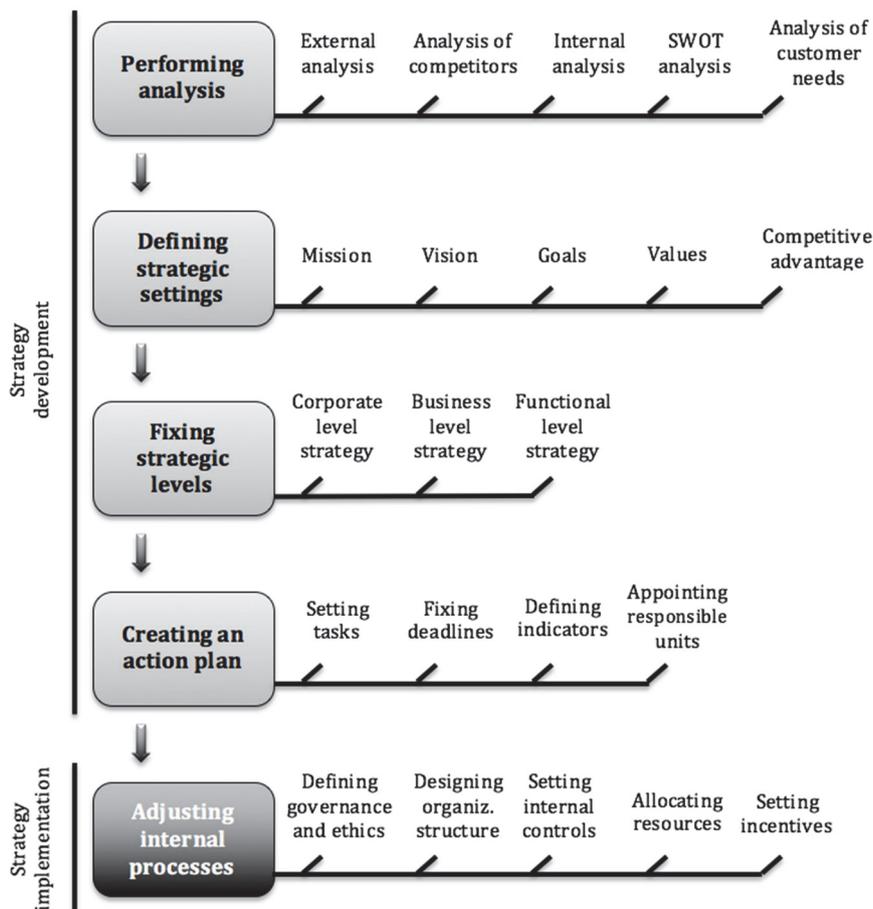


Figure 1.1. Strategy development and implementation process²⁰
(Adjusted by the author)

Blahova and Knapkova underline that organization's strategy cannot consist only from descriptions and framed mission statements.²¹ Organizations should start with strategic analysis and first perform external analysis.

Organization's external environment can be analyzed by evaluating the competition, industry and the general or external macro-environment and analysis of this kind is illustrated in Figure 1.2.

Elements of **analysis of competitors** are defined by Porter's Six Principles. According to Porter, there are six forces that shape the industry competition – rivalry among existing competitors, threat of new entrants, bargaining power of suppliers, threat of substitute products or services and bargaining power of buyers.²² Analysis of these six forces is crucial for creating a strategy and positioning an organization among rivals.

Analyzing the internal environment, it is possible to identify the organization's strengths and weaknesses, which most directly refer to a competitive advantage.

²⁰ Jones G. R., Hill C.E.L. Theory of Strategic Management with cases, 9th edition, 2010, 454.

²¹ Blahová M, Knápková A., Effective Strategic Action: From Formulation to Implementation, 2010. International Conference on Economics, Business and Management, 2011.

²² Porter M. E., The Five Competitive Forces That Shape Strategy, Harvard Business Review, January, 2008, 78–93.



Figure 1.2. Model of analyzing the external environment^{23 24 25}
(Adjusted by the author)

After internal and external analysis, the organization can perform **SWOT analysis**, defining organization's existing strengths and weakness and emerging opportunities and worrisome threats from external environment.²⁶

It is important to pay attention to the correct structure of the strategy. Management together with employees should find the answers to all general questions they will have to face during the strategy implementation process.

Stating mission and vision. For organization mission and vision statements answer the most important existence and guidance questions. Mission answers the fundamental question why an organization exists.²⁷ It is a brief, typically one-sentence, statement that defines fundamental purpose of the organization²⁸.

Vision meanwhile defines what the organization's preferred future is.²⁹ Vision must energize people by connecting them to the purpose of the organization and provide a basis for the strategy.²⁸

Setting goals. Strategy must have goals that are objectives and initiatives linked with performance metrics. The major goals are included in the core strategy document, but wider explanation can be defined in the operational plan.³⁰ The goal of the organization is the tool through which the aim is defined as the target for a specific period of time. Within the strategy itself, organizations tend to set 3-5 clear goals that will determine if the strategy is successful in a certain period. All other detailed plans in most cases are defined within the action plan.

²³ Jones G. R., Hill C.E.L. Essentials of Strategic Management. Third Edition, 2011, 74–77.

²⁴ Porter M. E., "The Five Competitive Forces That Shape Strategy", Harvard Business Review, January, 2008, 78–93.

²⁵ Jones G. R., Hill C.E.L. Strategic Management: An Integrated Approach, 2012, 64–68.

²⁶ Kaplan R.S., Norton D.P., Barrows Jr. E.A., developing the Strategy: Vision, value Gaps, and Analysis, Balanced Scorecard Report, January–February, 2008.

²⁷ Lipton M., Demystifying the Development of an Organizational Vision, Sloan Management Review; Summer, 1996, 83.

²⁸ Kaplan R.S., Norton D.P., Barrows Jr. E.A., developing the Strategy: Vision, value Gaps, and Analysis, Balanced Scorecard Report, January–February, 2008.

²⁹ Foursight Consulting Group Inc., Quick reference to creating vision, mission & value statements, Tayside Vision, Mission, & Values Workshop, April, 2006.

³⁰ Kaplan R.S., Norton D.P. Mastering the Management System, Harvard Business Review, January, 2008.

Defining values. Values identify what the organization is and what it stands for.³¹ Thus meaningful values can help organization to make the appropriate decision based on the strategy when it is either uncertain about certain things or has problems in strategy implementation process.

Defining the competitive advantage. Defining the competitive advantage is an important task for any organization that wants to excel in the market it works in. This advantage is important for defining how the organization sees its advantages against other competitors in the market and how organization defines its business by analyzing customer needs, customer groups and defines distinctive competences.

Fixing strategic levels. For organization to set the strategy across all the levels and functions of organization according to the mission, vision and goals, it has to set corporate, business and functional level strategies.

Corporate-level strategy defines the industries organization should operate in. This strategy sets specific actions an organization takes to gain a competitive advantage by selecting and managing a portfolio of businesses that compete in different product markets or industries.

Business level strategy defines the competitive advantages of the organization and its products and shows how the organization will compete in the market. Organizations might choose appropriate business level strategies to defend their desired strategic position against rivals.

Functional level strategy defines organization's marketing, finance and human resources and other strategies and applies value chain to define how process will be organized.³² Organization must define all of these strategies to overlay the whole scope of functional level strategy. All these strategies reflect the organization's activities.

Creating an action plan. Action plan is a document that incorporates operational strategy, setting the targets and tasks for all units of the organization. It is created when the analysis of environment has been performed, strategic settings are defined and strategic level strategies are fixed. Action plan states how the organization will implement its goals, by defining clear step-by-step tasks, setting the responsible units for the results and allocating deadlines.

Evaluation of factors influencing strategy implementation. For strategy to be successful organization must set its internal systems and procedures to control the overall implementation of the strategy. Careful and planned approach to execution is important for successful strategy implementation, and that factor is the main reason why nowadays organizations fail the most.³³

In order to analyze, which factors are crucial in strategy implementation process, the author of the Doctoral Thesis analyzed opinions of different authors regarding strategy development process. Conclusions can be seen in Table 1.2.

³¹ Foursight Consulting Group Inc., Quick reference to creating vision, mission & value statements, Tayside Vision, Mission, & Values Workshop, April, 2006.

³² Jones G. R., Hill C.E.L., Theory of Strategic Management with cases. 9th edition, 2010, 454.

³³ Blahová M, Knápková A., Effective Strategic Action: From Formulation to Implementation, 2010 International Conference on Economics, Business and Management IPEDR vol.2, 2011.

Table 1.2. Main factors that influence strategy implementation process
(Source: Compiled by the author)

Author	Factor	Communication of the strategy within the organization	Supporting organization design	Having strong planning team	Periodical update of the strategy	Regular monitoring of set indicators	Strategy fitting resources and opportunities	Supporting internal processes	Aligning with performance systems (PM, compensation)
1	2	3	4	5	6	7	8	9	
Bryant Adam ³⁴	×								
Christensen Clayton M., Donovan Tara ³⁵						×			
Desroches Denis, Hatch Toby, Lawson Raef ³⁶	×		×		×	×		×	
Eden Colin ³⁷			×						
Edinger Scott ³⁸	×								
Fawcett Stephen B., Negy Jenette ³⁹				×		×			
French Wendell ⁴⁰			×						
Greenstein Gail, Plunkett Daniel, Street Nancy ⁴¹	×							×	
Guillot Pete ⁴²						×			
Kaplan Robert S., Norton David P. ⁴³						×	×		
Kno× Alan B., McBride Patrick E., Mejicano George C., Underbaake Gail ⁴⁴			×			×			
Mintzberg Henry ⁴⁵			×	×					
Porter Michael E. ⁴⁶		×				×			
Radomska Joanna ⁴⁷					×				
Rains Juliet, Williams T.Craig ⁴⁸	×	×		×	×	×	×	×	
Rumelt Richard P. ⁴⁹						×			
Vincent Mark ⁵⁰			×			×			
TOTAL	5	2	6	3	3	10	2	3	

As Table 1.2 indicates, the most important factor during the strategy implementation process as mentioned by the majority of authors is that **strategy should fit resources and opportunities**. Equally important factors during strategy

- ³⁴ Bryant A., The challenge of creating a unified organizational strategy, The New York Times, July 12, 2013.
- ³⁵ Christensen C. M., Donovan T., The process of strategy development and implementation, Harvard Business School Working Paper, No. 00-075, April, 2000.
- ³⁶ Desroches D., Hatch T., Lawson R., Are 90% of organizations still failing to execute on strategy?, 2014, 61–67.
- ³⁷ Eden C., Strategy development as a social process, Journal of Management Studies, November, 1992, 709–811.
- ³⁸ Edinger S., Three Cs of implementing strategy, The Forbes, 2012.
- ³⁹ Fawcett S.B., Negy J., Developing successful strategies: Planning to win, The Community Tool Box, 1996.
- ⁴⁰ French W., Organization development objectives, assumptions and strategies, California Management Review, winter, 1969, 23–34.
- ⁴¹ Greenstein G., Plunkett D., Street N., A strategy for success: performance-based human resource development, Human Resource Planning, 1994, 43–61.
- ⁴² Guillot P., Strategy development process - good decisions are more important than great ideas, October 29, 2013.
- ⁴³ Kaplan R.S., Norton D.P., Having trouble with your strategy? Then map it, Harvard Business Review, September-October, 2000, 167–176.
- ⁴⁴ Knox A.B., McBride P.E., Mejicano G.C., Underbaake G., Organization Development Strategies for Continuing Medical Education, The Journal of Continuing Education in the Health Professions, 2001, 15–23.
- ⁴⁵ Mintzberg H., Strategy-Making in Three Modes, California Management Review winter, 1973.
- ⁴⁶ Porter M.E., From competitive advantage to corporate strategy, The McKINSEY quarterly 1988, 35–66
- ⁴⁷ Radomska J. Operational risk associated with the strategy implementation, Management, 2014.
- ⁴⁸ Rains J., Williams T.C., Linking strategy to structure: the power of systematic organization design, Organization Development Journal, Summer, 2007, 163–170.
- ⁴⁹ Rumelt R. P., Evaluation of strategy: theory and models, Business Policy and Strategic Management. 3rd edition, 1980.
- ⁵⁰ Vincent M., Ten attributes of an effective strategy development process, Strategic Planning Insight Plus, 2015.

implementation process are **having strong planning team** and **communication of the strategy**.

Management must also think of other factors that are vital for successful strategy implementation, such as **defining governance and ethics and adjusting organizational structure**. These factors will allow management to control and overview the strategy development process.

Defining governance and ethics and designing organizational structure. Governance is the system by which business corporations are directed and controlled, it is a set of processes, customs, policies, laws, and institutions affecting the way an organization is directed, administered or controlled. Ethics is an element of governance in organization that can be spotted from the beginning; it sets internal ecosystem. It aims at inculcating a sense within a company's employee population of how to conduct business responsibly.⁵¹ The appropriate structure is the tool for implementing the strategy. If an organization does not have a structure that fits its strategy, it will fail in implementing that or waste a lot of resources in trying to do the right things in the wrong way.

Establishing organizational controls, allocating resources and setting incentives. Organization must develop a control mechanism for strategy implementation to spot the deviations from the set targets. If management lacks such mechanism, then it has no power over strategy. It is important to constantly receive data based on the indicators set in the strategy and develop a system how the tasks are cascaded.

One of the most important factors during strategy implementation process is strategy fitting resources and opportunities. If the employees lack the needed resources, organization will not meet its targets and will either fail the strategy or will face the need to downgrade the expected results.

It is extremely important to assure effective implementation of the strategy by setting appropriate incentives. This can be achieved by linking strategic targets with the performance management system and compensation system.

Problems in strategy implementation process. Problems with the strategy implementation process may arise due to different reasons. Some organizations may face problems due to the process of implementation itself, others because of the change in internal or external environment.

Problems caused by incorrect process of strategy implementation may arise if the management does not constantly measure the results. Problems with strategy execution process can also arise if organizations senior management behavior is inconsistent with the vision and strategy.⁵² If the strategy is not followed by the management or constantly changed without any proper procedure or explanation, employees will no longer consider a strategy as a binding document and will tend to disregard the settings defined within it.

Role of management. In the strategy development phase as well as throughout its implementation, the management of the organization plays an important role, not only in setting up the strategy, but also in involving the employees of the company to become a part of the strategy development team. Senior management of the

⁵¹ Hurst N. E. Corporate Ethics, Governance and Social Responsibility: Comparing European Business Practices to those in the United States, 2004, Accessed online: http://www.scu.edu/ethics/publications/submitted/hurst/comparative_study.pdf

⁵² Lipton M., Demystifying the Development of an Organizational Vision, Sloan Management Review, Summer, 1996, 83.

organization has a significant role in setting and implementing the strategy. It is responsible not only for defining and communicating the strategy across all levels of the organization, but also for providing the discipline to decide which industry changes and customer needs the company will respond to.⁵³

Management is responsible for developing and sharing the vision, encouraging innovativeness, supporting employee efforts and involving employees in decision-making process. These activities are important for successful execution of the strategy and increase employee commitment, improve productivity and eliminate role ambiguity.⁵⁴

2. EVALUATION OF PRACTICAL DEVELOPMENT AND IMPLEMENTATION OF THE STRATEGY

In this section, the author has provided the results of analysis of practical development and implementation of the strategy in Latvian organizations that allows them reaching sustainable development, as well as describes the applied methodology used for the research.

Methodology of evolution of practical development and implementation of the strategy. In order to evaluate practical strategy development and implementation, survey method was applied for the purpose of the research. The aim of the survey was to gain additional information to supplement the methodology of strategy development and implementation, determine the most important factors, which have the impact on strategic planning, and practices applied during strategy implementation, as well to clarify, what are the key elements organizations practically apply to reach the desired goals set in the strategy.

Prior to the creation of survey, an analysis of strategy creation process was done by implementing focus group discussion and expert method. This allowed gaining expertise regarding the strategy development and commonly used practices in improving the strategy implementation process.

Total number of respondents that participated in the survey constituted 263 persons. Survey was implemented through January to April, 2015. Dissemination of the questionnaire was individual and the sample was targeted.

Analysis of the survey results. Based on the descriptive statistics of the survey it can be concluded that 91 % of all organizations have a written strategy. Regarding the accessibility of the strategy, organizations in Latvia tend to inform their employees on their strategic aims rather widely - for 82 % of all organizations strategy is accessible to employees, but regarding partners and clients organizations tend to reveal strategy only partly – only for 46 % of all organizations the strategy is accessible to clients and partners and it is available partly. 51 % of organizations organize yearly strategic management retreats, while 38 % tend to discuss strategic aims during management meetings. 61 % of organizations financially stimulate units and employees for achieving targets and tasks set in the strategy action plan, while almost a half – 48 % – have linked targets and tasks with organization performance management and compensation system.

⁵³ Porter M. E., What Is Strategy? Harvard Business Review, November–December, 1996, 2–22

⁵⁴ Niehoff B.P., Enz C.A., Grover R.A., The Impact of Top-Management Actions on Employee Attitudes and Perceptions, Group Organization Management Journal. September, 1990, 337–352

64 % of organizations create an activity plan with detailed description of strategic targets and tasks for all structural units. Organizations tend to overview the results set in the activity plan once a year (60 % of all organizations).

The average length for strategic planning in organizations in Latvia is 3–5 years, but the majority of organizations tend to overview strategic plans during the period they are in force. 35 % of organizations overview strategic plans regularly, but 40 % of organizations review strategic plans only in case change of external forces is observed. 51 % of organizations involve employees in the strategy development process, while 21 % of organizations involve employees in strategy development only partly. And for 9 % of all organizations strategy is developed by outside consultants based on management-defined settings.

Majority of Latvian organizations tend to evaluate their organization’s development strategy implementation in the real life as efficient (29 %) and as an average efficient (59 %).

When asked, which factors promote implementation of the strategy and set targets and tasks the most, managers mentioned precise formulation of mission, vision and targets (63 % of the organizations), regular control of targets and tasks set in the strategy action plan (52 %), development of detailed strategy action plan (45 %); while availability of the strategy for all employees of the organization (12 %) and as wide as possible employee involvement in the development of the strategy (13 %) were mentioned as the least popular factors (Figure 2.1.). Managers tend to underestimate the need to involve employees and regularly inform them about current events. This might serve well if everything goes as planned, but might cause trouble if organization is in danger and employees in their responsibility areas need to make decisions of their own.

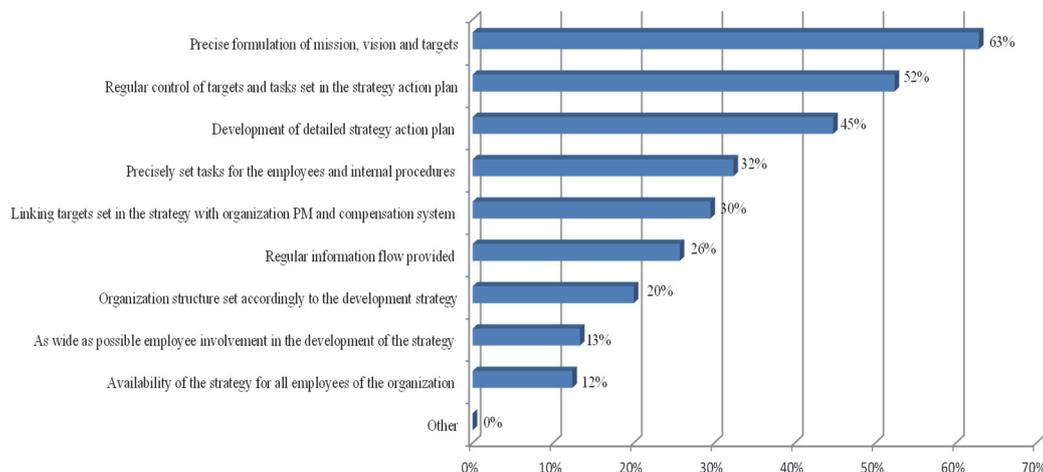


Figure 2.1. Factors, which promote implementation of the strategy and set targets and tasks the most

To explore implicit interactions between the results gained by means of the survey, the factor analysis and ANOVA analysis based on GLM procedure were performed.

Evaluation of the results based on factor analysis and GLM ANOVA analysis methods. To perform the factor analysis all questions were encoded and several of them were separated into sub-questions (subgroups) to analyze the common relationship of the corresponding part of the question. The factor extraction method is based on the Principal Component Analysis and the factor rotation method was chosen as

Varimax.⁵⁵ The factor analysis showed that all questions can be merged into 13 components (factors) which explain 73.770 % of total variance (Table 2.1).

Table 2.1. Number of total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.698	14.680	14.680	4.698	14.680	14.680	3.374	10.543	10.543
2	2.479	7.748	22.428	2.479	7.748	22.428	2.914	9.106	19.649
3	2.112	6.600	29.028	2.112	6.600	29.028	2.333	7.291	26.940
4	1.972	6.161	35.189	1.972	6.161	35.189	1.766	5.517	32.457
5	1.805	5.641	40.831	1.805	5.641	40.831	1.752	5.475	37.932
6	1.581	4.941	45.772	1.581	4.941	45.772	1.717	5.367	43.299
7	1.474	4.605	50.377	1.474	4.605	50.377	1.519	4.747	48.046
8	1.389	4.340	54.717	1.389	4.340	54.717	1.515	4.736	52.782
9	1.343	4.198	58.915	1.343	4.198	58.915	1.470	4.594	57.376
10	1.290	4.031	62.946	1.290	4.031	62.946	1.393	4.353	61.728
11	1.183	3.698	66.644	1.183	3.698	66.644	1.363	4.258	65.986
12	1.164	3.638	70.282	1.164	3.638	70.282	1.250	3.906	69.892
13	1.116	3.488	73.770	1.116	3.488	73.770	1.241	3.878	73.770
14	.916	2.862	76.632						
..							
32	.100	.313	100.000						

Analyzing the structure of each factor the author of the Doctoral Thesis found that Q8, Q5, Q6, Q13 and Q15 are grouped into one common factor (component 1) (see Table 2.2.).

Table 2.2. Rotated Component Matrix

Rotated Component Matrix				
	Component			
	1	2	3	...
Q8	.824			
Q5	.755			
Q6	.745			
Q13	.707			
Q15	.674			
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 17 iterations.				

The structure of the first factor indicates some specific conclusions. Efficiency of strategy implementation is strongly correlated with the following features (or activities) in an organization:

- Activity plan for strategy implementation with detailed tasks for the units, clearly defined achievable results and terms;
- Regularity of strategy revision and revaluation;
- Strategy accessibility for the employees;
- Strategy accessibility for partners and clients.

GLM ANOVA analysis

For this method of analysis question 15 “In your opinion, how efficient your organization’s development strategy implemented in the real life is (from 1 to 4)?” was

⁵⁵ Smith I. L. (2002). A tutorial on Principal Components Analysis, 27, 1–3.

set as a dependent variable and all other questions were defined as fixed variables, thus gaining answers of organizations that are most successful in strategy implementation.

Table 2.3. Results of general linear model ANOVA analysis
(only statistically significant variables)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Q4	.952	1	.952	4.541	.049	.221	4.541	.517
Q5	.735	1	.735	3.504	.080	.180	3.504	.421
Q7_6	1.967	1	1.967	9.381	.007	.370	9.381	.820
Q11	3.249	4	.812	3.873	.022	.492	15.493	.786
Q13	1.884	3	.628	2.996	.062	.360	8.987	.593
Q17_3	.951	1	.951	4.534	.049	.221	4.534	.516
Q17_5	.674	1	.674	3.214	.092	.167	3.214	.392
Q17_8	2.548	1	2.548	12.151	.003	.432	12.151	.905
Q17_11	1.270	1	1.270	6.057	.026	.275	6.057	.637
Q18_1	.628	1	.628	2.996	.103	.158	2.996	.370

Factor analysis (Table 2.3.) showed that more important questions can be grouped into one common factor, and it means that the greatest effect is achieved if organizations create activity plan for strategy implementation with detailed tasks for the units; regularly overview strategic plans and make strategy accessible to employees and partly to clients and partners.

GLM ANOVA analysis showed that additionally to previously mentioned factors that allow improving strategy implementation process, significance should be devoted to clear definition of mission statement; involvement of employees in strategy creation process and regular overview of the strategic tasks and targets.

Conclusions from comparison of theoretical aspects of strategy development and implementation process with practice. The author of the Doctoral Thesis combined all most important strategy development factors gained in one joint Table 2.4., which indicates how conclusions from literature overview correlate with the factors identified through the survey of management and analysis of most successful organizations in strategy implementation.

Table 2.4. Comparison of factors that influence strategy development and implementation based on theory and practice (source: Developed by the author)

Factors	Theory	Survey results	Most successful organizations
Existence of a written strategy document in an organiz.			×
Periodical update of the strategy (Regular overview of the strategic tasks and targets)	×		×
Developed action plan	×	×	×
Performing analysis of internal and external environment	×		
Performing analysis of strengths and weaknesses	×		
Fitting the strategy to available resources	×		
Forming an effective planning and strategy execution team (involving employees)	×		×
Communicating the strategy across organization (availability of strategy to employees)	×		×
Precise formulation of mission, vision and targets	×	×	×
Control of targets set in the action plan and linking the targets with organizational performance	×	×	×
Avoidance of too frequent change of strategic targets			×

Based on comparison seen in Table 2.4., it can be concluded that from both theoretical and practical perspective the most important factors for successful strategy development and implementation are:

- Forming an effective strategy planning and execution team and involving employees;
- Precisely formulated mission, vision and targets;
- Development of Action plan;
- Communicating the strategy across the organization;
- Control of targets set in the action plan and linking the targets with organizational performance management and compensation systems.

3. STRATEGY DEVELOPMENT AND IMPLEMENTATION IN UNIVERSITIES

Strategy development for universities performed to reach international excellence and sustainable development is different from the process implemented by business entities. Universities in most cases do not work for profit and the decision-making scheme is more difficult, thus strategy development is more complex as well.

Process of strategy development in universities. In the strategy development process, management of the university has to define priorities, find how the university is differentiated from peers and apply appropriate development concepts.

Importance of strategic planning for universities. Nowadays higher education institutions are defining strategic aims and choosing the appropriate typology to differentiate themselves. Setting a strategic direction is one of core leadership actions, which plays an important role in strategy implementation process⁵⁶.

Contribution of universities to the national economy through study process, research and valorization. Universities perform study process, research and valorization activities, by that meaning technology transfer, innovation and new product development. Universities in many different countries have analyzed how their activities contribute to the national economy of the country. This contribution has been made through services to business, including commercialization of new technologies, delivery of professional training, consultancy and services.

Applying typology to strategy development. University's future development and direction for reaching international excellence can be defined based on the type of the institution. The author of the Doctoral Thesis suggests that each university must find its own mission and purpose of existing. Figure 3.1 offers possible typology options, based on which a university might define its own type.

⁵⁶ Jooste, C.; Fourie, B. 2009. The role of strategic leadership in effective strategy implementation: Perceptions of South Africa strategic leaders, *Southern Business Review*, 2009, 51–68.

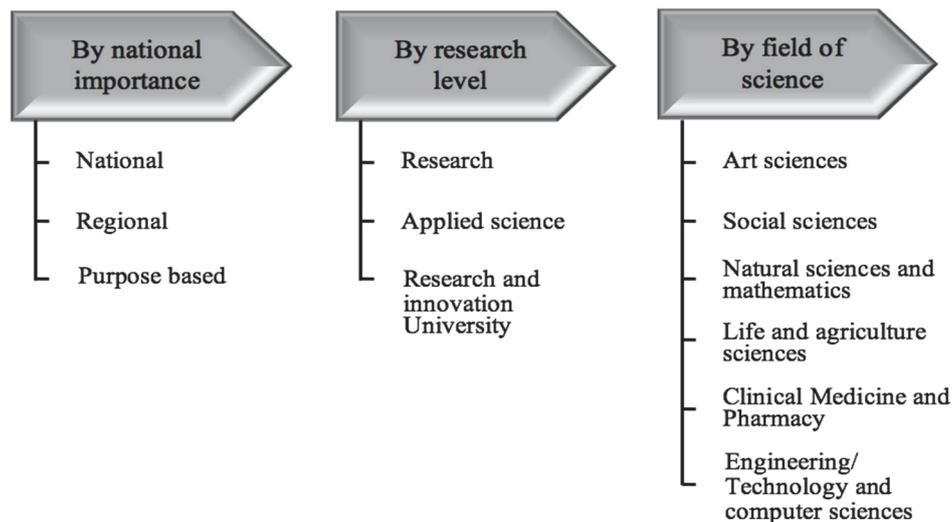


Figure 3.1. Typology of universities (source: Developed by the author)

The first option is to classify universities by national importance. This allows determining whether a university is significant to the whole country or specific region or is purpose based. The second option how to classify universities is based on the type of research level. Here universities might be differentiated by the basic activities they pursue. The last option is to classify universities by the field of science. Applying the right typology the university is capable of defining its niche and specialization.

Applying archetypes to strategy development

Recent trend for universities is to define their archetype, based on which universities set their governance structure, values, prioritized activities and sources of funding. Choosing the appropriate archetype is not only made by internal decision, but it is a result of external pressures, which make universities maintain the existing organizational form, gradually adopt a new one or break down the existing one to introduce a completely new organizational archetype.⁵⁷

The archetype allows a university to define which approach it wants to apply – becoming more bureaucratic, collegial or accountable university. The chosen archetype can not be applied during the strategy development phase and implemented when the strategy is approved. It is a steadily process of applying the archetype, changing structure, processes and attracting new funding sources.

Strategy development process for universities. Since universities (excluding privately – owned universities) are non-profit organizations, they have different aims than business organizations, which are more profit oriented. Universities focus on bringing benefits to society in general through educated labor, new inventions and scientific research. Universities also have different governance and employees are strongly involved in the decision-taking process. Additionally, strategy must be approved not only with internal stakeholders, but external as well – by the public government and industry.

Both business organizations and universities need to analyze their internal and external environment, define opportunities and threats and conduct analysis of competitors. Both universities and business organizations should develop an action plan

⁵⁷ Cunska Z., Kaša R., Lapiņa I., Paalzow A., Pauna D. Analysis of the mechanisms of change and institutional evaluation. Draft version of Project “EU policies impact to the transformations of the higher education and research system in Norway and Latvia”, 2016.

to define the tasks for units and employees, along with setting clear deadlines, defining performance measurement indicators.

Process of strategy development for universities

Strategy development process for universities (Fig. 3.2.) consists of 5 general steps. Performing environmental analysis is just the first one. To continue with strategy development, a university must have an understanding of what it needs to deliver, thus environmental analysis plays an important role to understand where the university currently is⁵⁸. This process is followed by defining of strategic settings and creation of action plan. When this has been done, the university must discuss the strategy internally and externally and approve it. Afterwards the implementation process starts – adjusting the internal processes, creating appropriate organizational structure and establishing control mechanism.

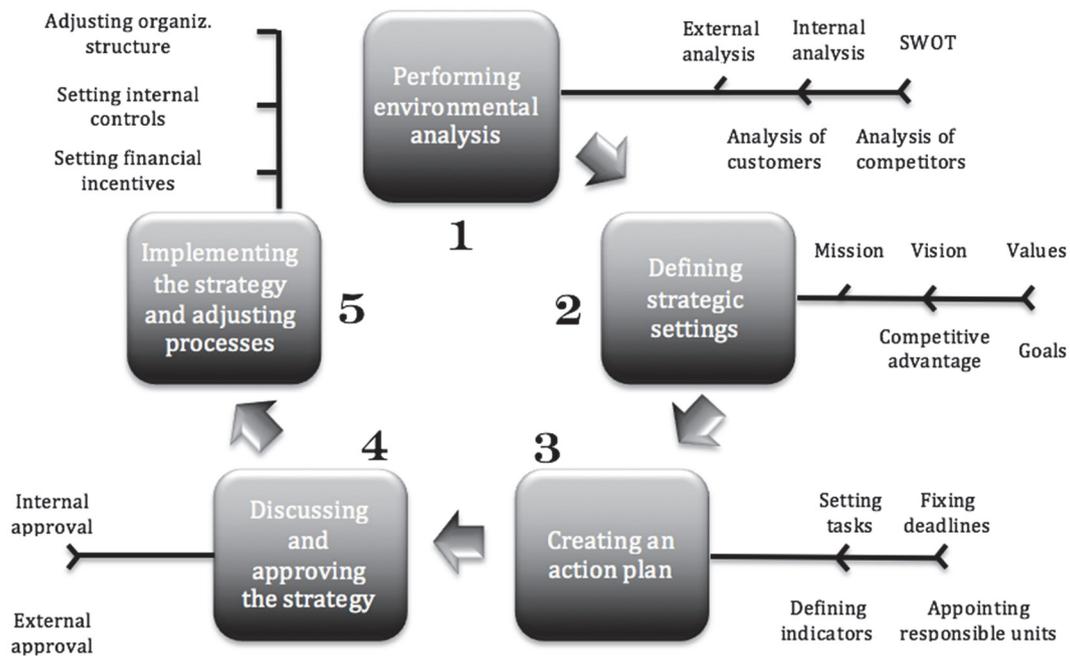


Figure 3.2. Strategy development and implementation process for universities
(Source: Developed by the author)

Strategy implementation and control process. To successfully implement the strategy managers should take into account four core principles – correct flow of information, clarifying decision rights, correct structure and effective motivators⁵⁹. One of the important rules for bringing strategy to work is continuous monitoring of performance⁶⁰.

Setting internal controls

To achieve desired results an organization must operate based on the strategy not only theoretically but also practically. To monitor if that is happening, constant measurement of indicators set within the strategy should be done and control mechanism should be developed (Fig. 3.3).

⁵⁸ Whitwam, D. R., Implementing Effective Organizational Strategy, 2009, Available from Internet: <http://www.charlesmore.com/cms/files/Implementing_Effective_Organizational_Strategy_ID39861.pdf>.

⁵⁹ Neilson, G. L.; Martin, K. L.; Powers, E., The Secrets to Successful Strategy Execution, Harvard Business Review, June, 2008, 93–93.

⁶⁰ Mankins, M. C.; Steele, R., Turning Great Strategy into Great Performance, Harvard Business Review, July – August, 2005, 123–131.

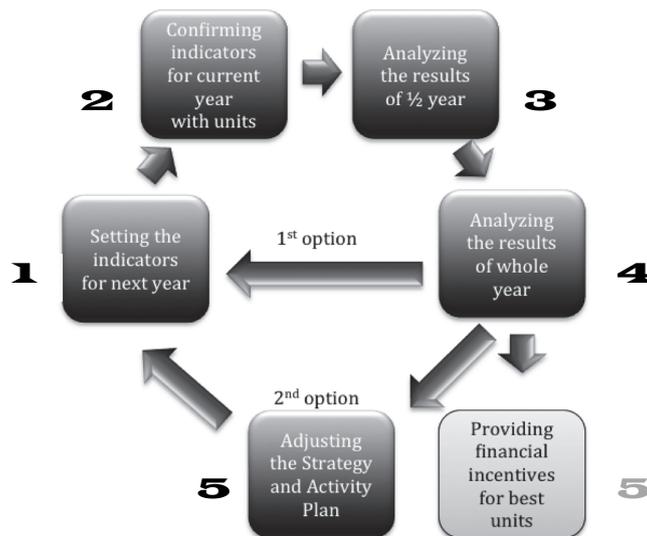


Figure 3.3. Implementing the control mechanism of the strategy
(Source: Developed by the author)

To follow the implementation of the strategy, a university must create a simple process used to define and afterwards measure indicators. A university cannot just measure the indicators and determine which units are doing well and which are under-performing. To utilize the full spectrum of tools for strategy implementation, additional resources should be provided to the best performing units. It is important for units to know up-front what benefits will be provided if all targets are met.

Setting financial incentives

One of the methods to adjust financial incentives that help to gain the defined strategic results is seen in Figure 3.4.

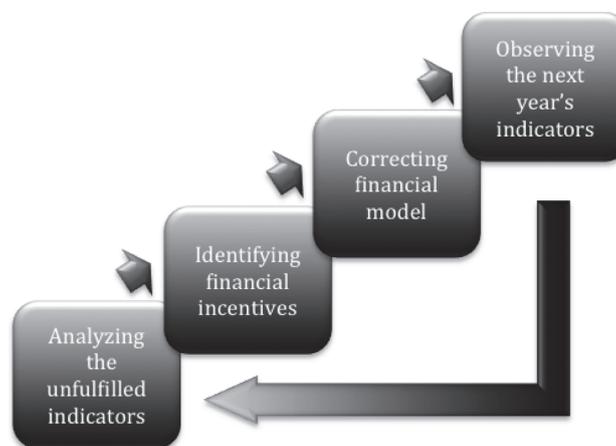


Figure 3.4. Adjusting financial incentives to reach the defined strategic results
(Source: Developed by the author)

According to Figure 3.4., the first task of the management is to analyze the unfulfilled targets shown by the indicators at the end of the year. If units have performed badly, it is a clear sign that some adjustments must be made in the financial model.

Financial model is the system by which units receive their funding. In some cases it is called budget methodology and it provides formulas and other mathematic calculations on how finances are distributed within the university. If the management has concluded that there are specific targets that are not met by the majority of units, it must identify financial incentives that do not work or not exist at all.

Applying sustainable development concepts throughout the strategy. Universities bring new concepts and thoughts to society by including them within the study and research process. That is why universities play a meaningful role in educating society about sustainable development and valorization as a concept. Initially, the main idea of the concept of sustainable development was to explain that it is possible to achieve economic growth and industrialization without environmental damage. When the concept was developed further it stated that sustainable development relies on three basic dimensions – environmental, social and economic sustainability that must be balanced through the concept^{61,62}.

Role of universities in promoting the concept of sustainable development

Taking into account the role of universities in facilitating new concepts and values, it is clear that universities have great importance in promoting the concept of sustainable development. Universities are able to have direct and indirect influence on the society through study process, research process, valorization, developing own infrastructure and maintaining it (Table 3.1.).

Table 3.1. Application of the concept of sustainable development within university’s strategy
(Source: Developed by the author)

		Core directions			
		Study process	Research	Valorization	Infrastructure development
Functions	Educate	Educate students		Inform partners about the concept	
	Develop		Develop new technologies for concept promotion	Assist partners in research on sustainable development	
	Practice			Help partners apply the concept through new technologies	Develop university’s infrastructure according the concept

Defining strategy formulation helps to determine where and how the university will compete and what actions will be taken to implement strategic goals.⁶² In such cases the university can create a list of activities with measurable indicators. By doing so, the university can integrate the concept of sustainable development in all levels of its operations.

Process of setting valorization as a strategic target for research and innovation universities. Another concept that can be applied to the university is the concept of valorization. To implement the task of developing university’s strategy to foster valorization – innovations, creativity and technology transfer – a university must not only think about the internal process of setting up the strategy, it must also analyze the external environment and understand how external parties can influence the university.

⁶¹ Adams, W.M., The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century. Report of the IUCN, Renowned Thinkers Meeting, 2006, 29 – 31.

⁶² Auzins A., Vanags J.: Analytical Assessment of Sustainable Development Concept, Journal of Geomatics, 2012, 49–53

Role of public governance in promoting valorization in universities. If public government wants to promote universities, it must understand the needs of higher education institutions and support them by providing targeted financial investments, adjusting the legislation and ensuring well developed infrastructure.

Cooperation of universities with industry through valorization. To maintain constant flow of innovations to the national economy, a university has to maintain constant cooperation with business companies producing new goods, technologies or services. This cooperation must ensure close collaboration within research activities that afterwards result in commercialization of new products with high added value. Figure 3.5 shows how universities can maintain constant cooperation with companies no matter in which stage of product development or life cycle they are.

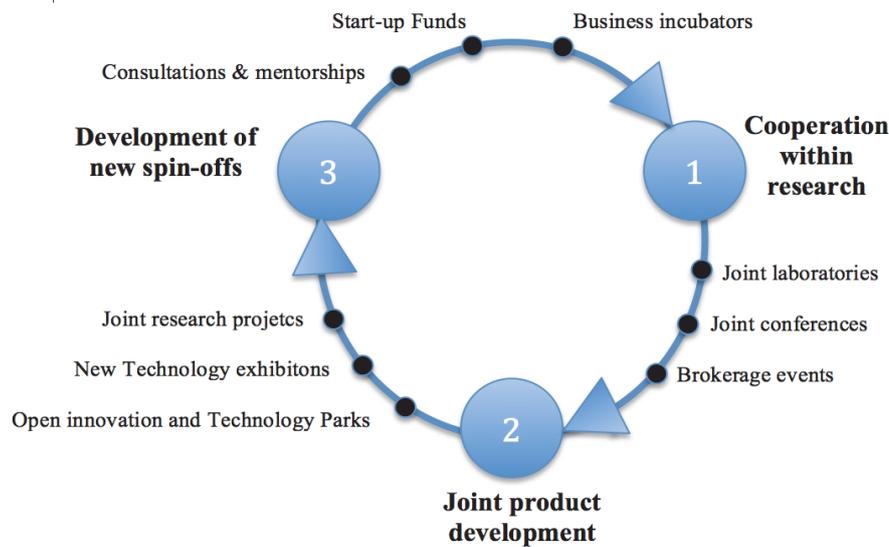


Figure 3.5. University cooperation cycle with business companies
(Source: Developed by the author)

Table 3.2. Comparison of visions of Baltic research and innovation universities
(Source: Developed by the author)

University	Vision
Tallinn University of Technology	Leading university of technology in the Baltic Sea region and an active partner of cooperation networks of entrepreneurship clusters and public institutions
Kaunas University of Technology	A leading European University with knowledge and technology development and transfer based activities
Vilnius Gediminas Technical University	Science University that combines high level research and studies
Riga Technical University	Riga Technical University – a modern university, internationally recognized as a European center for studies, scientific research, and innovation – is a cornerstone of the development of Latvia

Development of research and innovation university in the Baltic States. Research done by the author of the Doctoral Thesis indicates that valorization is a strategic setting for all four Baltic research and innovation universities. Based on the publicly available strategies of 4 Baltic research and innovation universities it is possible to analyze whether and to what extent universities define development of valorization as their strategic priority.

All four Baltic research and innovation Universities have defined their vision to become the leading research and innovation university, although they all have chosen regions of different range, where they want to excel. Table 3.3 provides a comparison of visions of all four Baltic research and innovation universities.

Role of public government in establishing research and innovation university in Latvia. To create and strengthen Research and Innovation University, public government is recommended to define that university integration with business industry is important and dedicate significant funding for development of this kind of university. Additional funding in the early stages of research and innovation university development is important for creating infrastructure, attracting best academics and professionals to set up the processes and services for the business industry.

The author of the Doctoral Thesis developed the model of establishment of Research and Innovation University presented in Figure 3.6.

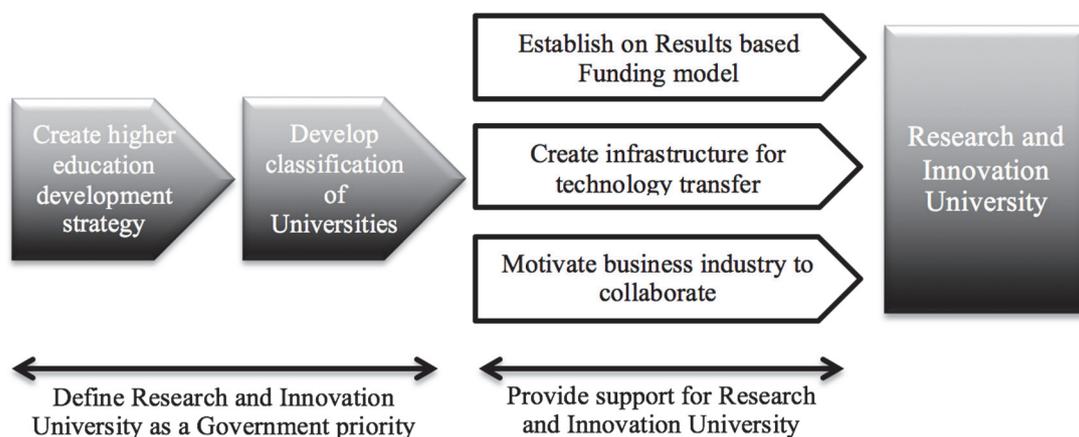


Figure 3.6. Establishment process of a Research and Innovation University
(Source: Developed by the author)

The author of the Doctoral Thesis believes that if public government wants to establish strong research and innovation university, it is obliged to develop appropriate classification of universities, allocate appropriate amount of financial and other resources and provide specific funding for valorization activities.

4. STRATEGY DEVELOPMENT PROCESS FOR RESEARCH AND INNOVATION UNIVERSITIES

Strategic planning can be used as a tool for higher education development and it has been used not only in individual organization and at the national level, but also at a much broader scope. Thus it is necessary to analyze strategic planning documents to cover the issues allowing universities to reach international excellence and make them sustainable in the long run.

Further sections provide a description of the methodology for strategy development process in university created by the author of the Doctoral Thesis. The methodology is created as a list of sequent steps that are recommended to be made to create a strategy for a university and afterwards to implement it. The author has designed the methodology based on research presented in the previous parts of this Doctoral Thesis and afterwards applied it on the case of Riga Technical University.

Figure 4.1 indicates 6 general steps management is recommended to take to create a strategy document. Although strategy development process is much more complicated than just 6 steps described in Figure 4.1, further on these steps will be discussed in more detail.

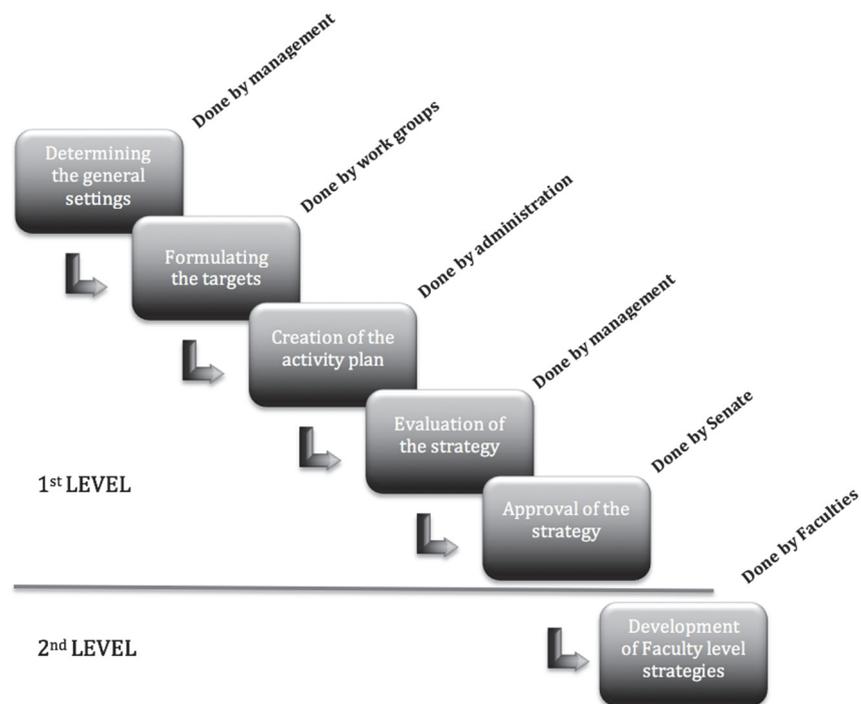


Figure 4.1. Research and innovation university strategy creation process
(Source: Developed by the author)

Determining the general settings is a responsibility of the management, but prior to that benchmarking and SWOT analysis (analysis of strengths, weaknesses, opportunities and threats) are performed as seen in Figure 4.2 to ensure all internal and external forces are taken into account and management can see where the closest competitors are heading with their strategies.

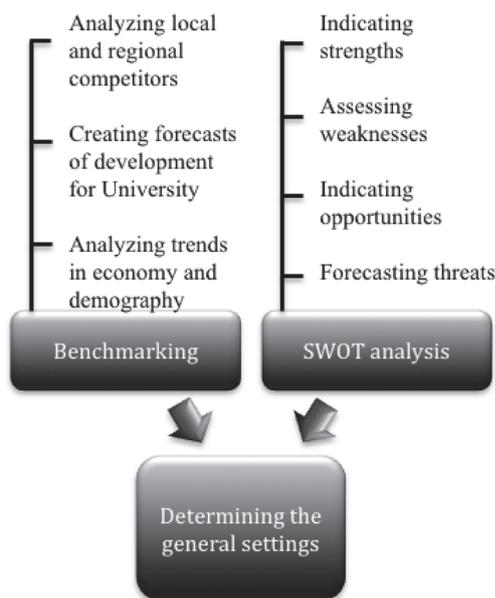


Figure 4.2. Process of determining the general settings
(Source: Developed by the author)

Research and innovation universities are recommended to perform not only academic work and scientific activities, but also together with the industry work on commercialization of scientific discoveries made at the universities. For each of 3 directions management is recommended to define few indicators that will determine if strategy implementation is successful. This task is done as shown in the example in Table 4.1.

Table 4.1. Defining indicators and targets
(Source: Developed by the author)

Nr.	1. Study process indicators	Indicator target
1.1.	Indicator 1	$IU_1^{S,Pl}$
1.2.	Indicator 2	$IU_2^{S,Pl}$
...
1.i	Indicator i	$IU_i^{S,Pl}$
...
1.n ₁	Indicator n ₁	$IU_{n1}^{S,Pl}$
Nr.	2. Research process indicators	Indicator target
2.1.	Indicator 1	$IU_1^{R,Pl}$
2.2.	Indicator 2	$IU_2^{R,Pl}$
...
2.j	Indicator j	$IU_j^{R,Pl}$
...
2.n ₂	Indicator n ₂	$IU_{n2}^{R,Pl}$
Nr.	3. Valorization process indicators	Indicator target
3.1.	Indicator 1	$IU_1^{In,Pl}$
3.2.	Indicator 2	$IU_2^{I,Pl}$
...
3.l	Indicator l	$IU_l^{In,Pl}$
...
3.n ₃	Indicator n ₃	$IU_{n3}^{In,Pl}$

where $IU_i^{S,Pl}$ – University level study process i – indicator target value;
 n_1 – number of indicators for university level study process;
 $IU_j^{R,Pl}$ – University level research process j – indicator target value;
 n_2 – number of indicators for university level research process;
 $IU_l^{In,Pl}$ – University level valorization process l – indicator target value;
 n_3 – number of indicators for university level valorization process.

Along with core directions and indicators, management is recommended to define the horizontal priorities – areas of tasks, which will allow the university to reach the aims of core priorities. Horizontal priorities can be grouped in such sections as organizational activities, international activities, financial activities, infrastructure development activities and other. Such groups of horizontal priorities are incorporated in the core processes as shown in Figure 4.3.

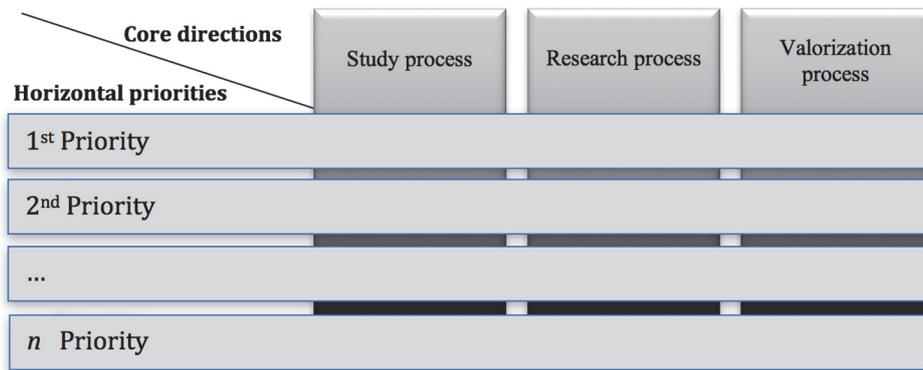


Figure 4.3. Incorporation of horizontal priorities in the strategy
 (Source: Developed by the author)

Formulation of the tasks within the work groups is done in the following sequence: first, a work group agrees on the terms of priorities – what it means to achieve excellence in exact process and within each horizontal priority. Then the work group discusses the potential targets that the university should aim at and agrees on common priorities.

All the results gained from the work groups as seen in Figure 4.4 are combined and used to create the structure of the action plan.

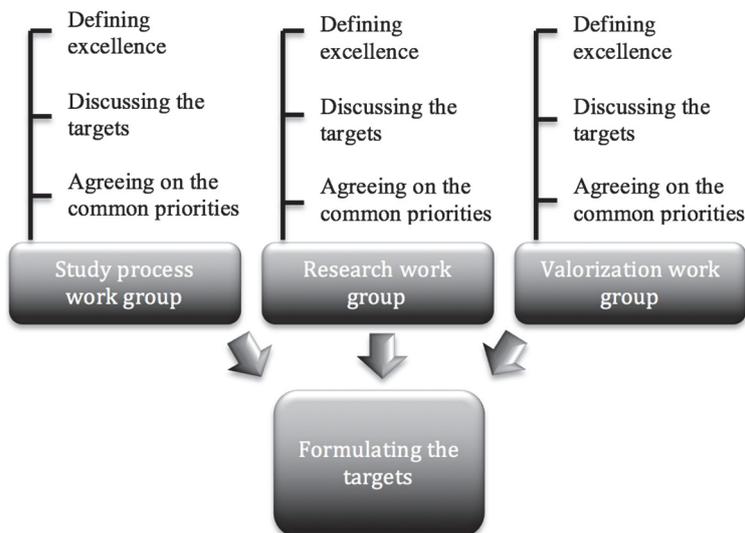


Figure 4.4. Process of formulating the targets
 (Source: Developed by the author)

After the targets are defined, the next process of strategy creation process can start – establishment of the action plan with clearly defined tasks, indicators, deadlines and defining of the responsible units as illustrated in Figure 4.5.

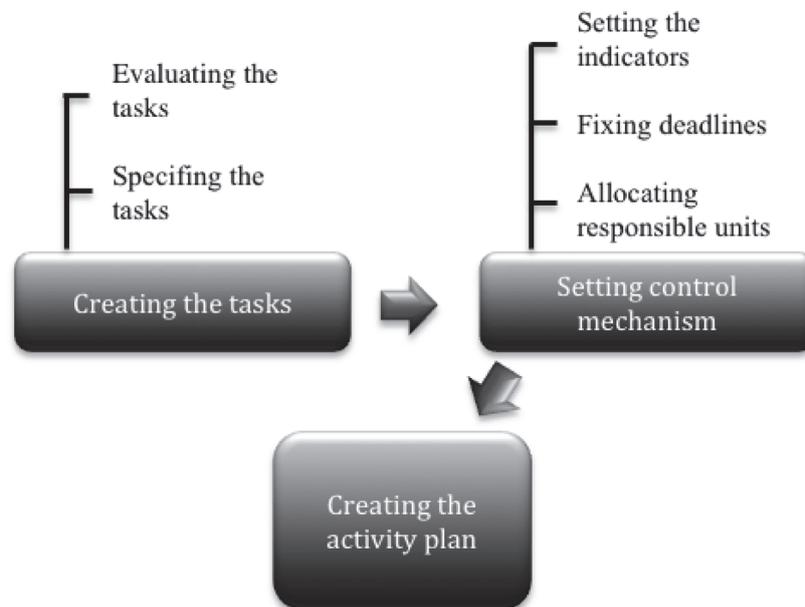


Figure 4.5. Process of creation of the action plan
(Source: Developed by the author)

Creation of the action plan is the task of administration of the university. Administration is recommended to define activities that will be done to achieve the tasks set by the work groups in the previous steps and to propose exact indicators how to manage if the tasks are done and the deadlines for each specific activity. Example of setting the tasks is seen in Table 4.2.

Table 4.2. Example of setting the tasks, indicators and responsible units within action plan
(Source: Developed by the author)

Task: Ease the access to services provided by the University to the students and employees	
Activity	Create one-stop service center to jointly provide all University services in the University Campus
Deadline	31 December, 2016
Indicator	Created one-stop service center in the University Campus
Responsible Unit	Administrative Department

After the structure of action plan is filled with content, the work done so far is evaluated. This allows assessing if the tasks within each of the objective groups are in accord with the university vision and mission and key targets defined for study process, research and innovation.

When the management approves the strategy and action plan, they have to be reviewed and approved by other stakeholders, this means acquiring internal and external feedback as illustrated in Figure 4.6.

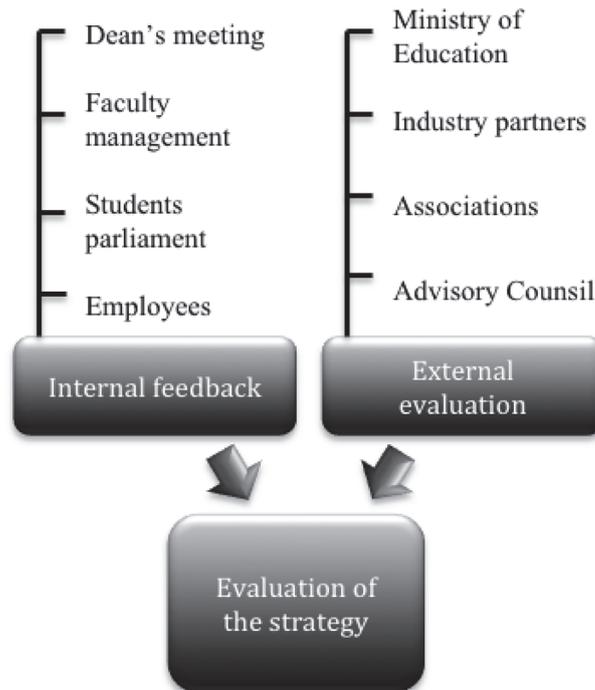


Figure 4.6. Process of evaluation of the strategy
(Source: Developed by the author)

Internal feedback means gaining approval from all faculties, employees and students. External feedback means gaining approval from public government, industry partners with whom the university has the closest links, and Advisory Council of the university. Only after gaining comprehensive feedback, the university can submit the document for approval as Figure 4.7 illustrates.

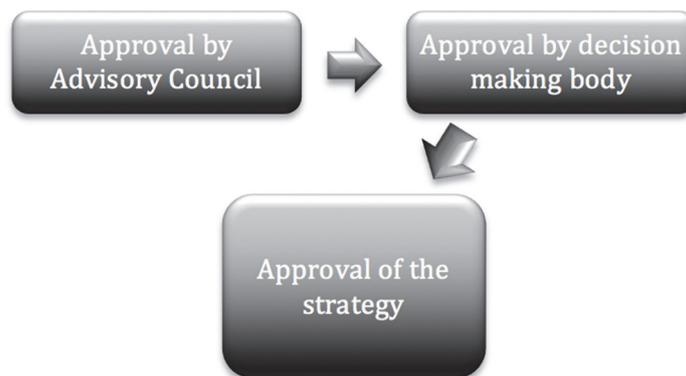


Figure 4.7. Process of approval of the strategy
(Source: Developed by the author)

The last version of the strategy after the evaluation of the strategy and the action plan should be reviewed once again and approved by the University Advisory Council and the decision making body thus putting the document in power.

After the approval of the university strategy each faculty is responsible for creation of its individual strategy document to be approved by the management based on the process illustrated in Figure 4.8.

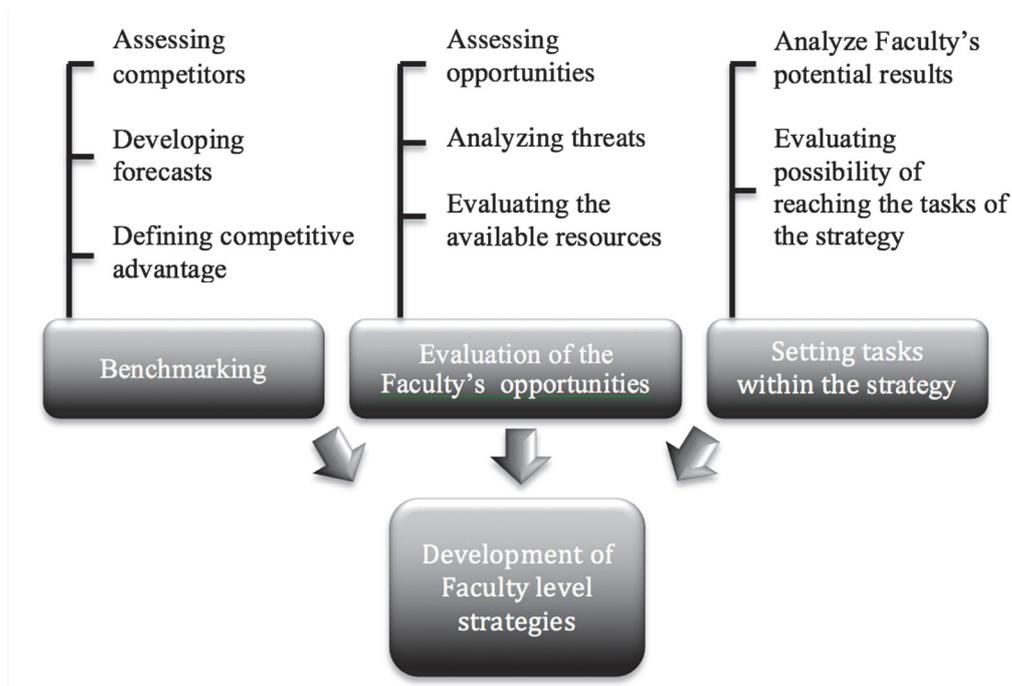


Figure 4.8. Process of development of faculty level strategy
(Source: Developed by the author)

However, for such organizations as universities with many faculties the most important task is not only creating the strategy, but implementing and designing the appropriate control process within the university and separately for each faculty to achieve the aims set in the strategy.

Process of strategy implementation and adjustment. Strategy implementation is an important task and it starts with establishment of control mechanisms. Since the activity plan sets clear indicators, deadlines and responsible units at the University level, an important task is to control the strategy implementation path at the Faculty level. Figure 4.9 illustrates the process of setting the targets for the next years within the whole university and shows how the results from each separate faculty are collected to define the university's performance overall.

Since the university strategy and action plan defines activities for the whole strategy period, management has to follow strategy implementation yearly. Administration has to define yearly activities along with approval of the budget and allocation of resources. Meanwhile, for the faculties yearly activities are more connected with the academic year, and that urges to check them more often.

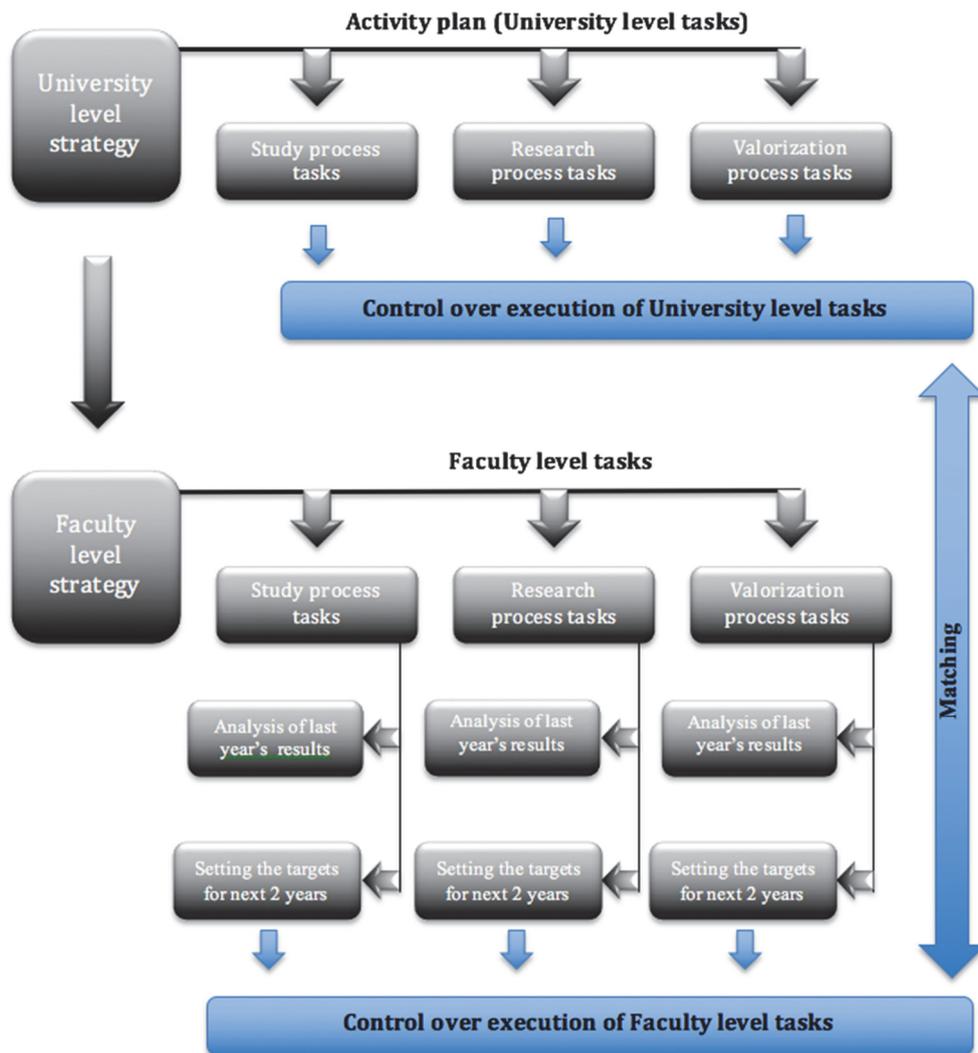


Figure 4.9. Two level strategy and process of establishment of the control mechanism
(Source: Developed by the author)

Measurement of strategy implementation and adjustment process. After the discussions with management targets are set for all units. First analysis of the performance is done after half a year, when all the half-year's reached targets are analyzed by the management. If the tendencies are good, nothing is done in addition, but if the tendencies show negative trends, management gets in touch with the worst performing units and they together analyze what else could be done to improve the results in the other half of the year. Analysis is performed based on the scheme presented in Table 4.3.

Table 4.3. Example of faculty's yearly performance evaluation
(Source: Developed by the author)

Nr.	1.Study process indicators	Indicator target	Actual Result	Relative result
1.1.	Indicator 1	$IF_{1,k}^{S,Pl}$	$IF_{1,k}^{S,Re}$	...
1.2.	Indicator 2	$IF_{2,k}^{S,Pl}$	$IF_{2,k}^{S,Re}$	...
...
1.i	Indicator <i>i</i>	$IF_{i,k}^{S,Pl}$	$IF_{i,k}^{S,Re}$	...
...
1.m ₁	Indicator <i>m</i> ₁	$IF_{m1,k}^{S,Pl}$	$IF_{m1,k}^{S,Re}$	...

Table 4.3. continued

Nr.	2. Research process indicators	Indicator target	Actual Result	Relative result
2.1.	Indicator 1	$IF_{1,k}^{R,Pl}$	$IF_{1,k}^{R,Re}$	...
2.2.	Indicator 2	$IF_{2,k}^{R,Pl}$	$IF_{2,k}^{R,Re}$	...
...
2.j	Indicator j	$IF_{j,k}^{R,Pl}$	$IF_{j,k}^{R,Re}$	...
...
2.m ₂	Indicator m ₂	$IF_{m_2,k}^{R,Pl}$	$IF_{m_2,k}^{R,Re}$	...

Nr.	3. Valorization process indicators	Indicator target	Actual Result	Relative result
3.1.	Indicator 1	$IF_{1,k}^{In,Pl}$	$IF_{1,k}^{In,Re}$	...
3.2.	Indicator 2	$IF_{2,k}^{In,Pl}$	$IF_{2,k}^{In,Re}$	...
...
3.l	Indicator l	$IF_{l,k}^{In,Pl}$	$IF_{l,k}^{In,Re}$	...
...
3.m ₃	Indicator m ₃	$IF_{m_3,k}^{In,Pl}$	$IF_{m_3,k}^{In,Re}$	...

where $IF_{i,k}^{S,Pl}$ – faculty level study process k – faculty i – indicator target value;
 $IF_{i,k}^{S,Re}$ – faculty level study process k – faculty i – indicator result value;
 m_1 – number of indicators for faculty level study process;
 $IF_{j,k}^{R,Pl}$ – faculty level research process k – faculty j – indicator target value;
 $IF_{j,k}^{R,Re}$ – faculty level research process k – faculty j – indicator result value;
 m_2 – number of indicators for faculty level research process;
 $IF_{l,k}^{In,Pl}$ – faculty level valorization process k – faculty l – indicator target value;
 $IF_{j,k}^{In,Re}$ – faculty level valorization process k – faculty i – indicator result value;
 m_3 – number of indicators for faculty level valorization process;
 N – number of faculties $k = 1, \dots, N$.

As shown in Table 4.3, each group of indicators allows identifying Faculty's results in a specific area and thus understanding where additional support is needed for better results in the next year.

The next task of the management is to understand each Faculty's contribution in reaching total University settings in each separate indicator as well as to benchmark them between each other to understand if any Faculty might be underperforming. This task can be done based on formulas, and that allows analyzing different aspects of strategy implementation.

$$\begin{aligned}
\sum_{k=1}^N IF_{i,k}^{S,Pl} &\geq IU_i^{S,Pl}, \quad i \in A, \\
\sum_{k=1}^N IF_{j,k}^{R,Pl} &\geq IU_j^{R,Pl}, \quad j \in A, \\
\sum_{k=1}^N IF_{l,k}^{In,Pl} &\geq IU_l^{In,Pl}, \quad l \in A,
\end{aligned} \tag{4.1}$$

where $\sum_{k=1}^N IF_{i,k}^{S,Pl}$; $\sum_{k=1}^N IF_{j,k}^{R,Pl}$; $\sum_{k=1}^N IF_{l,k}^{In,Pl}$ – sum of faculty level study, research and valorization process indicator target values, respectively;

$IU_i^{S,Pl}$; $IU_j^{R,Pl}$; $IU_l^{In,Pl}$ – university level study, research and valorization process indicator target values, respectively;

A – group of indicators that include faculty and university level targets.

$$\begin{aligned}
\Delta Si &= \sum_{k=1}^N IF_{i,k}^{S,Pl} - IU_i^{S,Pl}, \quad \sum_i \Delta Si \rightarrow \min, \quad i \in A, \\
\Delta Rj &= \sum_{k=1}^N IF_{j,k}^{R,Pl} - IU_j^{R,Pl}, \quad \sum_j \Delta Rj \rightarrow \min, \quad j \in A, \\
\Delta Inl &= \sum_{k=1}^N IF_{l,k}^{In,Pl} - IU_l^{In,Pl}, \quad \sum_l \Delta Inl \rightarrow \min, \quad l \in A.
\end{aligned} \tag{4.2}$$

where $\sum_{k=1}^N IF_{i,k}^{S,Pl}$; $\sum_{k=1}^N IF_{j,k}^{R,Pl}$; $\sum_{k=1}^N IF_{l,k}^{In,Pl}$ – sum of faculty level study, research and valorization process indicator target values, respectively;

$IU_i^{S,Pl}$; $IU_j^{R,Pl}$; $IU_l^{In,Pl}$ – university level study, research and valorization process indicator target values, respectively;

$\Delta S_i, \Delta S_j, \Delta S_l$ – differences between sum of Faculty level study, research and valorization process indicator target values and university level study process target values;

Formula 4.1 and Formula 4.2 depict an analysis that should be performed before Faculty level indicators are approved to understand if targets of specific indicators of each Faculty allow reaching the total target of the specific indicators of the university.

$$\begin{aligned}
\frac{IF_{i,k}^{S,Pl}}{IU_i^{S,Pl}} \times 100, \quad i \in A, \\
\frac{IF_{j,k}^{R,Pl}}{IU_j^{R,Pl}} \times 100, \quad j \in A, \\
\frac{IF_{j,k}^{In,Pl}}{IU_j^{In,Pl}} \times 100, \quad l \in A,
\end{aligned} \tag{4.3}$$

where $IF_{i,k}^{S,Pl}$; $IF_{j,k}^{R,Pl}$; $IF_{l,k}^{In,Pl}$ – Faculty level study, research and valorization process indicator target values, respectively;

$IU_i^{S,Pl}$; $IU_j^{R,Pl}$; $IU_l^{In,Pl}$ – university level study, research and valorization process indicator target values, respectively;

Formula 4.3 provides a model how management can indicate the contribution of a definite faculty to reaching general university targets in specific indicators.

$$\begin{aligned}
\Delta_{i,k} &= IF_{i,k}^{S,Pl} - IF_{i,k}^{S,Re}, \quad i \in A, \\
\Delta_{j,k} &= IF_{j,k}^{R,Pl} - IF_{j,k}^{R,Re}, \quad j \in A, \\
\Delta_{l,k} &= IF_{l,k}^{In,Pl} - IF_{l,k}^{In,Re}, \quad l \in A,
\end{aligned} \tag{4.4}$$

where $IF_{i,k}^{S,Pl}$; $IF_{j,k}^{R,Pl}$; $IF_{l,k}^{In,Pl}$ – faculty level study, research and valorization process indicator target values, respectively;

$IF_{i,k}^{S,Pl}$; $IF_{j,k}^{R,Pl}$; $IF_{l,k}^{In,Pl}$ – faculty level study, research and valorization process indicator result value, respectively;

$\Delta_{i,k}$; $\Delta_{j,k}$; $\Delta_{l,k}$ – difference between faculty level study, research and valorization process indicator target values, respectively, and faculty level study, research and valorization process indicator result values, respectively;

Formula 4.4 allows identifying how a certain faculty has performed compared against its plan. This is an important metric if additional funding is provided to faculties based on their performance.

Adjusting strategy according to the internal and external factors. For the university it is important to regularly monitor all factors and analyze whether the university is recommended to adjust the strategy due to these factors. Mechanism of such analysis is illustrated in figure 4.10.

If the factor is not significant in the long term, is caused by internal reason and affects only one unit or faculty, the management should at first implement internal discussions and try to allocate resources to avoid the effect of the factor.

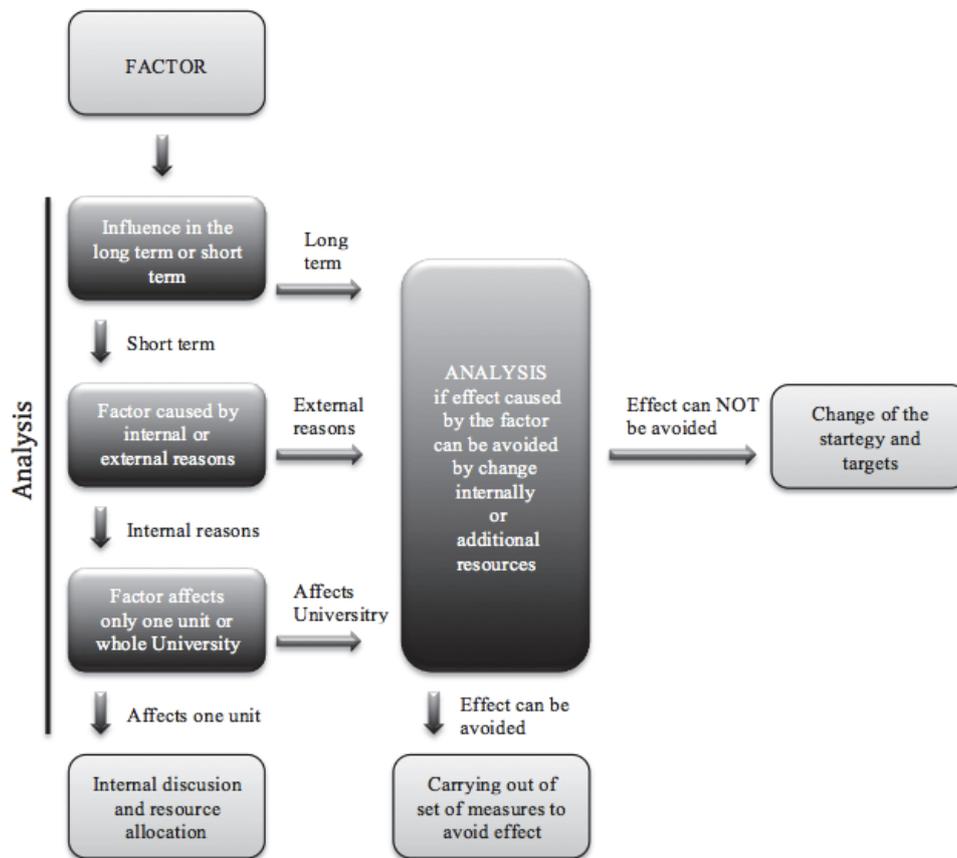


Figure 4.10. Process of assessing the factors that could necessitate adjusting the strategy (Source: Developed by the author)

However, it is important not to adjust the strategy too often. Some changes that are caused by such reasons as not precisely defined tasks or indicators could be solved after one year of beginning of strategy implementation.

Creation of incentives and allocation of additional performance funding. It is important to set the incentives for units to perform and reach the set targets. For university that has two level strategies there is a difference in creating and adopting incentives for administrative units and for faculties.

Allocation of the additional performance funding to faculties

Based on Faculty's yearly study process performance indicators as well as science and innovations processes performance indicators each Faculty should be able to gain additional funding. The specific formula (see Formula 4.5.) can be applied for distribution of performance based funding.

$$P_k = C_k \times 0.5(1 + K_k), \quad (4.5)$$

where P_k – performance funding for faculty, EUR;
 C_k – calculated performance funding base sum proportionally for a faculty, EUR;
 K_k – coefficient ($K = 0$ to 1) of faculty's study, science and valorization processes performance;
 k – number of Faculty $k = 1, \dots, N$.

The management should first define a calculated performance funding base sum (C_k) proportionally for each faculty. This can be done by summarizing all faculties total amount of funding attracted within study, science and valorization processes and calculating a percentage of each faculty's contribution. This percentage then should be multiplied with the total sum provided to faculties for distribution as performance funding for all faculties (see formula 4.6.).

$$C_k = AP \times \left(\frac{FA_k}{\sum_{k=1}^N FA_k} \right), \quad (4.6)$$

where C_k – calculated performance funding base sum proportionally for faculty, EUR;
 AP – total sum of available performance funding for all faculties;
 FA_k – amount of certain Faculty's attracted funding within study, science and valorization processes, EUR.

The results of proportionally for each faculty defined calculated performance funding base sum (C_k) can be gathered in one table as seen in Table 4.4.

Table 4.4. Proportionally for each faculty calculated performance funding base sum
 (Source: Developed by the author)

No.	Faculty	Amount of certain faculty's attracted funding within study, science and valorization processes, EUR	% of total sum	Calculated performance funding base sum proportionally for faculty, EUR
1	Faculty 1			
2	Faculty 2			
...	...			
k	Faculty k			
...	...			
N	Faculty N			
			100 %	TOTAL all faculties attracted funding

Afterwards management should calculate each faculty's coefficient of implementation of study, science and valorization process indicators (K_k). For this purpose, the total number of accomplished indicators within study, science and innovations processes set to the current faculty should be divided by the total number within study, science and valorization processes set to the current faculty (see Formula 4.7.)

$$K_k = \frac{\sum \alpha}{m_1 + m_2 + m_3}, \quad 0 \leq K_k \leq 1 \quad (4.7)$$

where K_k – coefficient of faculty’s study, science and valorization process performance;
 α – accomplished indicators within study, science and valorization processes set to a certain faculty;
 m – total number of indicators within study, science and valorization processes set to the current faculty.

The process of calculation of the coefficient of faculty’s study, science and valorization process performance can be seen in Table 4.5.

Table 4.5. Calculation of the coefficient of faculty performance
 (Source: Developed by the author)

Indicators	Accomplished indicator according to plan
Study process indicators	
Indicator 1	α_1^S
Indicator 2	α_2^S
...	...
Indicator m_1	$\alpha_{m_1}^S$
Research process indicators	
Indicator 1	α_1^R
Indicator 2	α_2^R
...	...
Indicator m_2	$\alpha_{m_2}^R$
Valorization process indicators	
Indicator 1	α_1^{In}
Indicator 2	α_2^{In}
...	...
Indicator m_3	$\alpha_{m_3}^{In}$
Total number of accomplished indicators within study, science and valorization processes set to the current faculty	$\sum \alpha = \sum_{i=1}^{m_1} \alpha_i^S + \sum_{j=1}^{m_2} \alpha_j^R + \sum_{l=1}^{m_3} \alpha_l^{In}$
Total number of indicators within study, science and valorization processes set to the current faculty	$m = m_1 + m_2 + m_3$

where $\alpha_i^{S,R,In} = \begin{cases} 0 & \text{– planned target has not been reached} \\ 1 & \text{– planned target has been reached} \end{cases}$

Based on this method, faculties that have accomplished greater number of indicators within study and science receive larger coefficient of faculty’s study, science and valorization process performance.

Additionally, since all faculties are not able to get $K_{Faculty}$ on 100 % level, this means that after first division of performance funding a part of it remains undivided.

After the first calculation, remaining performance funding should be divided to all faculties, taking into account the proportion used to calculate the allocated performance funding for each faculty (see Formula 4.8.)

$$AF_k = RP \frac{P_k}{\sum_{k=1}^N P_k} \quad (4.8)$$

where AF_k – additional performance funding calculated for faculty, EUR;
 RP – amount of performance funding remaining after the first division, EUR;
 P_k – performance funding for faculty (within the first division), EUR;
 $\sum_{k=1}^N P_k$ – amount of total performance funding divided to all faculties (within the first division), EUR.

This method developed by the author of the Doctoral Thesis can be applied to calculate the performance funding for faculties. In each specific methodology of calculating the performance funding base sum and coefficient of faculty's study, science and innovations process performance can be adjusted and additional results taken into account.

Approbation of the strategy development and implementation methodology in Riga Technical University. Riga Technical University has created the strategy for the period of 2014–2020 and approved it by the decision of decision making body in October 2013. University has created the strategy and detailed action plan document that sets core priorities and detailed key performance indicators that allow following the strategy implementation process.

Management work group together with the Rector worked on the mission that had to express three core objectives of RTU – study process, research and innovation and commercialization process. The mission was adopted as follows – “To ensure internationally competitive high quality scientific research, tertiary education, technology transfer and innovation for Latvian national economy and the society”⁶³. Based on the mission, the university gained the triangle that reflected the core objectives and symbolized their unity seen in Figure 4.11.

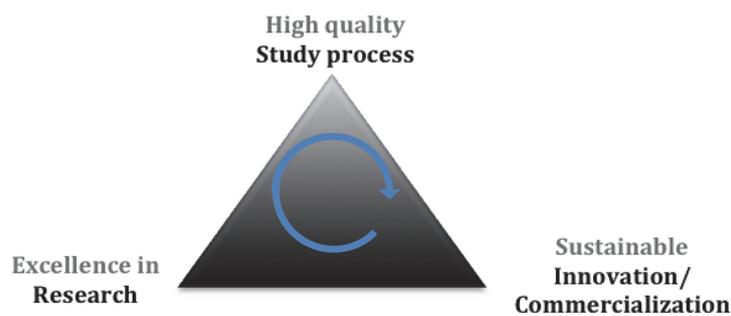


Figure 4.11. Defining the core objectives for Riga Technical University²¹⁸

Although the university acknowledged that beside study process, research and innovation and commercialization process it has to clearly state 5 horizontal priorities that cross all activities implemented within the university. Based on such setting, the work group introduced horizontal priorities– internationalization, interdisciplinary, organizational efficiency, financial efficiency and infrastructure efficiency and these priorities should have been incorporated in all 3 objectives, as seen in Figure 4.12.

⁶³ Riga Technical University, Strategy of Riga Technical University 2014-2020, Approved by the Decision of the Senate of RTU in October, 2013

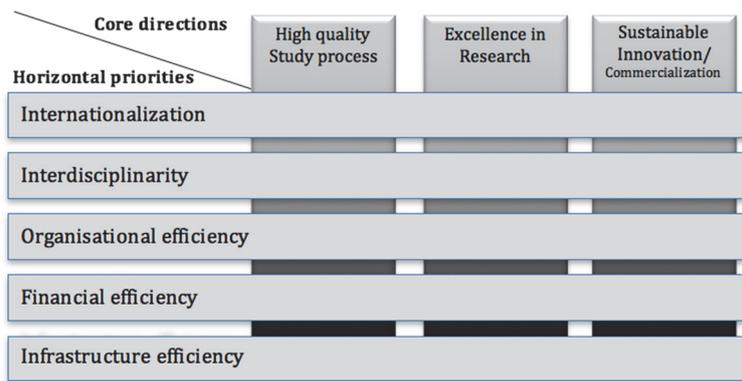


Figure 4.12. Horizontal priorities for the strategy of Riga Technical University²¹⁹

The management of Riga Technical University created a two level strategy. The first level was a general university strategy and action plan approved in decision-making body defining the general development path for the university. The second level was a strategy of each faculty approved by rector defining how a faculty will excel, what will be its specialization and improvements in the study process, research and innovation.

RTU underwent the strategy adjustment in 2015, when it was initiated since some targets were changed and management identified that some of the tasks were not defined clearly enough, since at RTU such strategy development process was implemented for the first time. The structure of the university had also changed, thus indicating the need to define responsibilities for some specific units that previously did not exist.

Experience of RTU shows that the methodology described in this Doctoral Thesis is applicable to the real university case and can help answer questions related to strategy implementation, control and adjustment processes.

CONCLUSIONS AND SUGGESTIONS

Summarizing the research results obtained in the course of the development of the present Doctoral Thesis, the author has made the following conclusions:

1. Based on theoretical analysis, the most important factors that are critical for reaching sustainable development of organizations through strategy development are correctly formulated mission and vision of the organization, analyzed organizations strengths, weaknesses and customer needs as well as created action plan with detailed activities specifying how strategy will be implemented.
2. Theoretical analysis indicates that most important factors that are critical for successful strategy implementation are establishing a good communication of the strategy within the organization, assembling strong planning and strategy execution team and fitting strategic targets with available resources.
3. Theoretical analysis acknowledges that management has a meaningful role in strategy development and implementation – it is responsible for developing and sharing the vision, encouraging innovativeness, supporting employee efforts and involving employees in decision-making process.

4. Based on the survey of Latvian organizations regarding strategy development and implementation it can be concluded that:
 - a. Large proportion of organizations (48 %) do not involve employees in strategy development process and (18 %) do not make strategy accessible to employees;
 - b. More than half of organizations (55 %) do not implement analysis of internal and external factors and (62 %) do not define advantage of the competitiveness during the strategy development process;
 - c. Significant amount of organizations (36 %) do not create an action plan with detailed tasks for the units and (42 %) do not financially stimulates units and employees for achieving targets and tasks set the strategy.
5. Correlation analysis based on GLM ANOVA method indicates that most successful organizations in strategy implementation have a written strategy, involve employees in the strategy development process and make strategy accessible to all employees, define a clear mission, regularly overview the strategic tasks and targets.
6. Strategy development for universities is a lot more complex than for business organizations since goals are mainly non-financial, universities have a complex decision making process and approval process involves many stakeholders.
7. By applying the correct typology and archetype universities can much easier head to reach the international excellence and formulate their strategy by determining their purpose, goals and settings for strategy.
8. There are 4 research and innovation universities in the Baltic States. They all have defined different scopes of activity but apply similar tools to strengthen valorization process.
9. Public government has a significant role in creating a research and innovation university.
10. Application of the appropriate methodology for strategy development and implementation can help research and innovation university reach its goals more effectively.
11. To effectively implement the targets set within the strategy, universities create incentives for structural units and employees.
12. Approbation of the methodology of strategy development and implementation presented within the Doctoral Thesis proved to be applicable in the case of Riga Technical University.

Based on the results of the research conducted within the present Doctoral Thesis, the following suggestions have been made:

For all organizations:

1. For successful development and implementation of the strategy it is recommended to apply these elements to the strategy development and implementation process:
 - a. Form an effective strategy planning and execution team and involve employees in the process;
 - b. Precisely formulate mission, vision and targets;
 - c. Develop an action plan;
 - d. Communicate the strategy across the organization;
 - e. Control the targets set in the action plan and link the targets with organizational performance management and compensation systems.

2. Organizations are recommended to create an action plan along with the strategy with detailed tasks for the units, achievable results and deadlines.
3. Organizations are recommended to review the strategy at least once a year and update it if any internal or external factors have changed.

For universities:

4. Developing a strategy for research and innovation universities it is recommended to structure it in two levels – university and faculty level – and in the implementation phase adjust internal processes, governance, financial system and structure according to the targets defined by strategy.
5. Universities willing to incorporate concept of sustainable development or valorization in the strategy are recommended to incorporate elements of the concepts through all of the basic functions.
6. Universities are recommended to create a financial model, which provides a performance based funding to the faculties according to the cascaded targets.

For public government:

7. For establishment of research and innovation university public government is recommended to:
 - a. Define classification of universities, separating one as research and innovation university;
 - b. Allocate appropriate amount of financial and other resources to run the research and innovation university;
 - c. Provide specific funding for valorization activities.
8. Public government is recommended to promote creation of strategies for universities by applying methodology presented in this Doctoral Thesis.

SOURCES AND LITERATURE USED IN THE SUMMARY

1. Adams, W.M., *The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century*. Report of the IUCN, Renowned Thinkers Meeting, 2006, 29–31.
2. Auzins A., Vanags J.: *Analytical Assessment of Sustainable Development Concept*, *Journal of Geomatics*, 2012, 49–53.
3. Beer, M., Eisenstat, R.A. *The Silent Killers of Strategy Implementation and Learning*, *Sloan Management Review*, Summer, 2000, 29–42.
4. Birnbaum B., *Strategic Thinking: a Four Piece Puzzle*, Douglas Mountain Publishing, 2004, 214.
5. Blahová M., Knápková A., *Effective Strategic Action: From Formulation to Implementation*, 2010 International Conference on Economics, Business and Management, 2011.
6. Blakely G.L., Martinec C. L., Lane M. S., *Management development programs: the effects of management level and corporate strategy*, *Human Resource Development Quarterly*, Spring 1994.
7. Bryant A., *The challenge of creating a unified organizational strategy*, *The New York Times*, July 12, 2013.
8. Charles W.L. H., Gareth R. J. *Essentials of Strategic Management*. Third Edition, 2011, 74–77.
9. Charles W.L. H., Gareth R. J. *Strategic Management: An Integrated Approach*, South-Western College Pub; 10 edition, 2012, 64–68.
10. Christensen C. M., Donovan T., *The process of strategy development and implementation*, Harvard Business School Working Paper, No. 00-075, April, 2000.
11. Closs L., Ferreira G.C., Soria A.F., Sampaio C.H., and Perin M., *Organizational Factors that Affect the University-Industry Technology Transfer Processes of a Private University*, *Journal of Technology Management & Innovation*, 2012, 104–117.
12. Collins J. Piana D. L., *Strategy development is a process, not a retreat*, Nelson Strategic Consulting, January 13, 2015.
13. Cunska Z., Kaša R., Lapiņa I., Paalzow A., Pauna D. *Analysis of the mechanisms of change and institutional evaluation*. Draft version of Project “EU policies impact to the transformations of the higher education and research system in Norway and Latvia”, 2016.
14. Desroches D., Hatch T., Lawson R., *Are 90% of organizations still failing to execute on strategy?*, 2014, 61–67.
15. Eden C., *Strategy development as a social process*, *Journal of Management Studies*, November, 1992, 709–811.
16. Edinger S., *Three Cs of implementing strategy*, *The Forbes*, 2012.
17. Fawcett S.B., Negy J., *Developing successful strategies: Planning to win*, *The Community Tool Box*, 1996, Available at: <http://ctb.ku.edu/en/table-of-contents/structure/strategic-planning>.
18. Foursight Consulting Group Inc., *Quick reference to creating vision, mission & value statements*, Tayside Vision, Mission, & Values Workshop, April, 2006.

19. Foursight Consulting Group, 2006. Quick Reference - Creating Vision, Mission and Value Statements, Tyside Vision, Missio, & Values Workshop, 2006, Available from Internet: <[http://www.foursightconsulting.com/ideas/tools/Quick Reference - Creating Vision, Mission and Value Statements.pdf](http://www.foursightconsulting.com/ideas/tools/Quick%20Reference%20-%20Creating%20Vision,%20Mission%20and%20Value%20Statements.pdf)>.
20. French W, Organization development objectives, assumptions and strategies, California Management Review, winter, 1969, 23–34.
21. French W., Organization development objectives, assumptions and strategies, California Management Review, winter, 1969, 23–34.
22. Gareth R.J., Charles E.L.H., Theory of Strategic Management with cases. 9th edition, 2010, 454
23. Greenstein G., Plunkett D., Street N., A strategy for success: performance-based human resource development, Human Resource Planning, 1994, 43–61.
24. Guillot P., Strategy development process - good decisions are more important than great ideas, Centerfirst Consulting LLC, October 29, 2013.
25. Hax, A. C.; Majluf, N. S., Strategy and The Strategy Formation Process, 1986, Available from Internet: <[http:// dspace.mit.edu/bitstream/handle/1721.1/2149/SWP-1810-15686178.pdf](http://dspace.mit.edu/bitstream/handle/1721.1/2149/SWP-1810-15686178.pdf)
26. Hurst N. E. Corporate Ethics, Governance and Social Responsibility: Comparing European Business Practices to those in the United States, 2004, Accessed online: [http://www.scu.edu/ethics/ publications/submitted/hurst/comparitive_study.pdf](http://www.scu.edu/ethics/publications/submitted/hurst/comparitive_study.pdf)
27. Ingley C., Mowbray D., Collaboration or confrontation: The characteristics of the board and executive that can influence strategy development, 3rd Annual International Conference on Business Strategy and Organizational Behaviour, 2013, 160–166.
28. Jooste, C.; Fourie, B. 2009. The role of strategic leadership in effective strategy implementation: Perceptions of South Africa strategic leaders, Southern Business Review, 2009, 51–68.
29. Kaplan R.S., Norton D.P, Putting the Balanced Scorecard to work, Harvard Business Review, September-October, 1993.
30. Kaplan R.S., Norton D.P. Having Trouble with Your Strategy? Then Map It, Harvard Business Review, September-October, 2000.
31. Kaplan R.S., Norton D.P. Mastering the Management System, Harvard Business Review, January, 2008.
32. Kaplan R.S., Norton D.P., Barrows Jr. E.A., developing the Strategy: Vision, value Gaps, and Analysis, Balanced Scorecard Report, January-February, 2008.
33. Kaplan R.S., Norton D.P., Using the Balanced Scorecard as a Strategic Management System, Harvard Business Review, July–August, 2007.
34. Knox A.B., McBride P.E., Mejicano G.C., Underbaake G., Organization Development Strategies for Continuing Medical Education, The Journal of Continuing Education in the Health Professions, 2001, 15–23.
35. Lipton M., Demystifying the Development of an Organizational Vision, Sloan Management Review, summer, 1996, 83.
36. Mankins, M. C.; Steele, R., Turning Great Strategy into Great Performance, Harvard Business Review, July – August, 2005, 123–131.
37. Mintzberg H., Strategy-Making in Three Modes, California Management Review winter, 1973.

38. Neilson, G. L.; Martin, K. L.; Powers, E., The Secrets to Successful Strategy Execution, *Harvard Business Review*, June, 2008, 93–93.
39. Niehoff B.P., Enz C.A., Grover R.A., The Impact of Top-Management Actions on Employee Attitudes and Perceptions, *Group Organization Management Journal*, September, 1990, 337–352.
40. Porter M. E., “The Five Competitive Forces That Shape Strategy”, *Harvard Business Review*, January, 2008, 78–93.
41. Porter M. E., What is a strategy? *Harvard Business Review*, November – December, 1996, 61–78.
42. Porter M. E., What Is Strategy? *Harvard Business Review*, November–December 1996, 2–22.
43. Porter M.E., From competitive advantage to corporate strategy, *The MCKINSEY quarterly* 1988, 35–66.
44. Radomska J. Operational risk associated with the strategy implementation, *Management*, 2014.
45. Rains J., Williams T.C., Linking strategy to structure: the power of systematic organization design, *Organization Development Journal*, Summer, 2007, 163–170.
46. Riga Technical University, Strategy of Riga Technical University 2014-2020, Approved by a Decision of the Senate of RTU on October, 2013.
47. Rumelt R. P., Evaluation of strategy: theory and models, *Business Policy and Strategic Management*. 3rd edition, 1980.
48. Smar V., Barman T., Gunasekera N. Incorporating ethics into strategy: developing sustainable business models. *Chartered Institute of Management Accountants*, 2010.
49. Smith I. L. (2002). A tutorial on Principal Components Analysis, 27, 1–3, Available at:
www.cs.otago.ac.nz/cosc453/student_tutorials/principal_components.pdf
50. Thomas A., Benchmarking Strategy Vital to Business Performance. *Financial Executive Magazine*, June, 2005, 16–16.
51. Tornatzky L.G., Building state economies by promoting University-industry technology transfer, 2000.
52. Villinger D.N. Analyzing non-profit organizations: managerial frameworks and evaluation, *Journal of Global Business Issues*, Spring, 2009, 61.
53. Vincent M., Ten attributes of an effective strategy development process, *Strategic Planning Insight Plus*, 2015.
54. Whitwam, D. R., *Implementing Effective Organizational Strategy*, 2009, Available from Internet:
<http://www.charlesmore.com/cms/files/Implementing_Effective_Organizational_Strategy_ID39861.pdf>.