RIGA TECHNICAL UNIVERSITY
Faculty of Engineering Economics and Management
Institute of Production and Entrepreneurship
Department of Finance

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DEVELOPMENT OF CUSTOMER CENTRIC BUSINESS MODEL IN A COMMERCIAL BANK

Summary of Doctoral Thesis

Field: Management Science

Sub-field: Entrepreneurship and Business Management

Scientific supervisor
Dr. oec., professor
N. LĀCE

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DOCTORAL THESIS

PROPOSED TO RIGA TECHNICAL UNIVERSITY FOR THE PROMOTION TO THE SCIENTIFIC DEGREE OF DOCTOR OF ECONOMICS (Dr. oec.)

The Doctoral Thesis has been developed at the Department of Finace of the Faculty of Engineering Economics and Management, Riga Technical University. To be granted the scientific degree of Doctor of Economics, the present Doctoral Thesis has been submitted for the defence at the open meeting of RTU Promotion Council "RTU P-09" on 27 May 2014 – 12 p.m., at the Faculty of Engineering Economics and Management, Riga Technical University, 6 Kalnciema Street, Room 309.

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DECLARATION OF ACADEMIC INTEGRITY

I hereby declare that the Doctoral Thesis submitted for the review to Riga Technical University for the promotion to the scientific degree of Doctor of Economics, is my own and does not contain any unacknowledged material from any source. I confirm that this Thesis has not been submitted to any other university for the promotion to other scientific degree.

Jana Eriņa _____

23 April 2014

The Doctoral Thesis has been written in English. The Doctoral Thesis comprises an introduction, three chapters, conclusions and proposals and bibliography with 389 reference sources; it has been illustrated by 36 figures, 45 tables and 14 formulas. The volume of the present Thesis is 173 pages, not including 22 appendices.

GENERAL DESCRIPTION OF THE PRESENT RESEARCH

Financial institutions such as banks play a decisive role in any sector of the national economy. With the increase of global competition, the focus of attention is getting shifted from the issues related to products and services offered by the banks and their concentration on cost reduction strategy to the increase of customer equity value not only to provide value to the customers, but also to ensure stable cash flow at the bank. In this respect, such intangible assets, as customer equity, brand, and workforce are the dominating factors that determine value (see, for example, Gupta et al, 2004).

The fact that banks cannot anymore work only according to the principles based on delivering good service and ensuring customer trust has also been attested by the results of research conducted by Keiningham et al (2007). Banks more than ever should concentrate their attention on customer segmentation and their needs analysis focusing on customer centricity strategy.

Former Chairman of the Board of JSC "Rietumu Bank" Michael J. Bourke stressed the role and significance of customers in the banking sector already in 2005, he maintained, "No matter what new technologies are used, no matter what new products are offered to the customers, the banks would not be able to retain their customers if they did not care about customer relations. In reality, bank customers are assets, which are not reflected on the bank balance sheet. Each bank has to learn how to attract their customers so as to ensure they are not lured away by some other bank. That is why it is necessary to maintain close contact also with those customers, who rarely visit the bank in person and who work through a remote system. Every employee should care about customer relations, from the bank tellers to top management. Banks should know their customer needs and watch how these needs change" (The Bank of Latvia, 2010).

The factors related to the increase of the banking customer value to a considerable extent depend on the strategies developed by bank management as well as managerial action plans. Thus, customer equity is seen as the basis for ensuring cash flow stability at the bank.

One of the main pressing issues is the transfer from product- and service-centric to customer-centric thinking, which also implies the increase of the existing value of customer equity both for financial institutions and the customers themselves. Rust et al (2004) note that customer equity and corporate value of an organization are closely interconnected.

Bank performance assessment methods disregard intangible assets of the banks; however, in the highly competitive financial sector it is specifically the intangible assets that are the factor increasing the book value of the bank assets in the opinion of investors.

Problems associated with customer equity management that exist in the commercial banks operating in Latvia and other countries banks determine **the topicality of the present research**:

- Banks still focus their attention on the value of financial assets, ignoring the value added by intangible assets;

- The concept "customer equity" used in the scientific literature has not been precisely defined in the financial service context; the approach to customer equity management has not been sufficiently analyzed;

- A new and not yet widely analyzed concept of customer-centric management, which also implies the changes in the existing business model;

- There are limitations of different kind related to customer equity management at the Latvian commercial banks, which hinder the introduction of the customer equity management system.

Topicality of the research is also determined by the fact that so far a universally accepted system of customer equity management has not been developed either in Latvia or at the banks of other countries of Central and Eastern Europe.

Within the framework of the Doctoral Thesis in order to solve the problems stated in the research, the author is looking for the answers to the following questions:

- What does the concept "customer equity" mean?

- What determines the management of customer equity? What are the constituent elements of customer equity? Is it possible to adapt the methods of determining and managing customer equity used abroad to the Latvian commercial banking environment?

- How can the transition from the existing bank business model to the ecosystem model principles ensure the stability of bank customer equity?

- What factors and characteristic values should be used to increase bank customer equity?

The Aim of the Doctoral Thesis is development of a customer-centered business model of commercial banks and make suggestions for improvement of customer equity management at a commercial bank based on the analysis of performance efficiency of the Latvian commercial banks and the results of the study of the concept of customer equity.

To reach the aim of the present Doctoral Thesis, the following **tasks** have been set:

1. To assess the efficiency of the Latvian commercial banking sector and compare it with the Central and Eastern Europe countries banks;

2. To specify the concept of customer equity and to develop a conceptual model of customer equity;

3. To explore the application of the concept of business ecosystem in the banking sector;

4. To develop a bank business ecosystem model and assess its dimensions: customer-centricity, bank customer segmentation, bank customer value proposition, responsible lending;

5. To develop bank customer equity management factor model and instruments for bank customer equity management.

6. To develop directions of bank environmental risk management for lending within the context of responsible lending.

The Object, Subject, Limitations and Constraints, and Methods of Research of the Doctoral Thesis

The Object of the Doctoral Thesis is the bank business model and its influencing factors.

The Subject of the Doctoral Thesis is the factors affecting bank customer equity and its management instruments.

Research Limitations and Constrains. Within the framework of the research, the main focus has been placed on the issues concerning customer equity with regard to bank development strategy and cash flow stability from the point of view of the banks and bank customers. The issues connected with the application of various management system software, marketing activities and their introduction at the banks are not considered in the present Doctoral Thesis due to space restrictions.

There are certain research limitations that are connected with the public availability of the data and the number of respondents.

For the purpose of data analysis and comparison, performance results of the Latvian commercial banks and the Central and Eastern Europe countries banks were used considering the time period from 2006 to 2012.

Methods of Research. Various research methods were applied in the course of development of the present Doctoral Thesis, such as qualitative, quantitative and mixed

research methods of economic science and quantitative and quantitative data processing methods including statistical, comparative methods, as well as content analysis methods.

Theoretical and Methodological Framework of the Research. The theoretical and methodological framework of the research is based on the works of such prominent foreign scholars as Anderson J. C., Berger A. N., Blattberg R. C., Bontis N., Degryse H., Edvinsson L., Epstein M. J., Gupta S., Hartman A., Iansiti M., Levien R., Lemon K. N., Kosmidou K., Kotler P., Moore J. F., Nonaka I., Osterwalder A., Pigneur Y., Rust R. T., Sufian F., Teece D. J., Zineldin M. and theoretical and practical insights on the concept of customer centricity made by such Latvian authors as Bikse V., Čirjevskis A., Grasis J., Niedrītis J. Ē., Praude V., Kudinska M.

The information basis of the Doctoral Thesis is formed by the data of the Central Statistical Bureau of the Republic of Latvia, Eurostat, Bankscope data base, financial annual reports of the banks, bank home pages in Latvia, CEE countries and other European countries.

Scientific Novelty of the Doctoral Thesis:

1. The assessment of the banking sector of Latvia and the countries of CEE has been performed using parametric and non-parametric methods, performance efficiency of the banking business models according to customer segment groups has been estimated, and bank performance priorities have been defined.

2. The analysis of the concept of customer equity in the banking sector and selection and assessment of the factors affecting customer equity has been conducted.

3. The customer-centered bank business model has been developed, its development according to ecosystem principles has been assessed using customer centricity, customer equity management instruments, which are related to customer loyalty and relations among the stakeholders, have been elaborated.

4. Factors of bank customer equity assessment based on values, brand and retention equity have been analyzed and bank customer equity factor model has been developed.

5. Suggestions for environmental risk management within bank lending process have been made.

Thesis Statements to be defended:

1. Sustainable performance of the banking sector can be increased by strengthening the relations with the customers.

2. Integration of the concept of the business ecosystem into the bank business model can increase bank customer equity.

3. Bank customer equity management, which is based on the customer-centric business model, will be able to increase bank performance efficiency and stability of the customer equity.

4. In order to increase customer equity, a bank should perform the assessment and management of the factors affecting customer equity and environmental risks.

The Approbation and Practical Use of Research Results. The results of the research were discussed in Latvia and other countries, and that is confirmed with the publications in the scientific editions.

The research results were used within the fundamental and applied research project No. 394/2012 "Enhancing Latvian Citizens' Securitability through Development of the Financial Literacy", as well as at the commercial banks. They were also integrated into the curriculum of some study courses delivered at Riga Technical University.

Questionnaires for studying the opinions of bank customers and employees about different aspects of customer equity have been developed within the framework of the research. They can be applied for improvement of bank performance efficiency and provide its sustainable development based on stability of customer equity.

The customer ecomap developed by the author can be used in the daily operations of the banks while working with profitable customer segments in order to recognize customer needs to the maximum possible degree. As a result, it would be possible to offer to the customers and launch value creating products and services.

The developed risk management instruments can be used in the process of bank credit risk assessment and monitoring.

Scientific Publications. Research results have been presented in 32 publications, including 19 articles published in the internationally indexed peer-reviewed editions (France, USA, Italy, Austria, Czech Republic, Malaysia, Spain, Russia, Lithuania, Turkey, Estonia and Bulgaria).

Articles published in scientific journals and proceedings of international conferences, which are included into such international databases as EBSCO, SCOPUS, ISI Web of Science and Index Copernicus:

1. Eriņš, I., & Eriņa, J. (2013). Banks Profitability Indicators in CEE Countries. World Academy of Science, Engineering and Technology. International Science Index 84. International Journal of Social, Human Science and Engineering, 7(12), 257-261, p ISSN: 2010-376X, e ISSN: 2010-3778.

2. Eriņa, J., & Eriņš, I. (2013). Responsible Lending in Banks of the Baltic States. Journal of Systemics, Cybenetics and Informatics, 11(8), 37-45, ISSN: 1690-4524.

3. Eriņa, J., & Eriņš, I. (2013, July 9-12). Assessment of Bank Customer Equity. Proceedings from the 17th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2013). USA, Orlando: International Institute of Informatics and Systemics, 17(II), 7-12, collection ISBN-13:978-1-936338-89-4, volume II ISBN-13: 978-1-936338-88-7.

4. Eriņš, I., & Eriņa, J. (2013, July 9-12). Development of Customer-Centric Banking: Case from Latvia. Proceedings from the 17th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2013). USA, Orlando: International Institute of Informatics and Systemics, 17(II), 13-18, collection ISBN-13:978-1-936338-89-4, volume II ISBN-13: 978-1-936338-88-7.

5. Eriņa, J., & Eriņš, I. (2013, June 27-28). Efficiency of the CEE Countries Banking System: a DEA Model Evaluation. Proceedings from the 21st International Business Information Management Association Conference "Vision 2020: Innovation, Development Sustainability, and Economic Growth". Austria, Vienna: IBIMA Publishing, 1009-1016, CD ISBN: 978-0-9860419-0-7.

6. Eriņa, J., & Eriņš, I. (2013, June 27-28). Needs for Business Ecosystem. Proceedings from the 21st International Business Information Management Association Conference "Vision 2020: Innovation, Development Sustainability, and Economic Growth". Austria, Vienna: IBIMA Publishing, 1472-1480, CD ISBN: 978-0-9860419-0-7.

7. Eriņa, J., & Eriņš, I. (2013). Bank Business Models and the Changes in CEE Countries. World Academy of Science, Engineering and Technology, 75, 7(3), 175-179, p ISSN: 2010-376X, e ISSN: 2010-3778.

8. Eriņa, J., & Lāce, N. (2013). Commercial Banks Profitability Indicators: Empirical Evidence from Latvia. IBIMA Business Review, 2013 (2013), 1-9, Article ID 873515, Available from: doi:10.5171/2013.873515, ISSN: 1947-3788.

9. Eriņa, J., & Eriņš, I. (2013, March 25-26). The Inclusion of the Intellectual Capital and the Reflection of Its Value in the Banks Annual Reports. Proceedings from the 20th International Business Information Management Association Conference "Entrepreneurship Vision 2020: Innovation, Real Estate Investment, Development Sustainability, and Economic Growth". Malaysia, Kuala Lumpur: IBIMA Publishing, 734-745, CD ISBN: 978-0-9821489-9-0.

10. Eriņa, J., & Lāce, N. (2012, November 12-13). Social and Environmental Risks Assessment in Banks` Lending Decisions. Proceedings from the 19th International Business Information Management Association Conference "Innovation Vision 2020: Sustainable Growth, Entrepreneurship, and Economic Development". Spain, Barcelona: IBIMA Publishing, 595-604, CD ISBN: 978-0-9821489-8-3.

11. Eriņa, J., & Eriņš, I. (2012, July 17-20). Responsible Lending in Latvian Banks. Proceedings from the 16th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2012). USA, Orlando: International Institute of Informatics and Systemics, 16(I), 7-12, collection ISBN-13: 978-1-936338-64-1, volume I ISBN-13: 978-1-936338-62-7.

12. Eriņš, I., & Eriņa, J. (2012, July 17-20). Need for New Business Model in Banks. Proceedings from the 16th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2012). USA, Orlando: International Institute of Informatics and Systemics, 16(I), 13-18, collection ISBN-13: 978-1-936338-64-1, volume I ISBN-13: 978-1-936338-62-7.

13. Eriņa, J., & Lāce, N. (2012, May 24-25). Factors that Affecting the Customer Loyalty and the Choice of Bank. Proceedings from the IX All-Russian Scientific and Practical Conference with International Participation "Contemporary Problems of Regional Economy Management-2012". Russia, Saint Petersburg: Saint Petersburg State University of Engineering and Economics, Publishing house "Lubavich", 155-158, ISSN: 2304-926X.

14. Eriņa, J., & Lāce, N. (2012, May 10-11). Bank Lending, the Impact of Environmental Factors. Proceedings from the 7th International Scientific Conference "Business and Management 2012". Lithuania, Vilnius: Vilnius Gediminas Technical University, 30-36, CD ISBN: 978-609-457-116-9, online ISSN: 2029-4441 print/2029-929X.

15. Eriņa, J., & Lāce, N. (2012, May 9-10). Environmental Risk Assessment in Commercial Banks. Proceedings from the 18th International Business Information Management Association Conference "Innovation and Sustainable Economic Competitive Advantage From Regional Development to World Economies". Turkey, Istanbul: IBIMA Publishing, 2823-2832, CD ISBN: 978-0-9821489-7-6.

16. Eriņa, J., & Lāce, N. (2012, March 28-30). Environmental Question Impact for Lenders and the Risk Management Process. Proceedings from the 17th International Scientific Conference "Economics and Management-2012 (ICEM-2012)". Estonia, Tallinn: Tallinn University of Technology, 17(2), 739-745, online ISSN: 2029-9338, CD ISSN: 1822-6515.

17. Eriņa, J., & Lāce, N. (2011, November 14-15). Latvian Commercial Bank Profitability Indicators. Proceedings from the 17th International Business Information Management Association Conference "Creating Global Competitive Economies: A 360-degree Approach". Italy, Milan: IBIMA Publishing, 1316-1325, CD ISBN: 978-0-9821489-6-9.

18. Eriņa, J., & Lāce, N. (2011, September 5-7). Needs for Customer Capital in Banks. Proceedings from the IV International Scientific Conference "Knowledge Society", V International Science Conference for Young Researchers "Technical Science and Industrial Management". Bulgaria, Nesebar: KSI Transactions on Knowledge Society. A Publication of the Knowledge Society Institute IV(3), 38-41, ISSN: 1313-4787.

19. Eriņa, J., & Lāce, N. (2011). Quality and Customer Relationship Management in the Bank. Economics and Management [Ekonomika ir vadyba], Lithuania, Kaunas: Technologija, 16, 736-742, ISSN: 1822-6515.

Other publications:

1. Eriņa, J., & Lāce, N. (2013, May 9). Biznesa ekosistēma kā bankas nākotnes perspektīva. Collected abstract of the RTU 54. Student Scientific and Technical Conference. Latvia, Riga, p.30, ISBN:978-9934-10-512-8.

2. Eriņa, J., & Lāce, N. (2013, April 24-26). Bank Customer Segmentation: the Case of CEE Countries. Collected Abstracts of the 18th International Scientific Conference "Economics and Management-2013 (ICEM-2013)". Lithuania, Kaunas, p.95, ISSN: 2335-8025.

3. Eriņa, J., & Eriņš, I. (2013, April 24-26). Efficiency of the Latvian Commercial Banking System: a DEA Model Evaluation. Collected Abstracts of the 18th International Scientific Conference "Economics and Management-2013 (ICEM-2013)". Lithuania, Kaunas, 31-32, ISSN: 2335-8025.

4. Eriņa, J., & Lāce, N. (2013, March 7-8). The New Banking Business Model Based on Ecosystem. Proceedings from the 16th Annual International Conference "Enterprise and Competitive Environment". Czech Republic, Brno, p.1, CD ISBN: 978-80-87106-64-8.

5. Eriņa, J., & Lāce, N. (2012, October 10-12). Changes in Business Model of Banks in CEE Countries. Collected Abstracts of the Riga Technical University 53rd International Scientific Conference "Dedicated to the 150th Anniversary and the 1st Congress of World Engineers and Riga Polytechnical Institute". Latvia, Riga, RTU Alumni: Digest, p.530, ISBN: 978-9934-10-360-5.

6. Eriņa, J., & Lāce, N. (2012, March 28-30). Environmental Question Impact for Lenders and the Risk Management Process. Collected Abstracts of the 17th International Scientific Conference "Economics and Management-2012 (ICEM-2012)". Estonia, Tallinn, 185-186, online ISSN: 2029-9338, CD ISSN: 1822-6515.

7. Eriņa, J., & Lāce, N. (2012, April 20). Vides risku pārvaldības nozīme komercbankās. Collected abstracts of the 53. RTU Student Scientific and Technical Conference. Latvia, Riga: RTU Publishing House, 9-10, ISBN: 978-9934-10-391-9.

8. Eriņa, J., & Lāce, N. (2011, November 16-17). Customer Capital – an Important Factor for Commercial Banks. Proceedings from the 1st International Scientific Conference "Whither Our Economies". Lithuania, Vilnius: Mykolas Romeris University, 167-174, online ISSN: 2029-8501.

9. Eriņa, J., & Lāce, N. (2011, October 7). Faktoru novērtējums, kuri nosaka bankas izvēli. Collected Abstracts of the 52nd International Scientific Conference of Riga Technical University "RTU FEEM Scientific Conference on Economics and Entrepreneurship (SCEE' 2011)". Latvia, Riga: RTU Publishing House, 34-35, ISBN: 978-9934-10-202-8.

10. Eriņa, J., & Lāce, N. (2011, April). Komercbankas klientu kapitāla vērtēšanas problēmas. Collected abstracts of the 52. RTU Student Scientific and Technical Conference. Latvia, Riga: RTU Publishing House, p.74, ISBN: 978-9934-10-260-8.

11. Eriņa, J., & Lāce, N. (2011, April 27-29). Quality and Customer Relationship Management in the Bank. Collected Abstracts of the 16th International Conference "Economics and Management-2011 (ICEM-2011)". Czech Republic, Brno: Brno University of Technology, 231-232, ISBN: 978-80-214-4279-5.

12. Eriņa J., & Lāce N. (2010). Zināšanu vadīšanas nepieciešamība komercbankās. Scientific Proceedings of Faculty of Engineering Economics and Management Riga Technical University Institute of Production and Entrepreneurship. Economics Research in Business. Latvia, Riga: RTU Publishing House, 8, 24-37, ISSN: 1691-0737.

13. Eriņa J., & Lāce N. (2010, October 15). Zināšanu menedžmenta nepieciešamība komercbankās. Collected Abstracts of the 51th International Scientific Conference of Riga Technical University. RTU FEEM Scientific Conference on Economics and Entrepreneurship (SCEE`2010). Latvia, Riga: RTU Publishing House, p.28, ISBN: 978-9934-10-061-1.

The research results of the Doctoral Thesis have been reported at 23 international and local conferences (France, USA, Italy, Austria, Czech Republic, Malaysia, Spain, Russia, Lithuania, Turkey, Estonia, Bulgaria and Latvia):

1. World Academy of Science Engineering and Technology International Conference: "ICBEF 2013 on Business, Economics and Finance", December 30-31, 2013, France, Paris, paper title – "Banks Profitability Indicators in CEE Countries".

2. International Institute of Informatics and Systemics the 17th International Conference "World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2013)", July 9-12, 2013, USA, Orlando, paper title – "Assessment of Bank Customer Equity" and "Development of Customer – Centric Banking: Case from Latvia".

3. International Business Information Management Association the 21st International Conference "Vision 2020: Innovation, Development Sustainability, and Economic Growth", June 27-28, 2013, Austria, Vienna, paper title – "Efficiency of the CEE Countries Banking System: a DEA Model Evaluation" and "Needs for Business Ecosystem".

4. Kaunas University of Technology, School of Economics and Business the 18th International Conference "Economics and Management-2013 (ICEM-2013)", April 24-26, 2013, Lithuania, Kaunas, paper title – "Bank Customer Segmentation: the Case of CEE Countries" and "Efficiency of the Latvian Commercial Banking System: a DEA Model Evaluation".

5. Riga Technical University the 54th RTU Student and Technical Conference, April, 2013, Latvia, Riga, paper title – "Biznesa ekosistēma kā bankas nākotnes perspektīva".

6. World Academy of Science Engineering and Technology International Conference "ICBEMS 2013: International Conference on Business, Economics and Management Sciences", March 28-29, 2013, Spain, Madrid, paper title – "Bank Business Models and the Changes in CEE Countries".

7. International Business Information Management Association the 20th International Conference "Entrepreneurship Vision 2020: Innovation, Real Estate Investment, Development Sustainability, and Economic Growth", March 25-26, 2013, Malaysia, Kuala Lumpur, paper title – "The Inclusion of the Intellectual Capital and the Reflection of Its Value in the Banks Annual Reports".

8. Mendel University in Brno, Faculty of Business and Economics the 16th International Conference "Enterprise and Competitive Environment", March 7-8, 2013, Czech Republic, Brno, paper title – "The New Banking Business Model Based on Ecosystem".

9. International Business Information Management Association the 19th International Conference "Innovation Vision 2020: Sustainable Growth, Entrepreneurship, and Economic Development", November 12-13, 2012, Spain, Barcelona, paper title – "Social and Environmental Risks Assessment in Banks` Lending Decisions".

10. Riga Technical University the 53rd International Conference "Dedicated to the 150th Anniversary and the 1st Congress of World Engineers and Riga Polytechnical Institute", October 10-12, 2012, Latvia, Riga, paper title – "Changes in Business Model of Banks in CEE Countries".

11. International Institute of Informatics and Systemics the 16th International Conference "World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2012)", July 17-20, 2012, USA, Orlando, paper title – "Responsible Lending in Latvian Banks" and "Need For New Business Model in Banks".

12. Saint Petersburg State University of Engineering and Economics, the Faculty of Regional Economy and Management International Conference "IX All-Russian Scientific and Practical Conference with International Participation", "Contemporary Problems of Regional Economy Management", May 24-25, 2012, Russia, Saint Petersburg, paper title – "Factors that Affecting the Customer Loyalty and the Choice of Bank".

13. Vilnius Gediminas Technical University the 7th International Conference "Business and Management 2012", May 10-11, 2012, Lithuania, Vilnius, paper title – "Bank Lending, the Impact of Environmental Factors".

14. International Business Information Management Association the 18th International Conference "Innovation and Sustainable Economic Competitive Advantage from Regional Development to World Economies", May 9-10, 2012, Turkey, Istanbul, paper title – "Environmental Risk Assessment in Commercial Banks".

15. Riga Technical University the 53rd RTU Student Scientific and Technical Conference, April 20, 2012, Latvia, Riga, paper title – "Vides risku pārvaldības nozīme komercbankās".

16. Kaunas University of Technology, School of Economics and Business the 17th International Conference "Economics and Management-2012 (ICEM-2012)", March 28-30, 2012, Estonia, Tallinn, paper title – "Environmental Question Impact for Lenders and the Risk Management Process".

17. Mykolas Romeris University, Faculty of Economics and Finance the 1st International Conference "Whither Our Economies", November 16-17, 2011, Lithuania, Vilnius, paper title – "Customer Capital – an Important Factor for Commercial Banks".

18. International Business Information Management Association the 17th International Conference "Creating Global Competitive Economies A 360-degree Approach", November 14-15, Italy, Milan, paper title – "Latvian Commercial Bank Profitability Indicators".

19. Riga Technical University the 52nd International Conference "RTU FEEM on Economics and Entrepreneurship (SCEE` 2011)", October 7, 2011, Latvia, Riga, paper title – "Faktoru novērtējums, kuri nosaka bankas izvēli".

20. Knowledge Society Institute International Conference "IV International Science Conference "Knowledge Society", V International Science Conference for Young Researchers "Technical Science and Industrial Management", September 5-7, 2011, Bulgaria, Nesebar, paper title – "Needs for Customer Capital in Banks".

21. Kaunas University of Tecnology, School of Economics and Business the 16th International Conference "Economics and Management-2011 (ICEM-2011)", April 27-29, 2011, Czech Republic, Brno, paper title – "Quality and Customer Relationship Management in the Bank".

22. Riga Technical University the 52nd RTU Student Scientific and Technical Conference, April 9, 2011, Riga, Latvia, paper title – "Komercbankas klientu kapitāla vērtēšanas problēmas".

23. Riga Technical University the 51st RTU Student Scientific and Technical Conference, October 15, 2010, Riga, Latvia, paper title – "Zināšanu menedžmenta nepieciešamība komercbankās".

Contents of the Doctoral Thesis

ABBREVIATIONS

INTRODUCTION

The Content and Volume of the Doctoral Thesis

In **Part 1** "Evaluation of Banking Sector Efficiency in Latvia, Central and Eastern Europe, and the Concept of Customer Equity" the author performs assessment of the efficiency of the banking sector in Latvia and the countries of Central and Eastern Europe using parametric and non-parametric methods; analyzes the existing business models at the banks according to financial and non-financial indicators, and develops the conceptual model of customer equity.

In **Part 2** "Functioning of Banking Business on the Basis of Business Ecosystem Principles" the author analyzes and determines the parties involved in the bank business ecosystem and their scope of responsibility; develops the model of bank business ecosystem; assesses the dimensions of bank business ecosystem including customer centricity; studies bank customer segments of the Latvian commercial and Central and Eastern Europe countries banks; assesses customer value proposition; analyzes the concept of responsible lending.

In **Part 3** "Directions of Latvian Commercial Bank Customer Equity Management" the author assesses and analyzes the factors affecting bank customer equity using survey questionnaires for polling bank employees and bank customers; assesses intellectual capital and its impact on bank financial indicators using the combination of qualitative and quantitative research methods; develops suggestions concerning environmental risk management processes at the bank.

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

The Doctoral Thesis has been developed at the Department of Finance, the Faculty of Engineering Economics and Management in the field of Management Science in compliance with the Law on Scientific Activity as of 14 April, 2005, Regulations of the Cabinet of Ministers of the Republic of Latvia No.1001 as of 27 December, 2005, the requirements of the Latvian Council of Science and Riga Technical University Regulations on Doctoral Studies as of 25 June, 2012.

THE MAIN SCIENTIFIC RESULTS OF THE RESEARCH

1. EVALUATION OF BANKING SECTOR EFFICIENCY IN LATVIA, CENTRAL AND EASTERN EUROPE AND THE CONCEPT OF CUSTOMER EQUITY

The Chapter contains 43 pages, 29 tables, 12 figures, 5 formulas.

Assessing the development of the Latvian banking sector, the author has concluded that the following financial performance criteria are considered as being the most important: changes in product and service sales volume, operating profit and revenues, as well as loan repayment rate and potential profit per share. However, that is not enough, taking into consideration the fact that being the main party involved, the bank customer plays a decisive role in ensuring a stable cash flow at the bank both from the point of view of the lender and the borrower. Also Joseph et al (1999) stress that the development of future strategy should not be based only on financial performance indicators.

Therefore, within the framework of the Doctoral Thesis the author performed the assessment of performance of the banking sectors in Latvia and the countries of Central and Eastern in three stages, using the concurrent triangulation research design. The logical scheme of the research is presented in Figure 1.
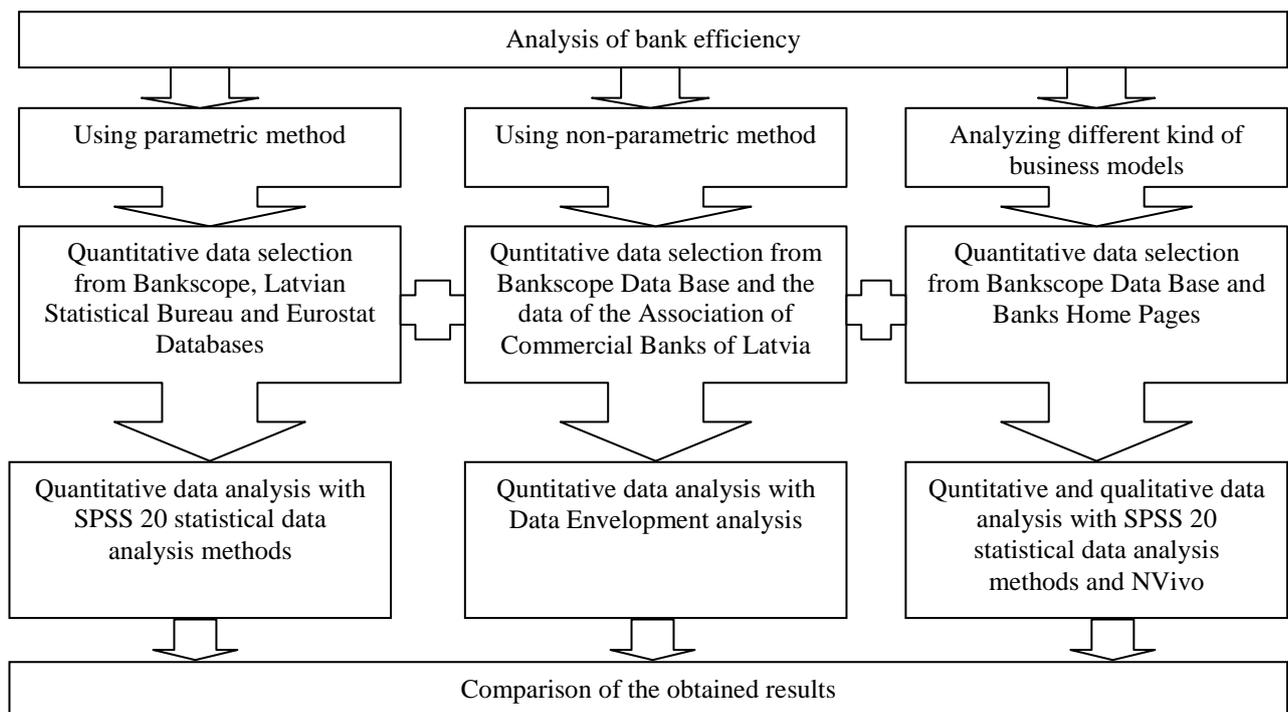
Fig.1. Concurrent triangulation research design [developed by the author]

To assess performance efficiency of the Latvian commercial banks using parametric and non-parametric methods, as well as different business models, the author used the data of Bankscope data base, Central Statistical Bureau of Latvia, Association of Latvian Commercial Banks and banks home pages of the analyzed banks for the period from 2006 to 2012. In turn, conducting the analysis of the banks in the Central and Eastern European countries to evaluate their performance efficiency the data from Bankscope and Eurostat data bases were used, as well as banks home pages.

In the first stage of research on the performance efficiency of the banking sector using parametric method (by Arhipova and Bāliņa (2006) based on the estimation of individual parameters used to compare the parameters in a sample) the factors affecting bank profitability were determined. In order to select the most frequently used bank profitability indicators, the author summarized the information on the research conducted by numerous foreign authors in Europe, USA and Asia. Based on Lee and Hsieh (2013), Kanas et al (2012), Bolt et al (2012), Amor-Tapia et al (2010), Sufian and Habibullah (2009), Athanasoglou et al (2008), Pasiouras and Kosmidou (2007), in order to assess bank profitability indicators of the banking sector in Latvia and the countries of Central and Eastern Europe, the author used such dependent indicators as return on average equity and return on average assets, internal bank indicators: capital, credit risk, total loans, deposits, net interest margin, and external indicators: growth of annual gross domestic product and annual inflation. The above-mentioned bank profitability indicators, their abbreviations and estimation methodology are given in Table 1.

Table 1

Description of Bank Profitability Indicators, their Abbreviations and Estimation Methodology

Variable	Measure
1	2
Dependent (bank profitability)	
Return on average equity (ROAE)	Net profits before taxes/ equity
Return on average assets (ROAA)	Net profits before taxes/ assets
Independent (internal indicators)	
Capital (CA)	Equity/ total assets
Credit risk (CR)	Loan loss provisions/ net interest revenue
Total loans (TL)	Net Loans/ total assets
Net interest margin (NIM)	Net interest revenue/ total assets
Macroeconomic (external indicators)	
Growth of annual gross domestic product (GDP)	GDP (in comparable prices) / GDP,%
Annual inflation (INF)	Changes in consumer prices in 12 months on average compared to the previous 12 months period

The data on bank profitability indicators estimated by the author were processed using SPSS descriptive data analysis methods (descriptive statistics, Pearson correlation analysis, and regression analysis).

Based on the results of correlation analysis of bank profitability indicators, the scholars from other countries established that there is weak or very weak correlation between bank profitability and internal and external indicators, however, the authors used regression analysis to define the factors affecting bank profitability (Demirgüç-Kunt and Huizinga, 1999; Naceur, 2003; Haron, 2004; Sufian and Habibullah, 2009; Alkassim, 2005; and other authors).

On the basis of Pearson correlation data, the author developed two types of regression analysis models. Regression models comprise bank indicators that are shown in the following functions:

$$ROAA = f \, (\mathrm{NIM, CA, CR, TL}) \tag{1}$$

$$ROAE = f \, (CA, CR, TL, NIM, INF, GDP) \tag{2}$$

Results of the regression analysis performed using the 1st model demonstrate that the following coefficients are significant: NIM (Sig.=0.000<0.05), CR (Sig.=0.025<0.05), TL (Sig.=0.001<0.05), while CA ratio (Sig.=0.104>0.05) is statistically insignificant. Thus, it may be concluded that NIM can (positively) affect ROAA, which testifies to the fact that banks are able to balance their interest expenses and the amount of deposits (Wasiuzzaman and Tarmizi, 2010). At the same time, CR and TL can (negatively) affect ROAA, which indicates that the supervision of the lending risks at the banks is weak (Kargi, 2011), and/or there is a large weight of bad debts (Acaravci and Çalim, 2013).

The table of statistic indicators of the regression coefficients according to the 2nd model demonstrated that the following coefficients are statistically significant: CA (Sig.=0.008<0.05), CR (Sig.=0.008<0.05), NIM (Sig.=0.014<0.05), at the same time, the ratios TL, INF and GDP are statistically insignificant, thus it may be concluded that CA, CR (negatively) and NIM (positively) can affect ROAE. Negative CA value testifies to the fact that bank capital management structure is inefficient (Acaravci and Çalim, 2013).

Analyzing the banks in the countries of Central and Eastern Europe, within the framework of the present Thesis the author studies the following countries: Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Malta, Poland, Slovenia, Slovakia, Hungary, Bulgaria and Romania as representative countries of Central and Eastern Europe. All countries mentioned

joined the European Union in 2004, with the expectations of Bulgaria and Romania, which became the members of the European Union in 2007. Determining profitability of the Central and Eastern Europe countries banks, the author used the same methods, which had been used in determining profitability indicators of the Latvian commercial banks. In total, 216 banks in the countries of Central and Eastern Europe were analyzed in the research period.

As a result of analysis of Pearson's correlation of the Central and Eastern Europe countries banks, two regression analysis functions were developed and tested regarding the indicators affecting bank profitability (see functions (3) and (4)):

$$ROAA = f\ (CA, CR, TL, NIM, INF, GDP) \tag{3}$$

$$ROAE = f(CA, CR, TL, NIM, INF, GDP) \tag{4}$$

Based on the results of the performed regression analysis (1st and 2nd model) of the Central and Eastern Europe countries banks, it was concluded that CA and NIM can (positively), but CR and INF can (negatively) affect ROAA, while CR can (negatively) and NIM (positively) affect ROAE. Thus, the calculations performed reflected that the Central and Eastern Europe countries banks maintain efficient capital management structure – CA (Acaravci un Çalim, 2013), however, bank expenses grow more rapidly than revenues – INF (Wasiuzzaman and Tarmizi, 2010).

In the second stage of the research bank cost efficiency was determined using non-parametric method (it is not based on estimation of parameters that is why the assumption on the distribution method is not necessary – Arhipova and Bāliņa, 2006). In order to select the financial indicators most frequently used to determine bank cost efficiency, the author conducted content analysis of scientific articles from scientific data bases for the period from 2005 to 2012 on the researches performed at the USA, Asian and European banks (Ariff and Can, 2008; Chen et al, 2005; Thoraneenitiyan and Avkiran, 2009; Sufian and Habibullah, 2009; Ray and Das, 2010; Azadeh et al, 2010; Camanho and Dyson, 2005; Havrylchyk, 2006; and other authors), the results are summarized in Figure 2.
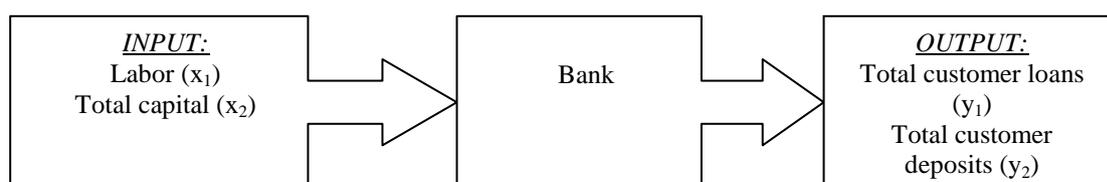
Fig. 2. Variables for bank cost efficiency assessment using financial indicators

[developed by the author]

To assess cost efficiency of the banks, the author has employed the most frequently used models – CCR (Charnes et al (1978) model) and BCC (Banker et al (1984) model), while the total bank efficiency is determined according to the formula (5):

$$Total\ bank\ cost\ efficiency = \frac{CCR\ Efficiency}{BCC\ Efficiency} \qquad (5)$$

Cost efficiency of the Latvian commercial banks has been calculated using two approaches: 1) using input (x_1, x_2) and output (y_1, y_2); 2) based on Rossi et al (2005), the author replaced the number of bank employees with total assets of each bank in the reporting years. The data on 9 Latvian commercial banks were analyzed according to the first approach, and the data on 15 banks – according to the second approach.

Having made the calculations, it was concluded that higher cost efficiency indicators were observed in Banker et al model, while lower indicators – in Charnes et al model, the finding were also attested by the results of analysis of scientific literature.

Thus, based on two types of approaches total cost efficiency of each bank was estimated according to formula 5, the obtained results are presented in Table 2.

Table 2

Cost Efficiency of the Latvian Commercial Banks

Banks	1st approach	2nd approach
1	2	3
Swedbank	N/a	0.950
SEB bank	0.847	0.961
ABLV Bank	1.000	0.996
DNB bank	0.958	1.000
Rietumu Bank	N/a	0.942
UniCredit Finance	1.000	0.996
Norvik Bank	N/a	0.977
PrivatBank	0.947	0.996
ALTUM (Mortgage and Land Bank of Latvia)	0.969	0.996
Baltikums Bank	N/a	0.931
Trust Commercial Bank – Trasta Komercbanka	0.741	0.995
Expobank	N/a	0.990
Baltic International Bank	0.766	0.974
SMP Bank	0.755	0.988
Bank M2M Europe (Latvian Business Bank)	N/a	0.654

N/a – data is not available

Based on the results of the analysis performed, the author concluded that the most efficient bank performance with regard to cost efficiency according to the first and the second approach was maintained at ABLV Bank and UniCredit Finance, in turn, other Latvian commercial banks need to find solutions for efficiency improvement.

The author applied Data Envelopment Analysis for the assessment of cost efficiency of the Central and Eastern Europe countries banks, having analyzed 149 banks in total. The estimates of cost efficiency of the Central and Eastern Europe countries banks were compared with the results of research conducted by scientists from other countries, the results are presented in Table 3.

Table 3

Central and Eastern Europe Countries Bank Cost Efficiency by Data Envelopment Analysis

	Fries and Taci (2005), research period 1993-1998	Grigorian and Manole (2002), research period 1995-1998	Kasman and Yildirim (2006), research period 1995-2002	Weill (2007), research period 1996-2000	Chronopoulos et al (2011), research period 2001-2007	The author, research period 2006-2012
1	2	3	4	5	6	7
The method used and variables						
Input	Ratio of total non-interest expenses to total assets	Labor, fixed assets, interest expenses	Price of labor and capital, price of loanable funds	Personnel expenses, other non-interest expenses, interest paid	Total deposits, physical capital, labor	Labor, total capital
Output	Loans, deposits	Model 1: revenues, net loans, liquid assets Model 2: deposits, net loans, liquid assets	Totals loans, other earning assets, total deposits	Loans, investment assets	Total customer loans, other earning assets off balance sheet items	Total customer loans, total customer deposits
Method	Cost	Technical	Cost and benefit	Cost	Cost and benefit	Cost
DEA results by country						
Bulgaria	0.520	0.530	N/a	N/a	N/a	0.886
Czech Republic	0.445	0.667	0.272	0.620	0.697	0.955
Cyprus	N/a	N/a	N/a	N/a	0.593	0.942
Estonia	0.835	0.548	0.264	N/a	0.556	0.857
Hungary	0.690	0.558	0.299	0.635	0.729	0.843
Latvia	0.755	0.529	0.297	N/a	0.493	0.856
Lithuania	0.810	0.448	0.263	0.544	0.356	0.857
Malta	N/a	N/a	N/a	N/a	0.427	0.837
Poland	0.700	0.514	0.285	0.528	0.632	0.888
Romania	0.510	0.385	N/a	N/a	N/a	0.915
Slovenia	0.765	0.656	0.265	0.583	0.524	0.879
Slovakia	0.770	0.589	0.317	0.421	0.372	1.000

N/a – data is not available

The estimates performed by the author on bank cost efficiency have demonstrated that the Slovakian banking system works most effectively. In turn, Grigorian and Manole (2002), Delis and Papanikolaou (2009) have assessed Slovenian banks as having the highest efficiency rate, while Casu and Ferrari (2013) discovered that Slovakian banks are the most efficient.

In the third stage of the research in order to assess bank performance efficiency considering various business models, the concept of banking business model was initially elaborated. Based on the research results conducted by authors from other countries – Timmers (1998), Markides (1999), Rappa (2000), Tapscott et al (2001), Osterwalder and Pigneur (2002), Lindsay et al (2003), Osterwalder (2004), Osterwalder and Pigneur (2010), Zott and Amit (2010) it was concluded that *a business model characterizes the way how enterprise revenue is created based on mutual relationships among stakeholders.*

The concept of bank business model by Billet et al (1995) considers how the bank's operations are organized, the way it actually performs its business activities, the quality of its products and services, as well as their price.

Content analysis of the scientific literature also demonstrated that banking business models can be grouped into numerous dimensions. Based on business model dimensions distinguished by Rüegg-Stürm and Rohr (2002), Osterwalder et al (2005) and Lindgren (2012), the author assessed these dimensions in the Latvian commercial banks and banks in the Central and Eastern Europe countries according to customer groups and priorities.

As a result, to evaluate bank business models the author used financial constituent elements of the bank business models discussed in the scientific literature, such as capital, customer deposits, loans and assets. The dynamics of bank profitability indicators ROAA and ROAE in the research period were analyzed within the framework of the banking business models.

To perform the analysis of the financial components of bank business models, the author initially determined bank business model typology according to the following customer groups:

1. Wholesale Banks – provide services to large corporate customers, medium-sized enterprises, real estate developers; are characterized by a relatively small branch network, few distribution channels developed, concentrate on lending and financial markets;

2. Investment Banks – activities are concentrated on individual customers, corporate customers and government in the financial markets, transactions in the stock market, issuance of shares, raising capital;

3. Retail Banks – core activities are concentrated on providing services to individual customers, fewer activities aimed at legal entities and fewer operations in the financial markets;

4. Universal Banks – combination of all three previous customer groups, offer all types of bank products and services to all customers groups.

Such bank business model typology is widely used not only by the scholars, but also by professionals in the financial sector (Ayadi et al, 2012; Hellmann et al, 1995; Minh To and Tripe, 2002).

Therefore, based on four types of bank business models according to their customer groups, the author used the data of the Bankscope data base and the information presented on the bank home pages in order to determine business models of the Latvian commercial banks and to estimate their financial constituent elements.

On the basis of bank classification according to customer groups considered above, the author classified the existing Latvian banks and branches of foreign banks according to four business models, as seen in Table 4.

Table 4

Classification of Latvian Commercial Banks According to Bank Business Models

Wholesale Banks	Investment Banks	Retail Banks	Universal Banks
1	**2**	**3**	**4**
ALTUM (Mortgage and Land Bank of Latvia) Regional Investment Bank – Reģionālā investīciju banka Rietumu Bank	Baltic International Bank Baltikums Bank ABLV Bank Trust Commercial Bank – Trasta Komercbanka Bank M2M Europe (Latvian Business Bank)	UniCredit Finance PrivatBank Danske Bank Latvia Branch Latvian Post Bank – Latvijas pasta banka SMP Bank	Swedbank SEB bank DNB bank Nordea Bank Finland Latvia Branch Citadele bank Expobank* Norvik Bank

*Financial indicators of Expobank from 2006 till 2008 are available for 9 months of operation, starting with 2009 – for 12 months of operation.

The data on customer groups summarized in Table 4 show that in the Latvian banking sector universal banks are represented best of all; they are followed by retail banks and investment banks, and, finally, by wholesale banks.

Descriptive statistics was calculated to determine mean, minimal and maximal values of the financial constituent elements as well as standard deviation (see Table 5).

Table 5

Descriptive Statistics on the Business Models of the Latvian Commercial Banks in EUR,

Thousands

	Total Capital	Total Customer Deposits	Loans	Total Assets
1	**2**	**3**	**4**	**5**
Model 1 - Wholesale Banks				
Mean	73,465.89	271,903.36	383,438.43	641,141.71
Std. dev	58,552.46	162,770.14	374,433.25	479,461.04
Min.	19,016.00	72,562.00	52,131.00	91,513.00
Max.	146,356.00	508,632.00	1,054,599.00	1,375,987.00
Model 2 - Investment Banks				
Mean	101,412.52	661,078.32	351,829.36	816,059.84
Std. dev.	81, 044.06	717, 374.92	365,107.34	837,337.10
Min.	5,281.00	143,00	285.00	5,995.00
Max.	275,613.00	2,667,494.00	1,005,538.00	3,053,295.00
Model 3 – Retail Banks				
Mean	34,236.42	190,871.15	255,008.78	391,848.56
Std. dev.	29,955.36	161,833.02	298,291.79	363,637.57
Min.	6,575.00	11,924.00	1,845.00	19,306.00
Max.	98,341.00	659,273.00	916,260.00	1,146,196.00
Model 4 - Universal Banks				
Mean	305,591.54	1,188,090.18	2,092,170.50	2,768,005.89
Std. dev.	307,163.89	782,397.11	1,781,519.19	2,141,442.41
Min.	35,132.00	255,773.00	140.00	328,138.00
Max.	897,724.00	3,116,525.00	6,533,724.00	7,978,227.00

The summarized data on the bank business models of the Latvian commercial banks according to descriptive statistics show that the universal banking business model demonstrates the highest mean values in all four financial components, and the lowest values are characteristic of retail banks.

Dynamics of return on average assets of the bank business models in the research period is reflected in Figure 3.
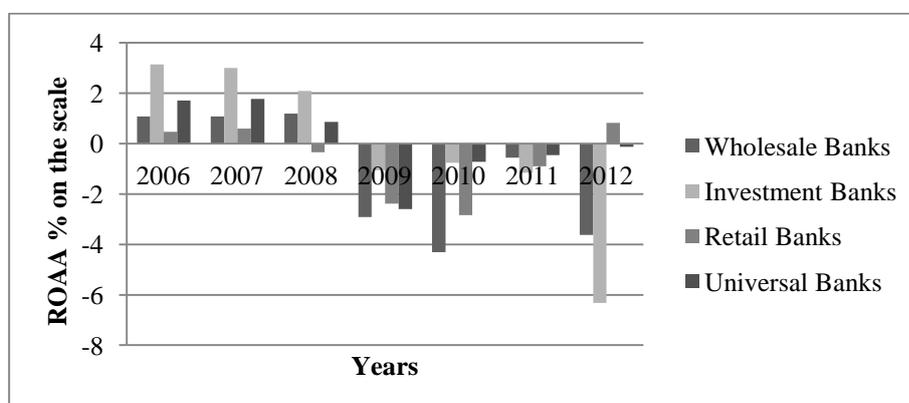

Fig. 3. Changes in ROAA according to business models in the Latvian commercial banks

[developed by the author based on Bankscope data]

The data on ROAA index change in the business models of the Latvian commercial banks summarized as a result of analysis have shown that before the year 2008 all four business models were operating successfully. However, the situation radically changed after 2008, demonstrating that return on average assets of investment banks continued to decrease rapidly, sustaining the negative tendency in 2012. Similar situation is observed at wholesale banks. It should be noted that the contrary situation is observed in the retail banks, ROAA indices of which showed positive growth in 2012 in contrast to other bank business models. Starting with 2010, universal banks demonstrate a tendency to grow; however, ROAA index rates are still negative.

Changes in ROAE indices of the assessed bank business models are summarized in Figure 4.
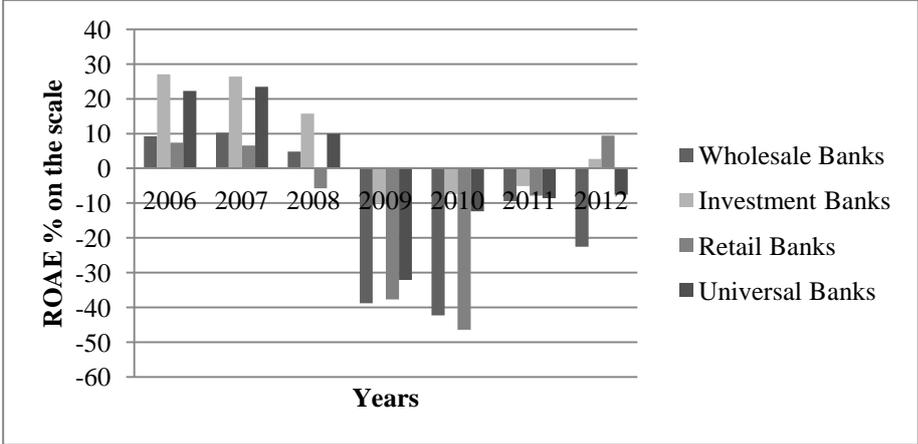
Fig. 4. Changes in ROAE according to business models in the Latvian commercial banks
[developed by the author based on Bankscope data]

The data on ROAE indices of bank business models summarized in Figure 4 have shown that the index decreased in 2008 in all business models. Starting with 2009 return on equity continued to demonstrate a negative tendency in all business models. Positive changes in ROAE were observed starting with 2012 at investment and retail banks. Having considered these data, the author concludes that all four bank business models need new solutions to improve bank performance.

The same approach as in case of assessment of the Latvian commercial bank was used to assess bank business models of the banks in the countries of Central and Eastern Europe. To classify the banks in the countries of Central and Eastern Europe according to the bank business model typology, five largest banks in each country were considered. As a result, it

was concluded that three out of four bank business models are used – investment, retail and universal banks. Analyzing the bank business models according to ROAA and ROAE indices, it was concluded that the models used in the countries of Central and Eastern Europe should introduce the concepts aimed at the issues concerning customer equity sustainability.

To evaluate bank business models used in each country according to their non-financial indicators – priorities, the author developed four priorities ranking them according to their significance. The priorities were analyzed using five largest banks in each country of Central and Eastern Europe. The results of the content analysis performed are summarized in Table 6.

Table 6

Priorities of Business Models of the Central and Eastern Europe Countries Banks

Country	I Priority	II Priority	III Priority	IV Priority
1	2	3	4	5
Bulgaria	Customers	Development	Value	Services
Czech Republic	Services	Customers	Financing	Products
Cyprus	Customers	Development	Innovation	Services
Estonia	Customers	Services	Value	Sustainability
Hungary	Services	Customers	Development	Profitability
Latvia	Services	Customers	Development	Value
Lithuania	Customers	Services	Development	Value
Malta	Services	Customers	Sustainability	Value
Poland	Customers	Services	Development	Products
Romania	Services	Customers	Products	Development
Slovakia	Services	Development	Customers	Products
Slovenia	Services	Customers	Value	Products

As shown by the assessment of priorities of bank business models (see Table 6), there are still countries, such as the Czech Republic, Hungary, Latvia, Malta, Romania, Slovakia and Slovenia, where the customer is not ranked as the most important factor ensuring sustainable development of the bank. However, in the knowledge economy banks can reach long-term goals and develop only if the customer is seen as the first priority, and also if their performance is considered as being affected not only by financial, but also by non-financial factors, such as social and environmental factors.

Different approaches to performance efficiency assessment of the Latvian commercial banks and Central and Eastern Europe countries banks and banking system in general have shown that there are certain efficiency problems in the financial system, which are explained by poor customer centricity. In this respect, in order to increase their performance efficiency rates, banks have to look for increase customer equity and to develop a concept, which would

give the opportunity to determine the factors that directly affect customer equity and the increase of its value.

Using the combination of qualitative and quantitative research methods, in three research stages the author has defined the concept of bank customer equity and its constituent elements. The stages of the analysis of the concept of customer equity are presented in Figure 5.
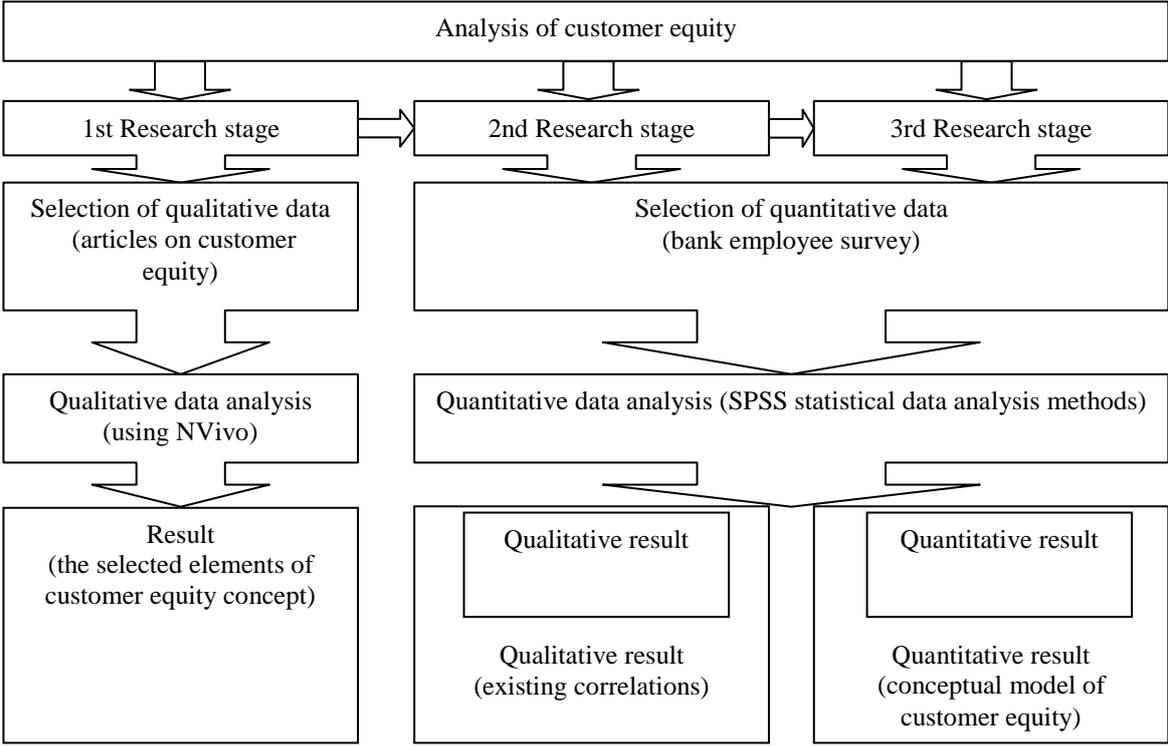
Fig. 5. Research design of customer equity concept [developed by the author]

Concept of customer equity of the research in the first phase were selected and analyzed in a variety of foreign authors (Rust et al, 2004; Blattberg et al, 2001; Lemon et al, 2001; Villanueva and Hanssens, 2007) scientific articles about customer equity (customer equity and customer capital) of scientific databases for the period from 2000 to 2013. Qualitative data analysis using NVivo was selected more frequently used words and their analogues.

Based on the results of content analysis, the author concluded that the most frequently used components of customer equity are brand, value, marketing and loyalty, whereas structural capital and responsible lending appear to be the least important. On the basis of content analysis results, the author elaborated the concept of customer equity. As a result, customer equity is defined as *the system of bank-customer relationships, which is based on*

considering customer values and maintaining the bank brand and customer base, which ensures bank sustainable performance.

In turn, to assess the development of the elements selected in the course of analysis of the theoretical data on the concept of customer equity, the author conducted the quantitative analysis of the concept of customer equity (the second stage of analysis). The quantitative research was conducted in 2011 at one of the Latvian commercial banks (assuming that the assessment of other commercial banks is similar, thus the obtained research results can be also used at other banks). Questionnaires, which contained questions rated according to the Likert scale (1 – 'strongly disagree', 5 – 'strongly agree'), were used to survey bank employees. The obtained survey results were summarized using SPSS statistical data analysis methods. The results of qualitative analysis of the components of customer equity were adjusted to the Likert scale and the data was compared with the results of quantitative analysis, as it is demonstrated in Figure 6.
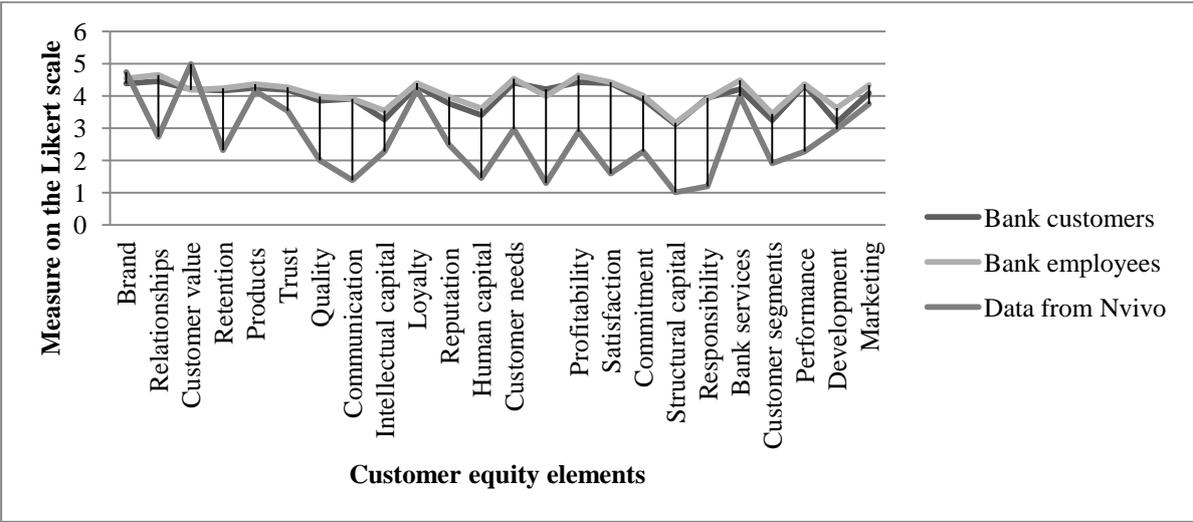
Fig. 6. Qualitative and quantitative assessment of customer equity elements

Considering the results of the qualitative and quantitative analysis of the components of customer equity it was concluded that they are interrelated, the definition of customer equity elaborated by the author was validated.

In the third stage of analysis the author developed the conceptual model of bank customer equity, which is presented in Figure 7.
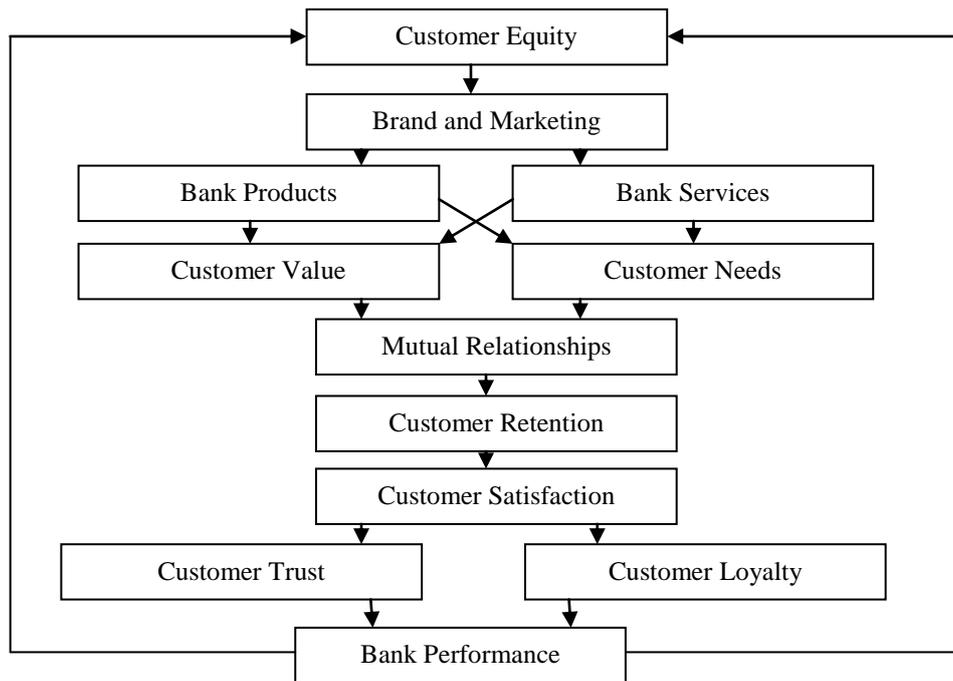
Fig. 7. Bank customer equity conceptual model [developed by the author]

The conceptual model of bank customer equity developed by the author was validated using survey questionnaires. The survey was conducted in 2011 at one of the Latvian commercial banks. The questions used in the survey were closed questions that were rated according to the Likert scale (1 – 'strongly disagree', 5 – 'strongly agree'). The questionnaires were processed using SPSS statistical data analysis methods (Pearson Chi-Square and Monte Carlo model). The obtained results are presented in Table 7.

Table 7

Results of the Questionnaire on the Conceptual Model of Customer Equity

Hypothesis tested	Pearson Chi-Square value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
1	**2**	**3**	**4**	**5**	**6**	**7**
H1.Brand and marketing influence bank services	22.068	4	0.000	0.002	0.001	0.003
H2.Brand and marketing influence bank services	12.126	4	0.016	0.131	0.122	0.140
H3.Bank products influence customer needs	0.805	2	0.669	1.000	1.000	1.000
H4.Bank products influence customer value	6.824	4	0.145	0.132	0.124	0.141
H5.Bank services influence customer needs	0.934	2	0.627	1.000	1.000	1.000
H6.Bank services influence customer value	2.698	4	0.610	0.620	0.607	0.632
H7.Customer needs influence mutual relationships	0.268	2	0.875	1.000	1.000	1.000
H8.Customer value influence	17.488	4	0.002	0.053	0.047	0.059

30

Table 7 continued

1	2	3	4	5	6	7
mutual relationships						
H9.Mutual relationships influence customer retention	41.591	4	0.000	0.000	0.000	0.000
H10.Customer retention influence satisfaction	10.017	4	0.040	0.032	0.027	0.036
H11.Satisfaction influence customer trust	10.264	4	0.036	0.037	0.032	0.042
H12.Satisfaction influence customer loyalty	25.234	4	0.000	0.001	0.000	0.002
H13.Customer trust influence bank performance	12.679	4	0.013	0.091	0.084	0.099
H14.Customer loyalty influence bank performance	10.638	4	0.031	0.041	0.036	0.046
H15.Bank performance influence customer equity	3.704	4	0.448	0.441	0.428	0.454

As a result, the author was able to fully confirm the initial hypotheses (H1:H15), as well as to confirm the validity of customer equity conceptual model.

2. FUNCTIONING OF BANKING BUSINESS ON THE BASIS OF BUSINESS ECOSYSTEM PRINCIPLES

The Chapter contains 44 pages, 10 tables, 7 figures, 5 formulas.

In the second part of the Doctoral Thesis the questionnaires developed by the author were used to assess customer centricity, customer centricity index and customer value proposition. The questionnaires used in the research mainly consisted of closed questions, with the exception of questions on demographic data, which were rated according to the 5-point Likert scale (1 – 'strongly disagree', 5 – 'strongly agree'). Based on the research results, their significance on the Likert scale was rated according to the following criteria: rating 1-3 (low), 3-4 (average), 4-5 (high). The questionnaire results were processed using SPSS statistical data analysis methods.

In order to study the concept of business ecosystem, the author analyzed scientific articles by author from other countries (Adner and Kapoor, 2010; Bannerman and Zhu, 2009; Ding et al, 2009; Foer, 2004; Kandiah and Gossain, 1998; Moore, 1993; Peltoniemi and Vuori, 2004, etc.) for the period from 1999 to 2012. The articles were extracted from different scientific data bases. On the basis of the results of content analysis, the author elaborated the concept of business ecosystem: "*Enterprise business ecosystem is a dynamic economic model that can be used for strategic planning process, which is provided at the establishment of*

mutual relationships among the stakeholders involved in it, and at defining of the customer needs, which in the future can ensure increment in the value proposition".

As a result of content analysis on the concept of business ecosystem it was concluded that the research performed particularly on bank business ecosystem is limited. However, bank business ecosystem has been widely discussed at the banks themselves, for example, the World Bank (2013) has summarized the data on the banks, which got involved in natural capital (soil, air, water) accounting. Banks involved in natural capital accounting base their activities not only on the biological ecosystem (a community of living organisms), but also on bank business ecosystem, stressing their centricity on the customer and mutual relationships among the stakeholders involved.

To estimate the outcomes after introduction of bank business ecosystem into bank activities, the author analyzed the banks considering the changes in return on average assets index in the period from 2009 to 2012 using the data from Bankscope database. Thus, on the basis of the results of the analysis the author concludes that the changes in bank performance efficiency indicators can be explained with bank activities, which are focused on bank business ecosystem.

As a result of the analysis of the areas controlling business ecosystem (politics, finance, culture, support institutions, human capital and market), the author came to the conclusion that the controlling areas used in regulating business can be also used in the bank business ecosystem.

In further research the author considered the concept of bank business ecosystem model. Based on the works by such authors as Slywotsky (1996), Chesbrough (2006), Teece (2010), Zott et al (2010), Amit and Zott (2010), den Hartigh et al (2005), Wei et al (2013), Gradl and Jenkins (2011), Moore (1996), the concept of bank business ecosystem model was elaborated: it is based on *the way how customer value is created and mutual relationships among the stakeholders are built.*

Based on the results of research conducted by Rüegg-Stürm and Rohr (2002), Osterwalder et al (2005), Lindgren (2012), Ahokangas et al (2012), Kett et al (2009), Shankar andKhan (2012), Bloom and Dees (2008), the dimension of the two business models have been compared, namely, of the existing one and the model based on eco system principles (see Fig. 8).
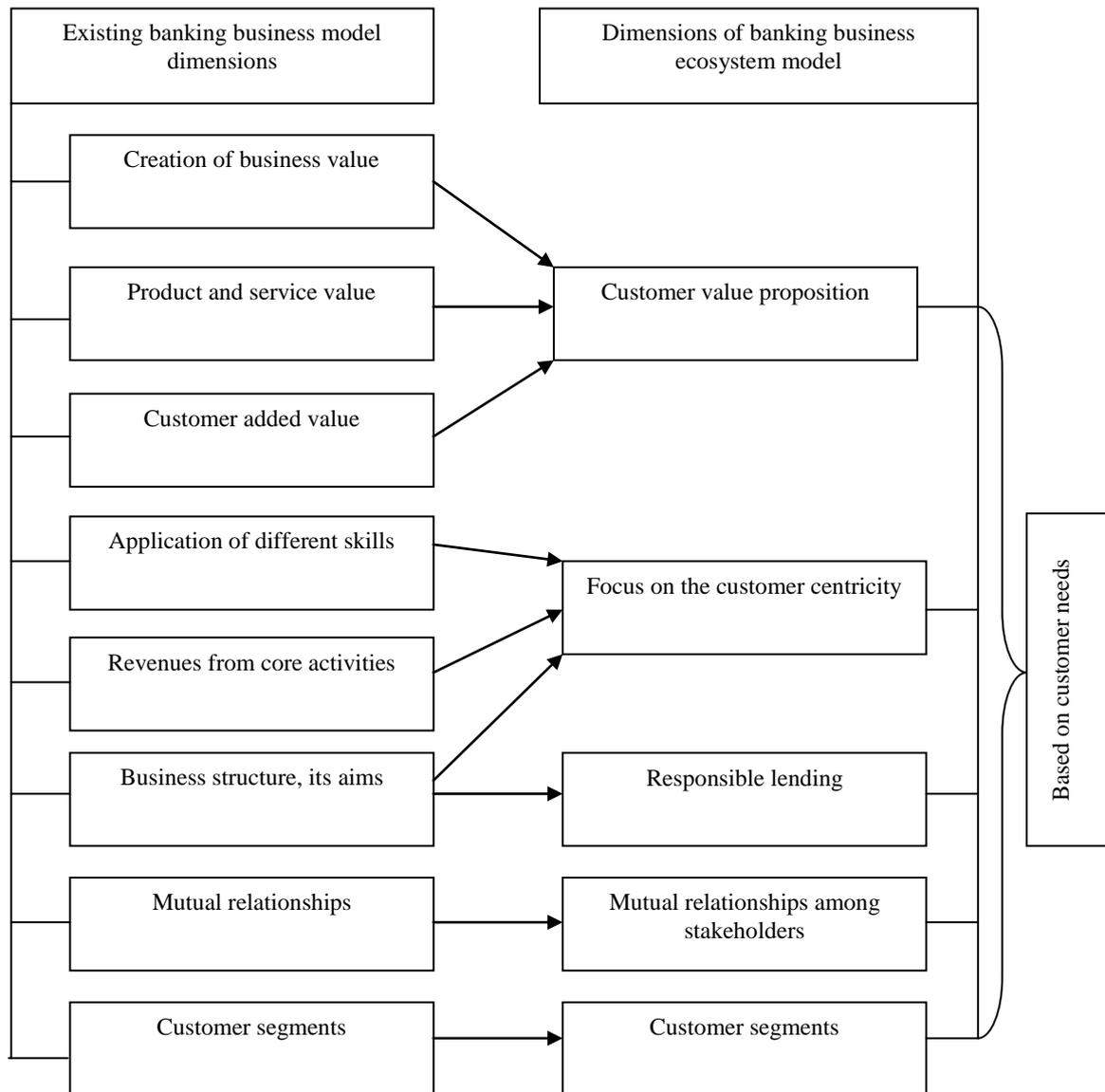
Fig. 8. Dimensions of the banking business model [developed by the author]

In order to define the concept of customer centricity, the author analyzed scientific articles included into different scientific databases for the period from 2003 to 2012 using NVivo and social interface model Tag-Cloud.

Based on the data analysis tools used in the present research, the author of the Thesis managed to elaborate the concept of customer centricity: "*customer centricity is a company attitude that helps to shape business processes, which is based on the recognition of the customer needs, thus creating long term financial value for the customers*".

Customer centricity of the Latvian commercial banks will be estimated in three stages using the combination of qualitative and quantitative methods, as it is shown in Figure 9.
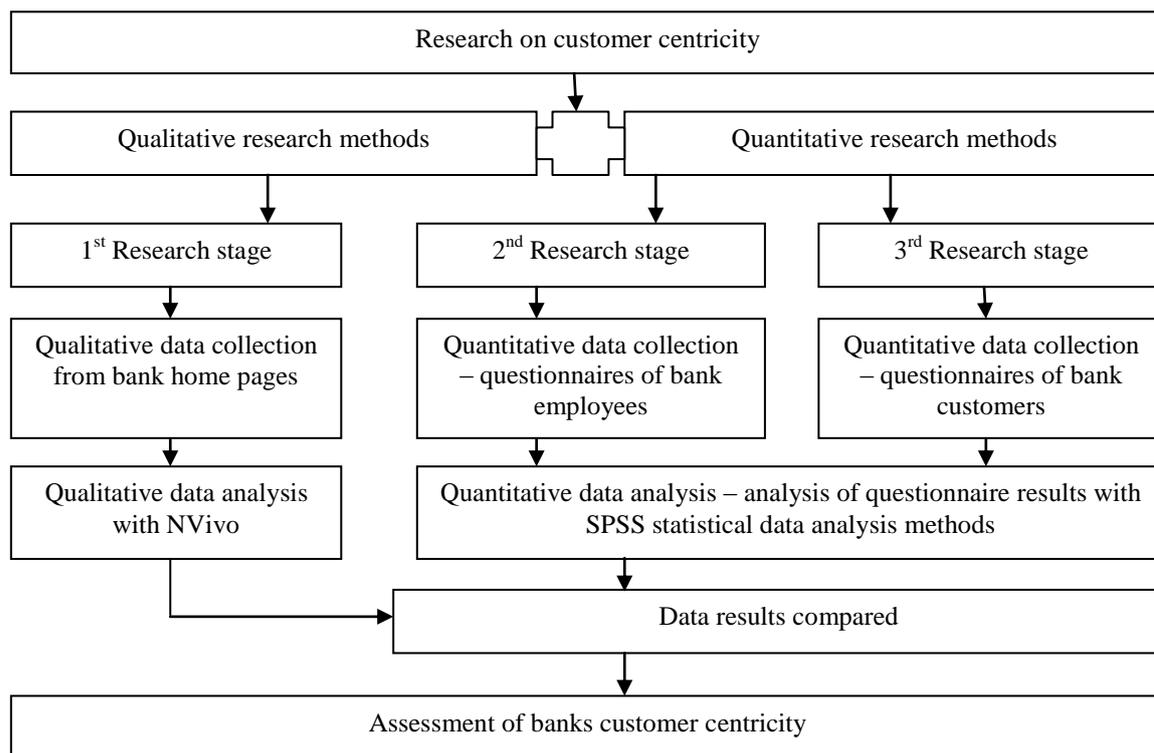
Fig. 9. Logical scheme of the research of bank customer centricity assessment
[developed by the author]

As a result of content analysis of scientific literature, the following components of customer centricity were selected: *loyalty*, *satisfaction*, *value creation*, *customer needs*, *relations*, *trust*. Based on the given selection of the components of customer centricity, the first stage of analysis was performed, within which customer centricity of the Latvian commercial banks was assessed at the banks, where the number of customers exceeds 10,000. The results of analysis are summarized in Table 8.

Table 8

Customer Centricity Assessment Considering the Home Pages of the Latvian Commercial Banks (1st Research stage)

Banks	Theory of customer centricity					
	Loyalty	Satisfaction	Value creation	Customer needs	Relations	Trust
1	**2**	**3**	**4**	**5**	**6**	**7**
Swedbank	-	-	v	v	-	-
SEB bank	-	-	-	-	v	-
Nordea Bank Finland Latvia branch	-	-	v	v	-	-
ABLV Bank	-	-	-	v	-	-
DNB bank	v	v	v	-	v	-
Rietumu Bank	-	-	-	-	-	-
Citadele bank	-	-	-	v	-	-

Table 8 continued

1	2	3	4	5	6	7
UniCredit Finance	-	v	v	v	v	-
Norvik Bank	v	v	-	v	-	-
PrivatBank	-	v	-	v	-	-
ALTUM (Mortgage and Land Bank)	-	v	-	-	-	-
SMP Bank	-	-	-	v	-	-
BIGBANK Latvia branch	-	-	-	-	v	-

v - there are customer centricity elements.
- there are no customer centricity elements.

Having performed the initial assessment of the home pages of the Latvian commercial banks, the author concluded that the banks position themselves in the market as being customer-centred. However, the content analysis performed demonstrated the opposite –that almost all banks have low customer centricity with the exception of DNB bank, which demonstrates average customer centricity.

The conducted analysis on customer centricity of the Latvian commercial banks has also demonstrated that the main elements mentioned most frequently are customer needs and satisfaction, loyalty is mentioned least frequently, whereas trust in not mentioned at all. The obtained data have also shown that the strategy of customer centricity is better considered and developed in the foreign banks (DNB bank and UniCredit Finance) rather than local Latvian commercial banks.

During the second stage of the research the author conducted a survey among bank employees, who work with customers on the daily basis, in order to obtain bank employee self-assessment concerning customer centricity. The questionnaire was developed based on the content analysis of the scientific literature (Kobie marketing, 2013; Shah et al, 2006; Coveo, 2012). The survey was conducted in 2013, in total 170 questionnaires were electronically sent to Latvian bank employees; 137 questionnaires were sent back and proven to be valid. The obtained results of the survey are summarized in Table 9.

Table 9

Customer Centricity Assessment by the Employees of the Latvian Commercial Banks

(2nd Research stage)

Customer centricity metrics	Mean values of research results
1	**2**
Organizational structure (questions from 5 till 8)	4.13
Data processing at the bank (questions from 9 till 12)	2.61
Support of the Information System Department (questions from 13 till 16)	2.91

Table 9 continued

1	2
Support of the Data Analysis Department (questions from 17 till 20)	2.74
Marketing and Communications Department (questions from 21 till 24)	3.83
Customer opinion and suggestions (questions from 25 till 28)	2.77
Customer Service Department (questions from 29 till 32)	2.96
Total customer centricity	3.14

Using customer centricity metric assessment, the author has come to the conclusion that customer centricity at Latvian commercial banks is at an average level according to the 5-point Likert scale. The author also concludes that within customer centricity the directions that are focused on organizational structure of the bank and Marketing and Communication Department are developed best of all, whereas all other directions are underdeveloped. In this regards, the Latvian commercial banks should pay more attention to developing and improving their customer centricity directions.

During the third stage of the analysis, estimation of bank employee self-assessment determining customer centricity index of bank customers has been performed. In the scientific literature customer centricity from the customer perspective is defined as customer centricity index. The essence of customer centricity index is based on the measures aimed at discovering customer perception concerning the satisfaction of their needs and desires.

In order to estimate customer centricity index, the author used questionnaires, which were developed by the author on the basis of the scientific literature (Customer Carewords, 2013; Deutsch, 1985, Colquitt and Rodell, 2011; Nadiri and Tanova, 2010; Searle et al, 2011) and adapted to the specifics of the Latvian commercial banks. The questionnaires include the questions referring to the information presented on the home pages, customer visits to bank branches and justice index. Justice index (JI) estimates the level of customer satisfaction considering three affecting factors: distributive, procedural and interactional justice, that is based on the level of customer satisfaction and future behavior, which depends on the consumer perception of the business integrity in its treatment of the customer (McColl-Kennedy and Sparks, 2003).

The research has been conducted from August to November 2013 at the Latvian commercial banks. The questionnaire was completed by bank natural persons and legal persons. Within the survey, 230 questionnaires were electronically sent to Latvian bank customers, 211 questionnaires were sent back and proven to be valid. The data obtained from the research are summarized in Table 10.

Table 10

Customer-centric Index Measurement at the Latvian Commercial Banks by Customers
(3rd Research stage)

Customer-centric index metrics	Natural persons	Legal persons
1	**2**	**3**
Home pages , customer visits to bank branches (questions from 6 till 20)	3.21	3.31
Distributive justice (questions from 21 till 23)	2.76	3.00
Procedural justice (questions from 24 till 26)	3.18	3.17
Interactional justice (questions from 27 till 29)	2.76	2.83
Total customer centricity index	2.97	3.07

The summary of the questionnaire results has shown that customer centricity index at the Latvian commercial banks according to the Likert scale is within the range from 2 to 4 for natural persons, as well as for legal persons, consequently, the average customer centricity index value is 3.02. Considering the questionnaire results obtained from bank employees and customers, the author concludes that customer centricity at the Latvian commercial banks is at an average level.

In turn, analyzing each bank separately considering its customer centricity based on the information presented on the bank home page (also adjusted to the Likert scale), bank employee and customer questionnaires the author has come to the conclusion that SEB bank and Citadele bank demonstrate low customer centricity, whereas Swedbank, Nordea Bank Finland Latvia branch and DNB bank show average customer centricity. The results of the questionnaires on the banks, the customers of which were most active and submitted the largest number of questionnaires, are summarized in Table 11.

Table 11

Assessment of Customer Centricity by Banks

Bank	Home page analysis	Bank employees	Bank customers	Average customer centricity
1	**2**	**3**	**4**	**5**
Swedbank	1.66	3.71	3.64	3.00
SEB bank	0.83	3.64	3.61	2.69
Nordea Bank Finland Latvian branch	1.66	3.69	3.71	3.02
DNB bank	3.33	3.46	3.42	3.40
Citadele bank	0.83	3.31	3.28	2.47

Based on the compared research results considering all three stages, the author created bank CC function (see functions (6), (7), (8), (9)):

$$CC_i = mean(HCC_i; ECC_i; CCI_i), \tag{6}$$

where: CC_i – bank customer centricity;

HCC_i – analysis of bank home pages based on the customer centricity elements (loyalty, satisfaction, value creation, customer needs, relations, trust);

ECC_i – bank customer centricity as assessed by the employees (organizational structure, data processing, support of the information system department, support of the data analysis department, marketing and communication department, customer opinion and suggestions, customer service department);

CCI_i – bank customer centricity as assessed by the customers using customer-centric index (assessment of bank home pages and experience of attending bank branches, distributive, procedural and interactional justice).

$$HCC_i = \sum_{j=1}^{n} x1_{i,j}, \tag{7}$$

where: $x1_{i,j}$ – value of j-elements characterizing customer centricity on home pages of i-banks, points;

$x1_{i,j}$ = 0 or 0.83;

j=1, 2, …, n;

n=6 elements.

$$ECC_i = \frac{\sum_{k=1}^{K} \sum_{z=1}^{Z} \overline{x2}_{i,z}^{(k)}}{Z*K}, \tag{8}$$

where: $x2_{i,z}^{(k)}$ – value of k-respondent's answer to z-question on customer centricity of i-bank (bank employee questionnaires);

z=1, 2, …, Z;

Z – number of questions.

$$CCI_i = \frac{\sum_{k=1}^{K} \sum_{z=1}^{Z} \overline{x3}_{i,z}^{(k)}}{Z*K}, \tag{9}$$

where: $x3_{i,z}^{(k)}$ – value of k-respondent's answer to z-question on customer centricity of i-bank (bank customer questionnaires).

Thus, in order for the bank to be fully able to ensure customer centricity, it should use the principles of the function developed by the author as the basis for its activities and should concentrate on achieving the highest scores in all three customer centricity positions.

Having performed the assessment of the banks in the countries of Central and Eastern Europe with regard to their customer centricity, the author has concluded that customer

centricity elements that are mentioned most frequently are relations, customer needs, value proposition and trust, but the least frequently mentioned elements are loyalty and satisfaction. Another conclusion is that customer centricity elements addressed by one and the same bank performing its activities in different countries may differ. The conducted research results has shown that Central and Eastern Europe countries banks have weakly customer centricity.

The obtained research results on bank customer centricity demonstrated that not only the banks in the countries of Central and Eastern Europe still focus their attention on products and services rather than customers. Therefore, the existing bank centricity should be shifted from products and services to the customer.

As a result of the content analysis performed (Global Information & Research Adkit, 2011; Kim et al., 2006; Fader, 2012; Tsiptsis and Chorianopoulos, 2011; Machauer and Morgner, 2001), the author defined the criteria according to which banks evaluate the customers with regard to products and services and customer centricity. The author developed the figure presenting the criteria that should be included while performing customer evaluation (see Figure 10).
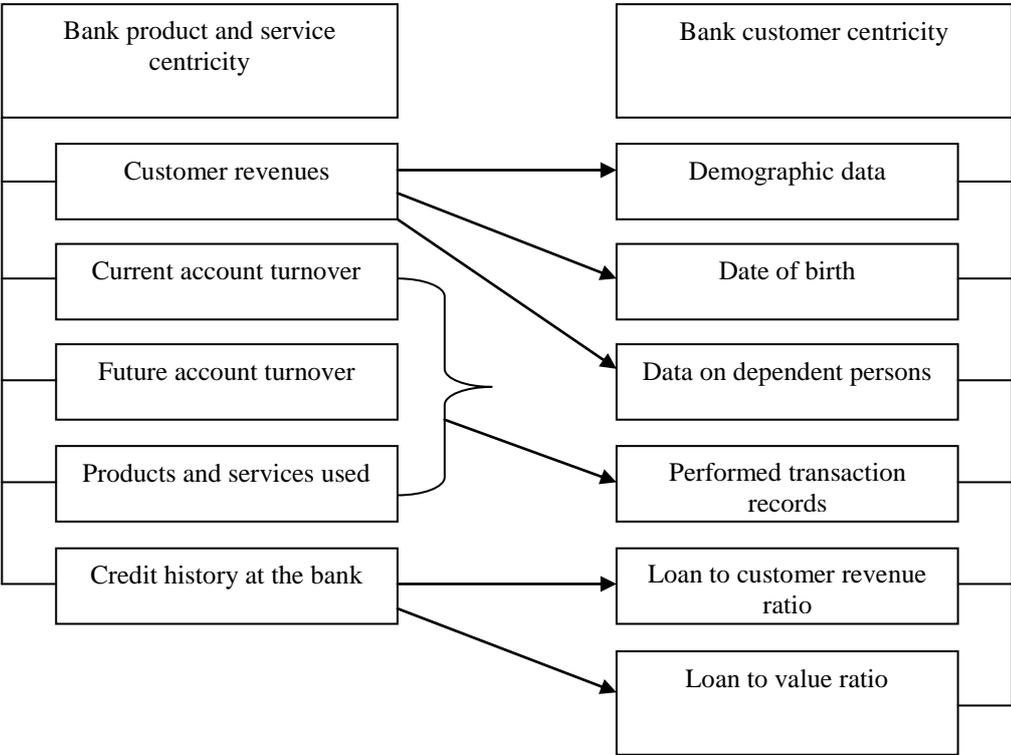

Fig. 10. Customer evaluation criteria, transition from the existing centricity on products and services to customer centricity [developed by the author]

Based on the analysis of the scientific literature and the figure (see Figure 10) created by author, the author analyzed ten natural person customer account statements from several

Latvian commercial banks for the last year (from 1.11.2012. till 1.11.2013.) using NVivo. The data summarized demonstrate that it is possible to distribute bank customers into several segments: most profitable customers, not profitable yet but in the future can become profitable and non-profitable customers. This kind of typology was also used other scientists, as Global Information & Research Adkit (2011), Rust et al (2000) and Fader (2012).

Based on the segment groups developed by the author, it would be necessary to ascribe a customer manager to the most profitable customers in order to evaluate the needs of each customer as comprehensively as possible, as well as to develop an ecocard to evaluate the needs of each customer as thoroughly as possible. Ecomap is a diagram, which is based on the social context, thus indicating the resources required to establish mutual relationships, as well as their absence or incompatibility.

Principles of the introduction of the ecomap at the bank are shown in Figure 11.

where:

Stable relationships
Unstable relationships
Uncertain relationships
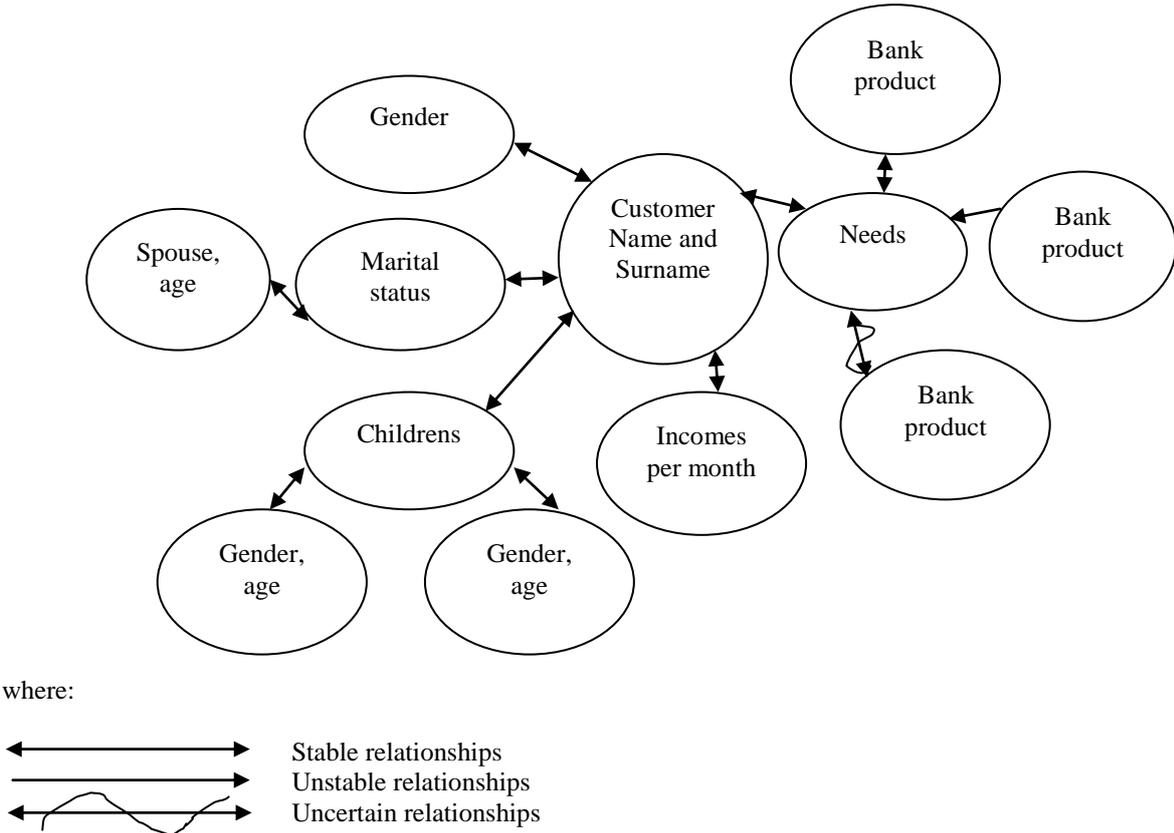
Fig. 11. Example of bank customer ecomap [developed by the author]

The author concludes that the changes in customer segmentation should be introduced in grouping customers – natural persons, however, it can be also applied regarding legal persons. Introducing and using ecomap principles in their daily work to evaluate the most

profitable customers, banks will gain stable customer equity as well as better will understand their customer needs.

To evaluate bank customer value proposition, the questionnaires were used, which were devised after analyzing products and services offered on the home pages of the Latvian commercial banks using content analysis and Camlek (2010) findings. The research was conducted in 2012, overall 117 respondents (natural persons) from two Latvian commercial banks took part in the survey. Survey results were summarized using the methods of statistical data analysis.

The questionnaire data obtained demonstrate that the most stable relationships exist among such bank products and services as the range of current account, transactions, cash transactions, payment cards, internet bank, cash machines, deposits, bank location, quality of products and services, product and service costs; unstable – deal account, consumer loan, leasing, 3rd pillar pension, life insurance, investment funds and savings for children future; uncertain – bills, currency exchange, SMS and telephone bank, mortgage loans, saving accounts and 2nd pillar pension.

Bank business ecosystem model dimension – responsible lending context analysis of the lending agreements of the banks demonstrated that banks include information in their lending agreements in compliance with the requirements of the respect to responsible lending and borrowing. On the basis of the performed analysis of the information included in bank lending agreements and imposed sanctions for the breach of agreement terms, the author elaborated a formula. The formula will allow calculating the amount of monthly credit payments and total expenses expected in case of any unfavourable scenario, for example, delayed credit payment, documents not submitted to the bank and other non-compliance to special terms (Eriņa and Eriņš, 2012) (see Formula 10)).

$$c = \frac{\frac{D_1+D_2+D_3}{12}}{\frac{\Pr\,(1+r)^n}{(1+r)^n-1}} \, , \tag{10}$$

where: c – proportion of total expenditure increase in monthly credit payment;

D1 – penalty for delayed payments;

D2 – penalty for delayed submission of insurance policy;

D3 – other penalties;

r – monthly interest rate, expressed as a decimal, not as a percentage. Since the quoted yearly interest rate is not a compound rate, the monthly interest rate is simply the

yearly interest rate divided by 12; dividing the monthly interest rate by 100 gives r, the monthly rate expressed as a decimal;

n - the number of monthly payments, called the loan's term;

Pr - the amount borrowed, known as the loan principal.

Having performed the analysis of Central and Eastern Europe countries banks, the author has concluded that it is necessary to adopt a special regulation in all Central and Eastern Europe countries, as it has been done in Lithuania and Estonia, which would strictly formulate and define the principles of mortgage lending that are based on responsible lending.

3. DIRECTIONS OF LATVIAN COMMERCIAL BANK CUSTOMER EQUITY MANAGEMENT

The Chapter contains 47 pages, 6 tables, 17 figures, 4 formulas.

In order to analyze commercial bank customer equity management, numerous qualitative and quantitative researches were conducted (on bank market factors, customer loyalty, mutual relations and factors, which determine customer equity). The proposals for assessment and management of environmental risks within lending operations were developed. To assess quantitative parameters, such as bank market factors, customer loyalty, mutual relations and factors, which determine customer equity, the questionnaires developed by the author were used. The questions were rated according to 5-point Likert scale (1 – 'strongly disagree' to 5 – 'strongly agree'), with the exception of questions on demographic data. The questionnaire results were processed using SPSS statistical data analysis methods.

The questionnaires were used in order to identify the market factors of commercial banks, customer loyalty, and the factors, which determine the choice of the bank. The questionnaires were developed based on the research results obtained by the foreign authors abroad such as Caruana (2002), Zineldin (1996), Rashid and Hassan (2009), Chigamba and Fatoki (2011). Using the questionnaire developed by the author, the following hypotheses were put forward and tested:

H1. The quality of products and services has a positive impact on customer loyalty.

H2. Reputation has a positive impact on customer loyalty.

H3. Confidentiality factors have a positive impact on a customer's choice of a bank.

H4. Cultural and identity factors have a positive impact on a customer's choice of a bank.

The research was conducted from March to May 2012, 225 employees and customers of the Latvian commercial banks took part in the survey (natural and legal persons). The research results are summarized in Table 12.

Table 12

Customer Loyalty and Factors Determining Customers' Choice of Banks

Question	Natural persons	Legal persons	Bank employees
1	**2**	**3**	**4**
Bank market factors (questions from 5 till 16)	3.64	3.67	3.89
Quality of products and services (questions from 17 till 21)	2.27	2.52	2.92
Reputation (questions from 22 till 25)	3.60	3.33	3.93
Confidentiality factors (questions from 26 till 30)	4.06	3.79	4.37
Culture and identity factors (questions from 31 till 33)	3.51	3.59	3.66

The results of the assessment of bank market factors demonstrated that such indicators as bank market position, working time, responsiveness of bank employees, technological solutions, comprehensive service, data confidentiality and wide branch network are the most important factors. However, based on the research data obtained on customer loyalty and the factors, which determine the choice of the bank, it was concluded that the hypothesis H1 put forward has not been proven, since the results feature combined responses of 'disagree' and 'agree/partially disagree' (2.57) based on the Likert scale. Similar findings were also reported by Kouthouris and Alexandris (2005), as well as Cristobal et al (2007). In turn, hypotheses H2, H3 and H4 have been fully proven. Hypothesis H2 was proven by Goode and Harris (2007) and Casaló et al (2008), H3 − by Li and Zhong (2005), H4 − by Barich and Kotler (1991), Conlon (2003).

Based on the research conducted abroad (Buttle, 1996; Anderson and Weitz, 1989; Chan and Cheng, 2004; Morgan and Hunts, 1994; Ndubisi, 2004) on the marketing elements of mutual relations, the author developed questionnaires and performed their assessment. The author conducted research from October to December of 2010 at the Latvian commercial banks, number of respondents − 73, the results are presented in Table 13.

Table 13

Elements of Mutual Relationship in the Latvian Commercial Bank

Questions	Small and medium sized enterprises	State-owned enterprises	Large enterprises	Natural persons	Non-residents
1	**2**	**3**	**4**	**5**	**6**
Relationship quality (questions from 1 till 5)	3.77	4.64	3.93	3.33	4.37
Communication (questions from 6 till 9)	4.25	4.55	4.42	3.47	4.25

Table 13 continued

1	2	3	4	5	6
Trust (questions from 10 till 14)	3.86	4.30	4.28	3.73	4.34
Conflict situation handling (questions from 15 till 17)	4.26	4.27	4.42	3.92	4.62
Satisfaction (questions from 18 till 21)	3.64	4.43	4.27	3.61	4.39
Competence (questions from 22 till 25)	4.04	4.38	4.17	3.87	4.54
Commitment (questions from 26 till 28)	3.56	4.23	4.08	3.67	4.33

The data obtained confirmed that the bank can ensure customer satisfaction by providing service of excellent quality, providing the most recent information on bank products and services, providing relevant information, professionally solving conflicts, and improving the overall customer relations quality among both satisfied and not so satisfied customers.

Questionnaire results also showed that state-owned enterprises, large enterprises and non-residents are the customers most satisfied with the quality of mutual relations, whereas natural persons and small and medium sized enterprises are least satisfied. Thus, the author concluded that a customer service manager is ascribed to almost every state-owned enterprise, who offers personalized service and more flexible product and service terms, but natural persons and small and medium sized enterprises do not have their own customer service managers, except credit or leasing customers.

In order to assess bank customer equity using different factors affecting value developed by Rust et al (2000): value equity, brand equity and retention equity, the author developed questionnaires in accordance with the specific features of the Latvian commercial banks.

To determine the factors affecting customer equity of the Latvian commercial banks and its components, within the framework of the Doctoral Thesis based on Rust et al (2000) the author has put forward and tested several hypotheses:

H5. Perceived value equity has a positive impact on bank customer equity.

H6. Perceived brand equity has a positive impact on bank customer equity.

H7. Perceived retention equity has a positive impact on bank customer equity.

The questionnaire contains 26 questions that make up four question blocks. The first question block (questions 1–6) includes demographic questions; the second consists of the questions concerning value equity and its influencing factors (questions 7–13); the third block includes the questions related to brand equity and its influencing factors (questions 14–

21); the fourth block – the questions regarding retention equity or interrelationship and its influencing factors (questions 22–26).

The research has been conducted during the period of time from January to April 2013, a total of 232 filled questionnaires were returned and considered valid, out of which 171 questionnaires were received from natural persons and 61 questionnaires – from legal persons.

Having analyzed questionnaire results, customer equity factor model was developed and its mean values were estimated, as shown in Figure 12.
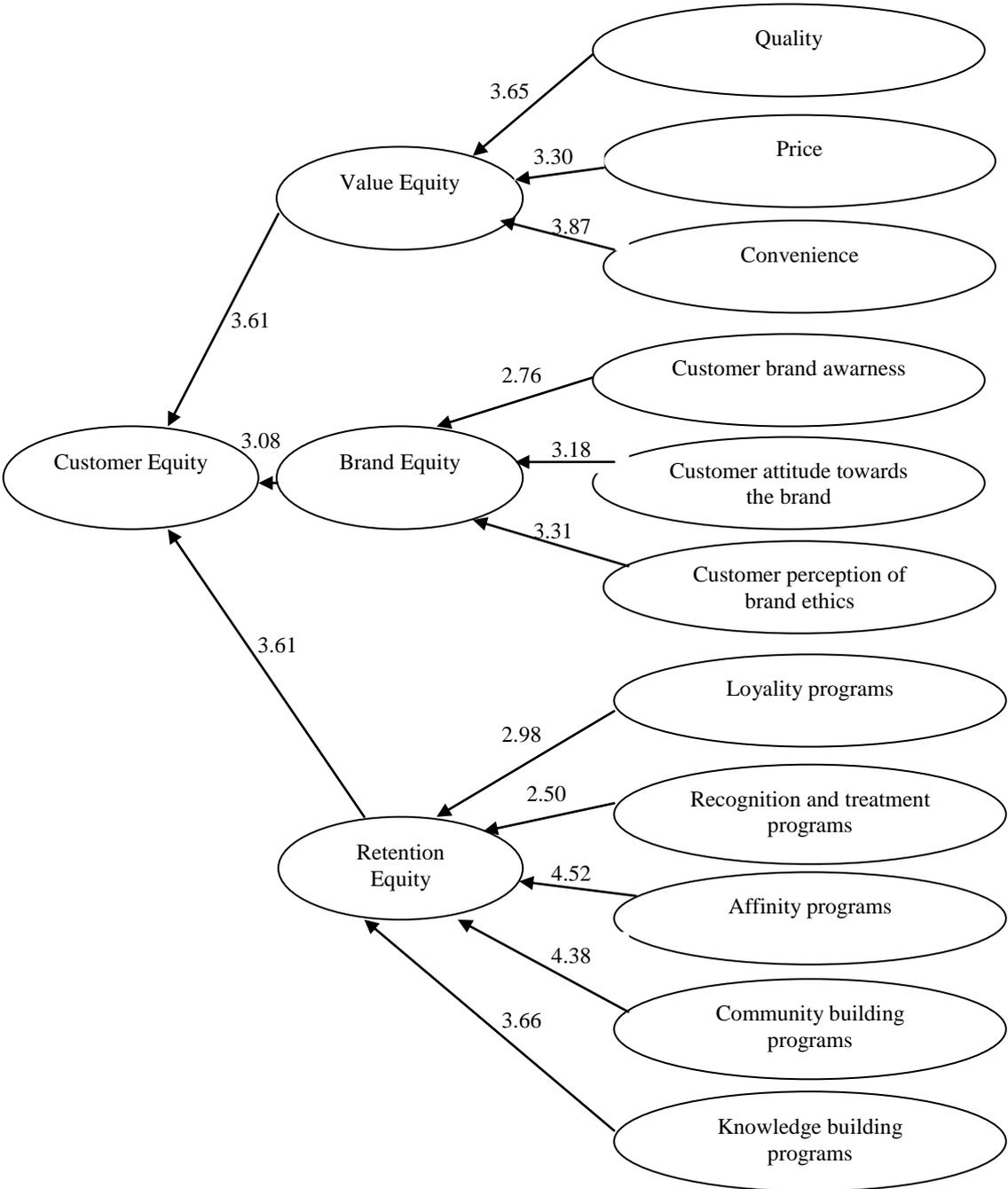

Fig. 12. Bank customer equity factor model

As a result, it was confirmed in all three (H5:H7) initially hypothesis developed by the author.

As a result of content analysis of the literature (Bontis, 2002; Wiig, 1997; Sveiby, 1997; Barney, 1991; etc.) it was concluded that intellectual resources play a decisive role and they can affect financial indicators of the banks. Intellectual resources comprise knowledge management, intellectual capital, formal and informal mentoring, as well as employee motivation.

In order to attest the need for knowledge management, mentoring, intellectual capital and motivation in Latvian commercial banks, the author put forward and verified several hypotheses:

H8: Knowledge management can have an impact on the financial performance indicators of Latvian commercial banks;

H9: Intellectual capital can have an impact on the financial performance indicators of Latvian commercial banks;

H10: There is an interrelation between formal and informal mentoring, knowledge exchange and utilization;

H11: Employee motivation plays a significant role in achieving high performance results at the commercial banks.

The author verified the hypotheses set forth in three stages using combination of qualitative and quantitative research methods (see Figure 13).
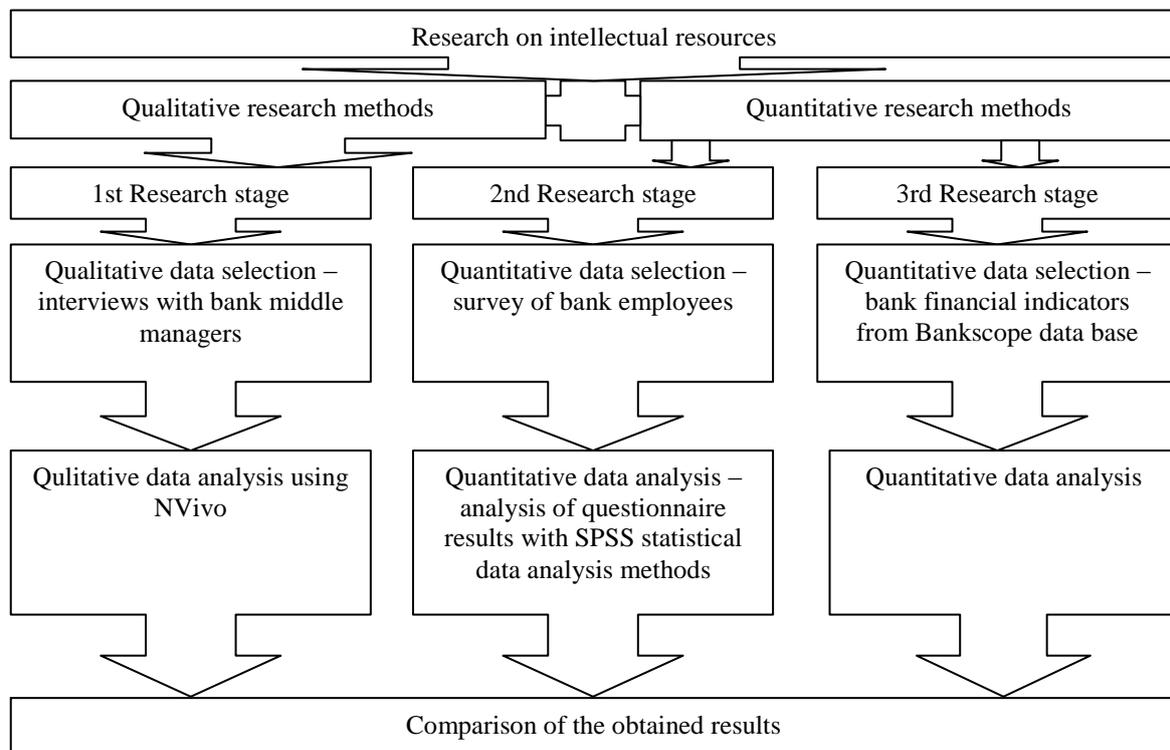

Fig. 13. Logical scheme of intellectual resource analysis [developed by the author]

The author conducted the research from August to September of 2010 at six Latvian commercial banks and branches of foreign banks operating in Latvia. Interview and survey questions were developed based on the analysis of the scientific literature (Sveiby, 1997; Bontis et al, 2002; Bryant, 2005 and other scholars).

In the first stage of analysis in order to evaluate how knowledge is managed at each bank and how it can influence financial performance indicators, middle managers (one from each bank) were interviewed. The following questions were asked:

1. Is knowledge management and intellectual capital administration performed at Latvian commercial banks?
2. Is knowledge management and intellectual capital reflected in the internal documents of Latvian commercial banks?
3. Is knowledge and intellectual capital accounting performed by a knowledge manager?
4. Can knowledge management, advancement and transfer as well as intellectual capital influence bank performance?

As a result of interviewing it was concluded that knowledge management and intellectual capital remain only a theoretical aspect at the work of Latvian commercial banks, which is not reflected in the bank annual reports.

In the second stage of the analysis in order to determine the level competence of the employees and their awareness of knowledge and intellectual capital, the survey was conducted. 30 natural person and corporate customer service managers from the same banks, where interviews were conducted, participated in the survey. Measurements were made according to the 5-grade Likert scale (1 – 'strongly disagree', 5 – 'strongly agree').

The research results that included questions of formal and informal mentoring, knowledge management, intellectual capital and employee motivation are summarized in Figure 14.
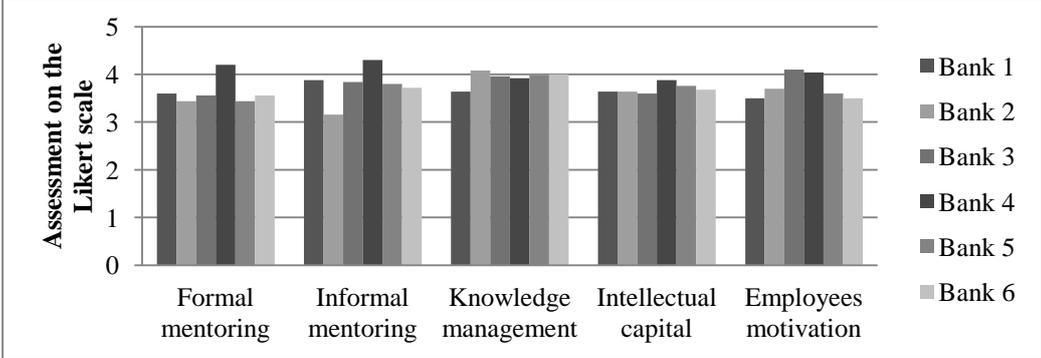

Fig. 14. Assessement of components of knowledge management and intellectual capital indicators by bank employees

Having obtained the research results, the author made the conclusions that there are banks where knowledge management plays a crucial role in the banking activities (Bank 2, 5, and 6), while Bank 1 and Bank 4 consider informal mentoring as the most essential factor, in turn, Bank 3 rates employee motivation as being most significant. There is no consensus among bank employees with regard to the influence of knowledge management and intellectual capital on bank financial performance indicators.

In the third stage of the analysis financial performance indicators for the year 2010 of the banks analyzed before were selected and calculated. The data was extracted from Bankscope data base. The results of financial and empirical research were compared considering non-financial indicators. The results are summarized in Figure 15.
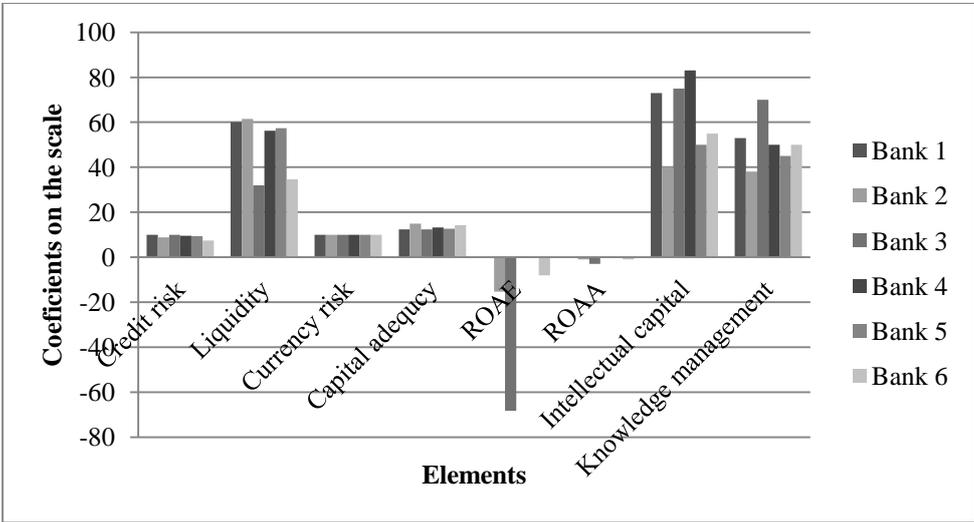
Fig. 15. Comparison of indicator values characterizing intellectual capital, knowledge management and financial performance at the banks [created by the author by Bankscope data base and the results of questionnaire data]

The data presented in Figure 15 demonstrate that almost all financial and non-financial indicators at Bank 1 and Bank 4 are higher than at other banks, which testifies to the fact that these banks are capable to manage the ongoing business processes more effectively, to develop these processes and in general to conduct business with a better outcome. This also proves the fact that knowledge management and intellectual capital can have an impact on bank financial performance indicators. The data obtained on Bank 2 demonstrate that its financial performance results are high and its indicators for knowledge management and intellectual capital are low compared to other banks. This can be an evidence of inefficient usage of intangible resources. In this regards, Bank 2 should consider further development

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and creation of these resources. In turn, financial performance indicators at Bank 3 are low in comparison with intangible indicators. This can indicate that at the bank there is no complete understanding of knowledge management and intellectual capital and how these resources can be used to improve financial performance indicators

Having summarized and analyzed the data obtained within interviews and survey, the author confirmed all the initially (H8:H11) stated hypotheses, and it was concluded that informal mentoring plays an essential role in knowledge exchange among bank employees and that banks that have an established motivation system stimulate their employees invest more knowledge and experience in their work, thus improving financial performance indicators of the banks.

The fact that there are strong correlations between financial and non-financial assets was also attested by the intellectual capital and its inclusion into banks annual reports results of analysis demonstrating that such banks as Oesterreichische Nationalbank, Development Bank of Japan, Bankinter, Banco Bilbao Vizcaya Argentaria include intellectual capital into their annual reports. Thus, to improve their financial performance indicators, the banks should include the information on the non-financial indicators into their financial reports.

It has been widely discussed in the scientific literature that the banks will be able to ensure sustainable development of financial services only on the basis of efficient evaluation of social and environmental factors. Thus, in order to empirically evaluate the interrelation between bank loans and the demand for environmental information at the Latvian commercial banks the author developed survey questionnaires based on the studies conducted abroad (Harte et al, 1991; Epstein and Freedman, 1994; Cowton and Thompson; 2000). The questions were grouped into six blocks: demographic data questions (1-4), the role of environmental factor assessment upon making a lending decision (question 5-11), environmental factor standards (question 12-23), customer lending risk assessment (question 24-32), sections of annual reports (question 33-42), the role of annual reports in environmental protection (question 43-51).

The research by author was carried out from October to November 2011 in the largest banks and branches of foreign banks operating in Latvia, the number of respondents – 244.

Having conducted the research, it was concluded:

1. The largest significance in assessing environmental factors in the course of performing corporate lending transactions is ascribed to sustainable development policies employed by the bank;

2. Considering environmental factor evaluation standards, significance should be ascribed to the application of environmentally-friendly technologies, product manufacturing, and recycled resources;

3. In the course of assessment of lending risk factors it was discovered that considering new lending deals or making amendments to the existing corporate lending agreements the highest importance is ascribed to annual reports of the enterprise, the information available in the enterprise register, company assets and its credit rating taking into account the data of the Credit Register;

4. The most essential sections that should be included into the annual reports are balance sheet representation according to accounting items, profit and loss account and cash flow statement;

5. Preparing annual reports, the information connected with management forecasts and results, the tasks concerning environmental issues, as well as reports on the environmental policies of the enterprise and environment-related issues should also be included into the financial reports.

Based on the results of the research by the International Finance Corporation (2008), Bebbington and Gray (2001), the author classified the industries according to their environmental impact using the division into sectors by the Central Statistical Bureau of Latvia (NACE 2nd edition), as it is reflected in Table 15.

Table 15

Sector Breakdown by Environmental Factors

Sectors that affect environmental factors	Sectors that do not affect environmental factors
A – agriculture, forestry and fishing	K – financial and insurance activities
B – mining and quarrying	L – real estate activities
C – manufacturing	M – professional, scientific and technical activities
D – electricity, gas, steam and air conditioning supply	N – administrative and support service activities
E – water supply, sewerage, waste management and remediation activities	O – public administration and defense; compulsory social security
F – construction	P – education
G – wholesale and retail trade; repair of motor vehicles and motorcycles	Q – human health and social work activities
H – transportation and storage	R – arts, entertainment and recreation
I – accommodation and food service activities	S – other service activities
J – information and communication	U – activities of extraterritorial organizations and bodies

From the table it can be seen that the sectors that affect environmental factors are mainly manufacturing, whereas the sectors that do not affect environmental factors are service

providing sectors. Thus, further more detailed subdivision of the sectors was performed according to their environmental impact, grouping them into three categories: A1 − low risk sectors (A02, C10-12, C13-15, C18, C26, C33, E36, E39, F41-43, J58-63, K64-66, N78-82, O84, P85, Q86-88, R90-93, S94, and U99), medium risk sectors − B1 (A01, A03, B05, B08, C16, C21, C24-25, C31-32, D35, E36, E38, G45, H52-53, I55-56, M75, N77, S95), high risk sector − C1 (C17, C19, C22-23, C29, H49-51).

On the basis of the current decision-making scheme used for lending at the banks and discussed in scientific literature, the author created a new decision-making structure for lending, which includes also environmental factors (see Figure 16).
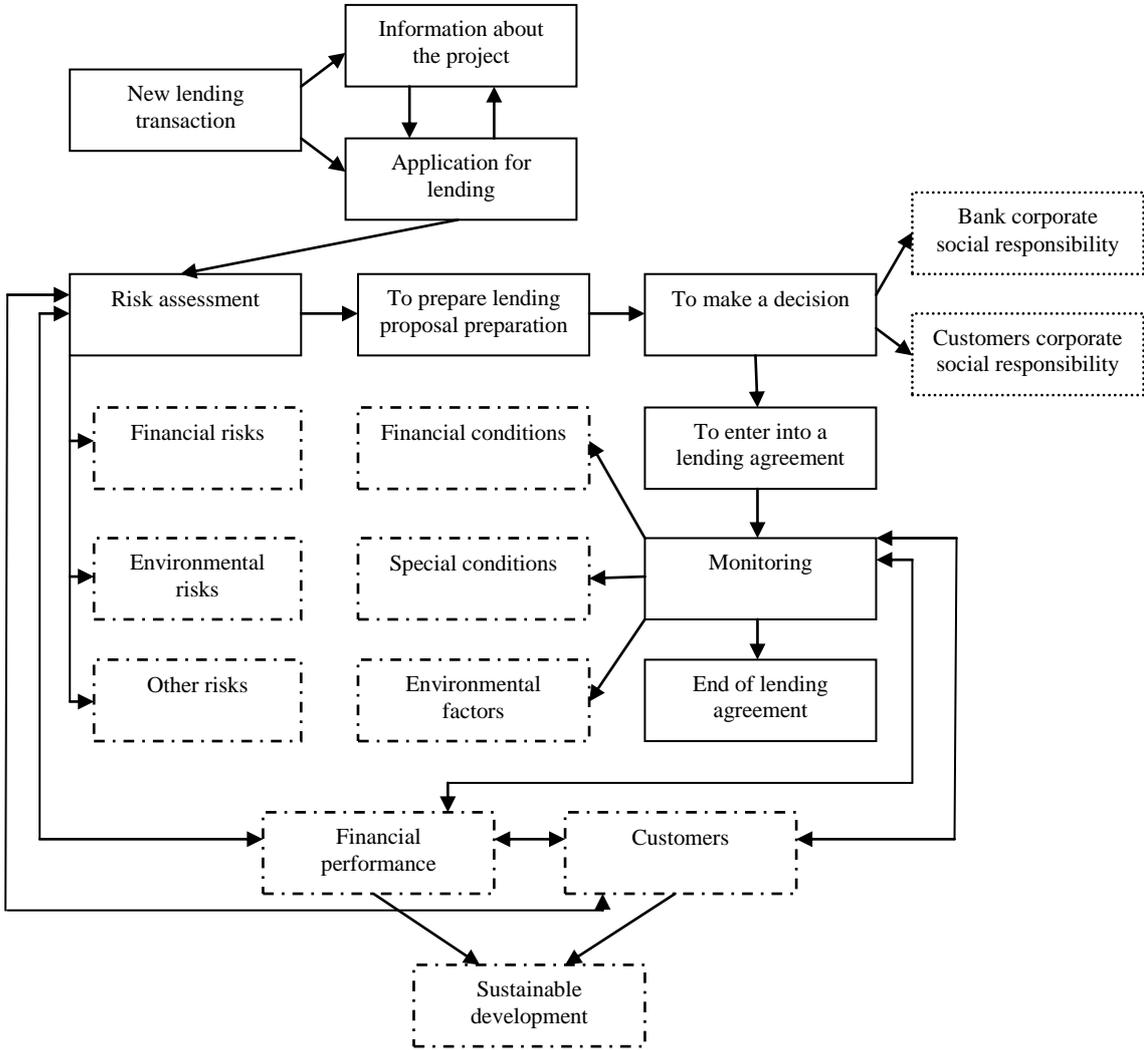
where:

```
┌──────────────────┐
│                  │-   the existent bank decision-making structure
└──────────────────┘
┌─·─·─·─·─·─·─·─·─┐
└─·─·─·─·─·─·─·─·─┘-   the added bank decision-making structure
┌··················┐
└··················┘-   the bank decision-making structure supplemented by the focus group
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Fig. 16. Lending decision-making structure [developed by the author]

The lending decision-making structure developed by the author was tested using focus group interview with the experts in the field of finance. After involvement of the focus group, the decision-making structure developed by the author was almost completely approved, except for the stage of decision-making, where the focus group reached the conclusion: "making lending decisions, corporate social responsibility should be undertaken not only by the bank, but also by the customer".

To be able to fully exclude potential environmental risks, banks should develop an environmental risk assessment procedure, which would include the stages starting with the receipt of the lending application by the bank, till the final decision-making stage. Based on the good practices of other banks (Bank Austria, Ceska Sporitelna and Bank of Georgia), the author developed an environmental risk assessment srtucture (see Figure 17).

```
┌─────────────────────┐
│ Lending application │
└─────────────────────┘
```

General information about the enterprise is obtained

Potential threat of pollution in the enterprise or real estate is considered
The enterprise risk group is determined

The environmental risk threats suspected and/or found

The environmental risk threats are not identified

An in-depth enterprise enquiry

Real estate assessment based on environmental aspects
The costs of the project;
Environmental risk management in the enterprise.

Environmental risk threats are identified

Environmental risk threats are not identified

An in-depth enterprise estimate

Environmental risk assessment by risk managers

Preparation of the lending proposal based on the environmental risks

Preparation of the lending proposal based on the financial risks

Making a lending decision based on environmental and financial risks

Fig. 17. Environmental risk assessment structure [developed by the author]

Considering the figure developed by the author, it is seen that the phases of environmental risk assessment can vary for each enterprise. For example, if environmental risk threats are not detected in the first phase, a credit manager can start preparing a lending proposal and send it for further lending decision-making. However, if environmental risk threats are identified, environmental risk assessment is performed in several stages till the decision on granting or rejecting a loan is made.

CONCLUSIONS AND PROPOSALS

Having analyzed performance indicators of the Latvian commercial banks and the banks in the countries of Central and Eastern Europe and having studied the theoretical aspects of customer equity, as well as the factors and dimensions affecting customer equity, the author of the Doctoral Thesis has identified the problems existing in the field of customer equity management and determined the necessity for the development of the new customer equity concepts in the commercial banking sector of Latvia.

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

1. Having assessed bank performance efficiency using a variety of approaches, the author has identified the existing efficiency problems of the financial system, which are connected with the changes in the number of customers. Therefore, in order to increase bank performance efficiency it is necessary to develop new customer equity centric management techniques.

2. Having evaluated bank business models according to customer groups and priorities, it has been concluded that in order to increase bank performance efficiency indicators it is necessary to reconsider the priorities set by the banks and reorient the existing business model towards customer centricity.

3. Having conducted qualitative and quantitative analyses of the scientific literature, the author has elaborated the concept of customer equity, which includes the total of mutual relationships between the bank and its customers that is based on bank brand, respect of customer values and retention of the customer base, in such a way ensuring stability of the current and future cash flow for the bank.

4. Customer equity model developed by the author and the testing of the hypotheses set using Chi-square test have attested the existing correspondence between theoretical and empirical customer equity research.

5. The conducted analysis of the concept of bank ecosystem has demonstrated that there is a tendency for dependence of a bank performance indicator (ROAA) on the indicators that characterize the observance of bank business ecosystem principles.

6. Having analyzed the concept of business ecosystem, conclusions on the opportunities to apply ecosystem dimension and the domains in the development of the concept of bank business ecosystem have been made.

7. On the basis of the analysis of scientific literature, the comparison of the traditional bank business model and the bank business model based on ecosystem principles has been performed. As a result, it has been concluded that banks should adopt business ecosystem model in such a way ensuring the stability of customer equity.

8. Having performed theoretical and empirical research, the dimensions of bank business ecosystem model have been evaluated, and the methodology for their assessment has been developed in such a way determining bank customer centricity, bank customer segments based on customer profitability, bank product and service range, and responsible lending principles.

9. As a result of the empirical research on customer loyalty, issues related to the selection of a particular bank, and bank-customer relationships, it has been concluded that there is correspondence between the results of empirical research and the findings presented in the scientific literature.

10. Research results on customer equity and the elements affecting it have demonstrated that customer equity within the financial system can be influenced by value and retention capital.

11. Having investigated the risk sequential exploratory method, it has been concluded that evaluating bank lending transactions environmental factors are assessed only formally, therefore the banks should develop stricter guidelines to regulate the process of risk assessment and monitoring in order to facilitate sustainable relationships with the stakeholders.

12. Different approaches to the evaluation of knowledge capital and intellectual capital have demonstrated that for the Latvian commercial banks it is a new and unconventional practice, however, in order to ensure the stability of the customer equity, banks should start evaluating knowledge capital and intellectual capital and include them into their annual reports.

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

For the customer service departments:

1. It is desirable to introduce ecomap principles developed by the author for evaluation of profitable bank customer segments and include them in the credit files of the customers;

For the lending and risk assessment departments:

2. It is advisable to perform environmental risk assessment according to the risk segment categories developed by the author while considering customer loan applications, and carry out their further monitoring;

For the marketing and customer development departments:

3. It is advisable to conduct regular assessment and analysis of bank customer centricity using the questionnaires for bank employees and bank customers developed by the author;

4. It is recommended to analyze customer transactions and on the basis of transaction records to segment the customers according to the segment groups specified by the author;

For the IT departments:

5. It is desirable to create a section on bank home pages where a bank customer may leave feedback on bank performance;

6. It is recommended to ensure customer ecomaps and customer classification according to segments are available to all customer service departments;

For the bank development departments:

7. It is advisable to develop and integrate the guidelines and principles of responsible lending into the regulatory documents of the bank.

REFERENCES USED IN THE SUMMARY

1. Acaravci, S. K., & Çalim, A. E. (2013). Turkish Banking Sector's Profitability Factors. International Journal of Economics & Financial Issues (IJEFI), 3(1).
2. Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. Strategic Management Journal, 31(3), 306-333.
3. Ahokangas, P., Matinmikko, M., Myllykoski, J., & Okkonen, H. (2012). Future Scenarios, Ecosystems and Business Models for Cognitive Radio Systems. Future, 5, 5.
4. Alkassim, F. A. (2005). The profitability of Islamic and conventional banking in the GCC countries: a comparative study. Journal of Review of Islamic Economics, 13, 5-30.
5. Amor-Tapia, B., Tascon, M. T. & Fanjul J. L. (2010). Country Creditor Rights, Information Sharing, and Commercial Banks' Profitability. Finance a úvěr-Czech Journal of Economics and Finance, 60(4), 336-354.
6. Amit, R., & Zott, C. (2010). Business model innovation: Creating value in times of change (No.D/870). IESE Business School.
7. Anderson, E., & Weitz, B. (1989). Determinants of continuity in conventional industrial channel dyads. Marketing science, 8(4), 310-323.
8. Ariff, M., & Can, L. (2008). Cost and profit efficiency of Chinese banks: a non-parametric analysis. China Economic Review, 19(2), 260-273.
9. Arhipova, I., & Bāliņa, S. (2006). Statistika ekonomikā un biznesā. Datorzinību centrs.
10. Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Journal of international financial Markets, Institutions and Money, 18(2), 121-136.
11. Ayadi, R., Arbak, E., & Pieter De Groen, W. (2012). Regulation of European banks and business models: towards a new paradigm?. Centre for European Policy Studies, Forthcoming.
12. Azadeh, A., Ghaderi, S. F., Mirjalili, M., & Moghaddam, M. (2010). A DEA approach for ranking and optimisation of technical and management efficiency of a large bank based on financial indicators. International Journal of Operational Research, 9(2), 160-187.
13. Banker, R. D., Charnes, A., & Cooper, W. W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. Management science, 30(9), 1078-1092.
14. Bannerman, P. L., & Zhu, L. (2009, January). Standardization as a business ecosystem enabler. In Service-Oriented Computing–ICSOC 2008 Workshops (p.298-303). Springer Berlin Heidelberg.
15. Bankscope data base. Retrieved from https://bankscope2-bvdep-com.resursi.rtu.lv/version-2014218/Search.QuickSearch.serv?_CID=43&context=2AF49Q1YSJWKQ1S
16. The Bank of Latvia. (2010, 23. novembris). Banku darbība Latvijā. Retrieved from http://makroekonomika.lv/node/1285
17. Bank Austria. Retrieved from http://www.bankaustria.at/en/corporate-customers-financing-environmental-aspects-with-financing.jsp
18. Bankinter. Retrieved from https://www.bankinter.com/
19. Banco Bilbao Vizcaya Argentaria. Retrieved from http://www.bbva.com/TLBB/tlbb/ing/index.jsp#
20. Bank of Georgia. Retrieved from http://bogh.co.uk/m/u/ck/files/BGH%20Environmental%20and%20Social%20Policy

21. Barich, H., & Kotler, P. (1991). A framework for marketing image management. Sloan management review, 32(2), 94.
22. Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of management, 17(1), 99-120.
23. Bebbington, J., & Gray, R. (2001). An account of sustainability: failure, success and a reconceptualization. Critical perspectives on accounting, 12(5), 557-588.
24. Billett, M. T., Flannery, M. J., & Garfinkel, J. A. (1995). The effect of lender identity on a borrowing firm's equity return. The Journal of Finance, 50(2), 699-718.
25. Blattberg, R. C., Getz, G., & Thomas, J. S. (2001). Customer equity: building and managing relationships and valuable assets. Harvard Business Press.
26. Bloom, P. N., & Dees, G. (2008). Cultivate your ecosystem. Stanford social innovation review, 6(1), 47-53.
27. Bontis, N., Crossan, M. M., & Hulland, J. (2002). Managing an organizational learning system by aligning stocks and flows. Journal of management studies, 39(4), 437-469.
28. Bolt, W., De Haan, L., Hoeberichts, M., van Oordt, M. R., & Swank, J. (2012). Bank profitability during recessions. Journal of Banking & Finance, 36(9), 2552-2564.
29. Bryant, S. E. (2005). The Impact of Peer Mentoring on Organizational Knowledge Creation and Sharing An Empirical Study in a Software Firm. Group & Organization Management, 30(3), 319-338.
30. Buttle, F. (1996). SERVQUAL: review, critique, research agenda. European Journal of marketing, 30(1), 8-32.
31. Casu, B., & Ferrari, A. (2013). Dynamics of Bank Efficiency in the EU and Southern Mediterranean: Is there.
32. Casaló, L. V., Flavián, C., & Guinalíu, M. (2008). Promoting consumer's participation in virtual brand communities: A new paradigm in branding strategy. Journal of Marketing Communications, 14(1), 19-36.
33. Caruana, A. (2002). Service loyalty: the effects of service quality and the mediating role of customer satisfaction. European journal of marketing, 36(7/8), 811-828.
34. Camanho, A. S., & Dyson, R. G. (2005). Cost efficiency measurement with price uncertainty: a DEA application to bank branch assessments. European Journal of Operational Research, 161(2), 432-446.
35. Camlek, V. (2010). How to spot a real value proposition. Information Services and Use, 30(3), 119-123.
36. Central Statistical Bureau of the Republic of Latvia. Retrieved from http://www.csb.gov.lv/en/dati/data-23959.html
37. Ceska Sporitelna. Retrieved from http://www.csas.cz/banka/appmanager/portal/banka?_pageLabel=advanced_search_subportal03&_nfpb=true&segment=oNas&basic SearchText=environmental
38. Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. European journal of operational research, 2(6), 429-444.
39. Chan, D. K. S., & Cheng, G. H. L. (2004). A comparison of offline and online friendship qualities at different stages of relationship development. Journal of Social and Personal Relationships, 21(3), 305-320.
40. Chesbrough, H. (2006). Open business models. Harvard Business Press.
41. Chen, X., Skully, M., & Brown, K. (2005). Banking efficiency in China: Application of DEA to pre-and post-deregulation eras: 1993–2000. China Economic Review, 16(3), 229-245.
42. Chigamba, C., & Fatoki, O. (2011). Factors influencing the choice of commercial banks by university students in South Africa. International Journal of Business and Management, 6(6), 66.

43. Chronopoulos, D. K., Girardone, C., & Nankervis, J. C. (2011). Are there any cost and profit efficiency gains in financial conglomeration? Evidence from the accession countries. The European Journal of Finance, 17(8), 603-621.
44. Conlon, G. (2003). Corporate Image and Logos. From Logo design articles. Retrieved from http://logoworks.com/corporate-image.html
45. Colquitt, J. A., & Rodell, J. B. (2011). Justice, trust, and trustworthiness: A longitudinal analysis integrating three theoretical perspectives. Academy of Management Journal, 54(6), 1183-1206
46. Coveo. Retrieved from http://coveosc.coveo.com/~/media/Files/WhitePapers/ Unlocking-Knowledge-to-Engage-Customers-by-Coveo.pdf
47. Cowton, C. J., & Thompson, P. (2000). Do codes make a difference? The case of bank lending and the environment. Journal of Business Ethics, 24(2), 165-178.
48. Cristobal, E., Flavián, C., & Guinalíu, M. (2007). Perceived e-service quality (PeSQ): measurement validation and effects on consumer satisfaction and web site loyalty. Managing Service Quality, 17(3), 317-340.
49. Customer Carewords. Retrieved from http://www.customercarewords.com/customer-centric-index.html
50. Delis, M. D., & Papanikolaou, N. I. (2009). Determinants of bank efficiency: evidence from a semi-parametric methodology. Managerial Finance, 35(3), 260-275.
51. Deutsch, M. (1985). Distributive justice: A social-psychological perspective (p.122-155). New Haven, CT: Yale University Press.
52. The Development Bank of Japan. Retrieved from http://www.dbj.jp/en/co/csr/ property/index.html
53. Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. The World Bank Economic Review, 13(2), 379-408.
54. Ding, N., Zhao, L., Wang, Z., & Liu, W. J. (2009). The Trend of Enterprise Business Model development-business Ecosystem. China-USA Business Review, 8(1), 18-22.
55. Epstein, M. J., & Freedman, M. (1994). Social disclosure and the individual investor. Accounting, Auditing and Accountability Journal 7(4), 94-109.
56. Eriņa, J., & Eriņš, I. (2012). Responsible Lending in Latvian Banks. The 16th World Multi-Conference on Systemics, Cybernetics and Informatics, 1, 7-12.
57. Fader, P. (2012). Customer Centricity: Focus on the Right Customers for Strategic Advantage. Wharton Digital Press.
58. Foer, A. A. (2004). Do the "New Dynamics of Business Ecosystems" Spell the End of Antitrust?. New York Times.
59. Fries, S., & Taci, A. (2005). Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries. Journal of Banking and Finance 29(1), 55-81.
60. Global Information & Research Adkit. (2011). Retrieved from http://thefinanser.co.uk/ files/adkit---retail-customer-segmentation-in-worldwide-banking-1.pdf
61. Goode, M. M., & Harris, L. C. (2007). Online behavioural intentions: an empirical investigation of antecedents and moderators. European Journal of Marketing, 41(5/6), 512-536.
62. Gradl, C., & Jenkins B. (2011). Tackling Barriers to Scale: From Inclusive Business Models to Inclusive Business Ecosystem. CSR Initiative at the Harvard Kennedy School.
63. Grigorian, D. A., & Manole, V. (2002). Determinants of commercial bank performance in transition: An application of data envelopment analysis (No. 2002-2146). International Monetary Fund.

64. Gupta, S., Lehmann, D. R. & Stuart, J. A. (2004). Valuing Customers. Journal of Marketing Research, 41(1), 7-18.
65. den Hartigh, E., Tol, M., Wei, J., Visscher, W., & Zhao, M. (2005). Modeling a business ecosystem: An agent-based simulation. In Fifth annual meeting of the european chaos and complexity in organisations network ECCON.
66. Harte, G., Lewis, L., & Owen, D. (1991). Ethical investment and the corporate reporting function. Critical Perspectives on Accounting, 2(3), 227-253.
67. Haron, S. (2004). Determinants of Islamic bank profitability. The Global Journal of Finance and Economics, 1(1), 11-33.
68. Havrylchyk, O. (2006). Efficiency of the Polish banking industry: Foreign versus domestic banks. Journal of Banking & Finance, 30(7), 1975-1996.
69. Hellmann, T., Murdock, K., & Stiglitz, J. E. (1995). Financial Restraint: Towards a New Paradigm (No.1355). Graduate School of Business, Stanford University.
70. International Finance Corporation. (2008). Social & Environmental management system 101. Retrieved from http://www.ifc.org/ifcext/gfm.nsf
71. Joseph, K., Srinivasan, D., & Thevaranjan, A. (1999). Managerial myopia and nonfinancial performance measures: The case of customer satisfaction mitigating hard-selling. Working paper. University of Arkansas, Lawrence, KS, University of Pittsburgh, Pittsburgh, PA and Syracuse University, Syracuse, NY.
72. Kanas, A., Vasiliou, D., & Eriotis, N. (2012). Revisiting bank profitability: A semi-parametric approach. Journal of International Financial Markets, Institutions and Money, 22(4), 990-1005.
73. Kasman, A., & Yildirim, C. (2006). Cost and profit efficiencies in transition banking: the case of new EU members. Applied Economics, 38(9), 1079-1090.
74. Kargi, H. S. (2011). Credit Risk and the Performance of Nigerian Banks. AhmaduBello University, Zaria.
75. Kandiah, G., & Gossain, S. (1998). Reinventing value: The new business ecosystem. Strategy & Leadership, 26(5), 28-33.
76. Keiningham, T. L., Cooil, B., Aksoy, L., Andreassen, T. W., & Weiner, J. (2007). The value of different customer satisfaction and loyalty metrics in predicting customer retention, recommendation, and share-of-wallet. Managing Service Quality, 17(4), 361-384.
77. Kett, H., Scheithauer, G., Weiner, N., & Weisbecker, A. (2009, October). Integrated Service Engineering (ISE) for service ecosystems: an interdisciplinary methodology for the internet of services. In eChallenges e-2009 Conference Proceedings, IIMC International Information Management Corporation Ltd., Dublin (p.1-8).
78. Kim, S. Y., Jung, T. S., Suh, E. H., & Hwang, H. S. (2006). Customer segmentation and strategy development based on customer lifetime value: A case study. Expert Systems with Applications, 31(1), 101-107.
79. Kobie marketing. Implementing and Measuring a Customer Centricity Framework. Retrieved from http://www.kobie.com/
80. Kouthouris, C., & Alexandris, K. (2005). Can service quality predict customer satisfaction and behavioural intentions in the sport tourism industry? An application of the SERVQUAL model in an outdoors setting. Journal of Sport Tourism, 10(2), 101.
81. Lee, C. C., & Hsieh, M. F. (2013). The impact of bank capital on profitability and risk in Asian banking. Journal of International Money and Finance, 32, 251-281.
82. Lemon, K. N., Rust, R. T., & Zeithaml, V. A. (2001). What drives customer equity?. Marketing Management, 10(1), 20-25.

83. Lindgren, P. (2012). Business Model Innovation Leadership: How Do SME's Strategically Lead Business Model Innovation?. International Journal of Business and Management, 7(14), 53.

84. Lindsay, A., Downs, D., & Lunn, K. (2003). Business processes – attempts to find a definition. Information and software technology, 45(15), 1015-1019.

85. Li, Z., & Zhong, Y. H. (2005). The adoption of Virtual banking in China: An empirical Study. Chinese Business Review, 4(6), 24.

86. Machauer, A., & Morgner, S. (2001). Segmentation of bank customers by expected benefits and attitudes. International Journal of Bank Marketing, 19(1), 6-18.

87. Markides, C. C. (1999). A dynamic view of strategy. Sloan Management Review, 40(3), 55-63.

88. McColl-Kennedy, J. R., & Sparks, B. A. (2003). Application of fairness theory to service failures and service recovery. Journal of Service Research, 5(3), 251-266.

89. Minh To, H., & Tripe, D. (2002). Factors influencing the performance of foreign-owned banks in New Zealand. Journal of International Financial Markets, Institutions and Money, 12(4), 341-357.

90. Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. The journal of marketing, 20-38.

91. Moore, J. F. (1993). Predators and prey: a new ecology of competition. Harvard business review, 71(3), 75-86.

92. Moore, J. F. (1996). The death of competition: leadership and strategy in the age of business ecosystems. New York: HarperBusiness.

93. Naceur, S. B. (2003). The determinants of the Tunisian banking industry profitability: panel evidence. Universite Libre de Tunis Working Papers.

94. Nadiri, H., & Tanova, C. (2010). An investigation of the role of justice in turnover intentions, job satisfaction, and organizational citizenship behavior in hospitality industry. International Journal of Hospitality Management, 29(1), 33-41.

95. Ndubisi, N. O. (2004). Understanding the salience of cultural dimensions on relationship marketing, it's underpinnings and aftermaths. Cross Cultural Management: An International Journal, 11(3), 70-89.

96. The Oesterreichische Nationalbank. Retrieved from http://www.oenb.at/en/Publications/ Oesterreichische-Nationalbank/Annual-Report.html

97. Osterwalder, A., & Pigneur, Y. (2002, June). An e-business model ontology for modeling e-business. In 15th Bled Electronic Commerce Conference (p.17-19). Bled, Slovenia.

98. Osterwalder, A. (2004). The business model ontology: A proposition in a design science approach. Institut d'Informatique et Organisation. Lausanne, Switzerland, University of Lausanne, Ecole des Hautes Etudes Commerciales HEC, 173.

99. Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. Communications of the association for Information Systems, 16(1), 1-25.

100. Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. Wiley. com.

101. Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. Research in International Business and Finance, 21(2), 222-237.

102. Peltoniemi, M., & Vuori, E. (2004). Business ecosystem as the new approach to complex adaptive business environments. Frontiers of E-business Research, 267-281.

103. Rashid, M., & Hassan, M. K. (2009). Customer demographics affecting bank selection criteria, preference, and market segmentation: study on domestic Islamic banks in Bangladesh. International journal of Business and Management, 4(6), 131.

104. Rappa, M. (2000). Business models on the web. North Carolina State University (ecommerce. ncsu. edu), 13.

105. Ray, S. C., & Das, A. (2010). Distribution of cost and profit efficiency: Evidence from Indian banking. European Journal of Operational Research, 201(1), 297-307.

106. Rossi, S. P., Schwaiger, M., & Winkler, G. (2005). Managerial behavior and cost/profit efficiency in the banking sectors of Central and Eastern European countries. Oesterr. Nationalbank.

107. Rust, R. T., Zeithaml, V. A., & Lemon, K. N. (2000). Driving Customer Equity: How Customer Lifetime Value Is Reshaping Corporate Strategy.

108. Rust, R. T., Lemon, K. N., & Zeithaml, V. A. (2004). Return on marketing: using customer equity to focus marketing strategy. Journal of marketing, 109-127.

109. Rüegg-Stürm, J., & von Rohr, T. (2002). Strukturen und Ansätze einer Gestaltung von Beziehungskonfiguration – Das Konzept Geschäftsmodell. In Zukünftige Geschäftsmodelle (p. 35-61). Springer Berlin Heidelberg.

110. Searle, R., Den Hartog, D. N., Weibel, A., Gillespie, N., Six, F., Hatzakis, T., & Skinner, D. (2011). Trust in the employer: the role of high-involvement work practices and procedural justice in European organizations. The International Journal of Human Resource Management, 22(05), 1069-1092.

111. Shankar, R., & Khan. S. (2012). The next generation social banking ecosystem: a road maps for banks. Happiest Minds, Social Computing Practice.

112. Shah, D., Rust, R. T., Parasuraman, A., Staelin, R., & Day, G. S. (2006). The path to customer centricity. Journal of service research, 9(2), 113-124.

113. Slywotsky, A. J. (1996). Value migration: How to think several moves ahead of the competition. Harvard Business Press.

114. Sufian, F., & Habibullah, M. S. (2009). Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh. Journal of business economics and management, 10(3), 207-217.

115. Sveiby, K. E. (1997). The new organizational wealth: Managing and measuring knowledge-based assets. Berrett-Koehler Publishers.

116. Tapscott, D., Lowy, A., & Ticoll, D. (2000). Digital capital: Harnessing the power of business webs. Harvard Business Press.

117. Teece, D. J. (2010). Business models, business strategy and innovation. Long range planning, 43(2), 172-194.

118. Thoraneenitiyan, N., & Avkiran, N. K. (2009). Measuring the impact of restructuring and country-specific factors on the efficiency of post-crisis East Asian banking systems: Integrating DEA with SFA. Socio-Economic Planning Sciences, 43(4), 240-252.

119. Timmers, P. (1998). Business models for electronic markets. Electronic markets, 8(2), 3-8.

120. Tsiptsis, K., & Chorianopoulos, A. (2011). Data mining techniques in CRM: inside customer segmentation. John Wiley & Sons.

121. Villanueva, J., & Hanssens, D. M. (2007). Customer equity: Measurement, management and research opportunities. Now Publishers Inc.

122. Wasiuzzaman, S., & Tarmizi, H. A. (2010). Profitability of Islamic banks in Malaysia: an empirical analysis. Journal of Islamic Economics, Banking and Finance, 6(4), 53-68.

123. Weill, L. (2007). Is there a gap in bank efficiency between CEE and Western European countries?. Comparative Economic Studies, 49(1), 101-127.

124. Wei, W., Zhu, W., & Lin, G. (2013). Business Models, Symbionts and Business Ecosystem: A Case Study from E-commerce Industry in China. In Digital Enterprise Design and Management 2013 (p.161-182). Springer Berlin Heidelberg.

125. Wiig, K. M. (1997). Integrating intellectual capital and knowledge management. Long range planning, 30(3), 399-405.

126. World Bank. Retrieved from http://web.worldbank.org

127. Zineldin, M. (1996). Bank strategic positioning and some determinants of bank selection. International Journal of Bank Marketing, 14(6), 12-22.

128. Zott, C., & Amit, R. (2010). Business model design: an activity system perspective. Long range planning, 43(2), 216-226.

129. Zott, C., Amit, R., & Massa, L. (2010). The business model: Theoretical roots, recent developments, and future research.