Regina JASILIONIENĖ

EVALUATION OF CUSTOMER RELATIONSHIP SYSTEM EFFICIENCY

SUMMARY OF DOCTORAL DISSERTATION

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ECONOMICS (04S)

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Introduction

Topicality of the problem

As a result of globalisation, companies face ever increasing global competition. Consumers may choose from an increasing variety of suppliers of goods and services: where to purchase food or spend their holidays, which suppliers of telecommunication services to use, where to borrow money or keep it, etc. The privatisation of former state monopolies and elimination of various limitations increase competition to an even greater extent and force companies to reduce their expenses. Endless cost cutting prevents companies from completely satisfying clients' needs, however. Over the past few decades, one may observe the emergence of the concept of the customer relationship management (CRM). With the current level of IT systems, we may make just a step back into the past and personalise mass marketing, sales, and customer service. If at the start of last century the owner of a shop kept information about his 100 customers in his mind, the database of the contemporary customer relationship system (CRS) can store information about 100,000 customers and on the basis of historical information, the company can offer each customer what he needs. It is essential for the companies planning to develop a CRS to use adequate evaluation methods to identify the efficiency of the CRS under consideration and form the basis for objective decisions. In the case of a CRS that has already been implemented and is in use, it is also essential to apply relevant evaluation methods to carry out regular efficiency evaluation that must help disclose the actual advantages and disadvantages of the CRS in use and demonstrate the levels at which objectives have been implemented.

In order to implement a customer-oriented strategy, many organisations around the world and some organisations in Lithuania have undertaken development of a CRS. The goal of successful development of a CRS in a company is computerization of customer-related company processes, improvement of sales commands and efficiency of customer services centres, and, with the help of data analysis, more precise planning and implementation of marketing campaigns. The outcome of such an initiative should be a better financial situation for the company. Theory and practice seek answers to the questions of how to carry out both the initial CRS efficiency evaluation when a decision is made to acquire and/or develop the CRS and also efficiency evaluation of CRS being used when the suitability as well as expansion possibilities of the available CRS are disclosed. The search made by researchers is provoked by statistical information published in various scientific and practical sources that about 60% of the companies who try to implement a CRS suffer failure to a lesser or greater extent. So far no appropriate tools have been developed in the theory of eco-

nomics that would allow the efficiency of a CRS to be evaluated. A fairly large proportion of researchers suggest solving the problem of evaluating CRS efficiency by using economic efficiency evaluation methods such as NPV, IRR, ROI, and PP, which evaluate only financial factors. There are, however, many non-financial type factors (technical, social, psychological, cultural, legal, administrative, etc.) that have an impact on CRS efficiency. This encourages development of a model that when applied would enable more comprehensive and objective evaluation of CRS efficiency. In accordance with what is mentioned above, we may state that business does not have an adequate methodology to evaluate CRS efficiency. The problem of evaluating CRS efficiency is therefore analysed in this dissertation in order to identify quantitative and qualitative factors that have an impact on CRS efficiency and to create a model that would assist in carrying out efficiency evaluation of a CRS prior to purchase and/or development and performing regular evaluation of a CRS in use.

Research object

Customer relationship systems (CRS) in conditions of increasing demand for the quality of CRS development, implementation, usage, expansion, and growing global competition.

Aim and tasks of the work

The research aim is to identify the quantitative and qualitative factors (groups of factors) that have an impact on the efficiency of a CRS and create a model that will allow the company planning to acquire and/or develop or using a CRS to evaluate the efficiency of the CRS from the company's perspective. The model should allow more comprehensive and objective evaluation of CRS efficiency, the performance of a comparative analysis of CRS alternatives to be purchased/developed and implemented and regular analysis of the CRS in use by identifying the relative quality of the CRS and making premises justifying decisions to be made, and the preparation of proposals for the improvement and expansion of the CRS in use.

The following tasks are set in order to achieve the aforementioned aim:

1. To disclose the concept of a CRS, to define the place of a CRS in the overall structure of the company's information systems, and to explore the peculiarities and principles of acquiring and/or developing, using, and expanding a CRS in a company.
2. To perform a critical analysis of theoretical methods of efficiency evaluation and possibilities for their application in developing, using, and expanding a CRS.
3. By way of empirical research, to check the practical application of methods to evaluate the economic efficiency of developing and using a

CRS (on the ground of Lithuanian example) and to disclose the demand for creating a complex CRS efficiency evaluation model.

4. To identify aspects that describe CRS efficiency, to identify factors (groups of factors) that have an impact on CRS efficiency, and to classify them in terms of their content according to aspects that describe CRS efficiency.
5. To make a model for complex efficiency evaluation of the CRS that would include both initial and regular CRS efficiency evaluation, combine all the evaluated CRS efficiency aspects into a whole, and create premises for more comprehensive and objective CRS efficiency evaluation.
6. To demonstrate practically the possibilities of applying the proposed CRS efficiency evaluation model by performing an efficiency evaluation of two alternative CRSs and justifying the decision to acquire/develop and implement the system.

Defended propositions

1. CRS efficiency can be evaluated by using a systemic approach by applying methods that evaluate CRS efficiency as a whole.
2. For the evaluation of a complex CRS efficiency phenomenon as a whole, a range of evaluation methods and models must be applied.
3. The proposed initial and regular CRS efficiency evaluation model, formed as a synthesis of economic, multi-criteria, and balanced scorecard and methods for efficiency evaluation of information systems and based on a detailed system of quantitative and qualitative indicators that describe CRS efficiency, creates premises for evaluating CRS efficiency more comprehensively and making more objective decisions regarding the acquisition/development, implementation, further use, and expansion of the CRS.

Scientific novelty

1. Scientific and specialized literature about CRS has been systematised, with new insights about this system creation, development, usage and expansion has been replenished.
2. By way of systemic analysis of efficiency evaluation models and their application possibilities for acquiring/developing, implementing, using, and expanding a CRS and an empirical examination of the use of economic efficiency evaluation methods for developing and using a CRS, creation of a complex CRS efficiency evaluation model has been justified.
3. A CRS efficiency evaluation model has been proposed that will provide a possibility to evaluate a CRS more comprehensively and objec-

tively and perform a comparative analysis of the CRS alternatives to be developed/acquired and a regular analysis of the CRS in use/being expanded by identifying the relative quality of a CRS, providing premises for justifying decisions to be made, and preparing proposals for improving and expanding a CRS in use.

Practical value

Following the proposed CRS efficiency evaluation model based on quantitative economic, technical, and social evaluation aspects, practitioners are offered the opportunity to perform a more objective and comprehensive comparative analysis of the initial CRS alternatives under consideration and the CRS used over different periods and to justify the decisions made.

The work provides a practical demonstration of the application of the proposed CRS evaluation model by simulating an initial CRS efficiency evaluation for two CRS alternatives and justifying the decision to acquire and implement the system.

Systematised scientific and specialised literature by author about CRS, this system creation, development, usage and expansion, also about customer relationship management can be used by lecturers as student study material.

Scope of the scientific work

The doctoral dissertation is comprised of introduction, 3 problem sections, general conclusions, bibliographic list on the given topic (168 sources), 10 list of author's publications and 11 annexes (in electronic storage). The thesis contains 146 pages, 34 figures and 15 tables.

1. Theoretical Questions of Customer Relationship System Research

This section of the doctoral dissertation analyses the concept of developing, using and expanding a CRS. The customer relationship system of a company is described as an information system used to plan, fulfil, store, and control the customer-related activities of the company. From the point of view of IT, CRS may integrate various technologies and processes of a company: databases, data warehouses, internet sites, the internet and extranet, systems of providing service via the telephone, accounting, production, marketing, sales, customer services, and maintenance. The main objective of the CRS that is implemented is to connect external (sales, marketing, customer service, and support) and internal (production, finance, supply, logistics, human resources, and other internal operations) functions of a company with the points of the organisation's customer contact.

This chapter also provides an overview of the companies' information systems and their architecture and classification; the composition, classification, computerised functions, and processes of a CRS are described; and global and

Lithuanian CRS markets and their changes are reviewed. This chapter also describes the purchase, development, use, and expansion of a CRS in a company: the process of selection and purchase, stages of CRS project development, project documentation, and peculiarities of project management.

2. Analysis of Efficiency Evaluation Methods and Possibilities to Apply Them When Developing, Using, and Expanding Customer Relationship Systems

This chapter defines the importance of CRS efficiency evaluation, investigates the evaluation of CRS costs and benefits, and analyses economic, information system, balanced scorecard, and specialized CRM efficiency evaluation methods and possibilities to apply them when acquiring/developing, using, and expanding a CRS. So far, no specialised methods of CRS efficiency evaluation have been proposed in the scientific literature. The problem of CRS efficiency evaluation in the world and in Lithuania has been solved by using traditional economic efficiency evaluation methods such as NPV, IRR, ROI, PP, TCO, or PI.

In the analysed methods of economic efficiency evaluation, the following two main CRS indicators are evaluated: costs and future income directly related to the expected benefit of a company from the CRS implemented and used. Criteria (factors) and their groups that are of non-financial origin (technical, social, etc.) are not evaluated (they are not considered). In practise in the case of an initial CRS efficiency evaluation, when acquisition and development of alternative CRSs is considered, the decision regarding the choice of the specific CRS is frequently determined not only by economic, but also by technical and/or social factors which, on the other hand, have an impact on CRS financial indicators. The decision regarding further use of a CRS is also usually made on the basis of the evaluation of technical/social factors rather than economic ones. Thus, to make a complex evaluation of CRS efficiency, evaluation of indicators of financial origin is not sufficient.

Up to now, the scientific community and economic entities have not reached agreement regarding a single information system (IS) efficiency evaluation. Many methods and approaches are proposed: starting from components of IS architecture, relationships of the components, and IS quality evaluation and finishing with evaluation of IS interested parties and problems of IS use.

Kaplan and Norton Balanced Scorecard method, H. Kim and Y. Kim method and Customer Management Assessment Tool (CMAT) can be applied only to evaluate the efficiency of a CRS in use. In these methods, CRS is evaluated using only a few evaluation indicators. As a result, there is an insuffi-

cient amount of CRS efficiency evaluation indicators designated in these methods. In addition, these methods cannot be applied to initial evaluation of the system, when different alternatives for the acquisition of a CRS are considered. The main advantage, however, of these methods is that both quantitative and qualitative criteria are evaluated.

Application of a single CRS efficiency evaluation method is not sufficient for comprehensive (complex) evaluation of CRS efficiency. A range of efficiency evaluation methods and models must be applied. With that end in mind, evaluation methods of CRS efficiency must be defined.

3. A Customer Relationship System Efficiency Evaluation Model

Empirical Research of the Applicable CRS Economic Efficiency Evaluation Methods. Empirical research of the applicable methods of CRS economic efficiency evaluation carried out by the author of the thesis showed that only 15 % of the companies surveyed in Lithuania evaluate CRS economic efficiency, and 46 % state that they plan to evaluate it. Representatives of 39 % of the surveyed companies specified that they did not evaluate CRS economic efficiency.

The most frequent reasons specified by the respondents for not evaluating CRS economic efficiency are as follows: a) it is difficult to calculate (42 %); b) they do not have an initiator (17 %); c) they see no sense in it (17 %); d) they do not have a tool that would help perform such an evaluation (17 %), e) they do not have experts (7 %).

In world among the companies that do evaluate outcomes of CRS acquisition and development, financial methods are most popular: NPV – 30 %, IRR – 25 %, and PP – 23 %. In Lithuania, ROI (36 %) and IRR (14 %) financial methods are mostly used to evaluate CRS economic efficiency. However, 22 % of the respondents representing Lithuanian companies stated that they were using their own ROI calculation tool (Fig. 1).

The small percentage of the companies that do perform an evaluation of CRS economic efficiency, reasons specified by the companies for performing no evaluation, and relatively large percentage of companies using their own ROI calculation tools demonstrated that economic evaluation methods were not adequate for the companies' needs to evaluate the efficiency of the CRSs that are acquired, implemented, and used.

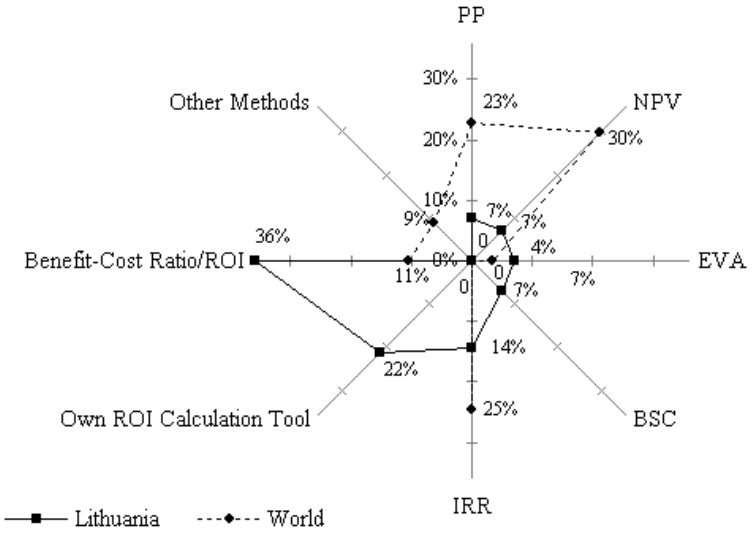

Fig. 1. Comparison of CRS economic efficiency evaluation methods used in Lithuania and the world (data from Lithuania are taken from empirical research done by the author and global data are taken from Gartner research)

The Proposed Complex CRS Efficiency Evaluation Model. The status of the CRS evaluated has a great impact on the objectives and scope of the system evaluation. A CRS efficiency evaluation may be initial and regular. The initial evaluation of CRS efficiency is the evaluation of the decision to acquire (or develop) and implement (or rent) a CRS and helps to either justify or reject the decision. Regular evaluation of the efficiency of a CRS in use must disclose its real advantages and disadvantages and show the level of implementation of economic, technical, and social aims. The CRS efficiency evaluation process is delineated by these stages (Fig. 2): 1) making a plan to evaluate CRS efficiency, 2) executing CRS efficiency evaluation, and 3) analysing the CRS efficiency evaluation.

When making a plan for the evaluation of CRS efficiency, the type of evaluation (initial evaluation or regular evaluation of a CRS in use), objectives of evaluation, budget of evaluation, objectives and requirements for CRS efficiency, regularity, evaluation groups and indicators, the weight of evaluation groups and indicators, and the value of evaluation indicators sought are defined.

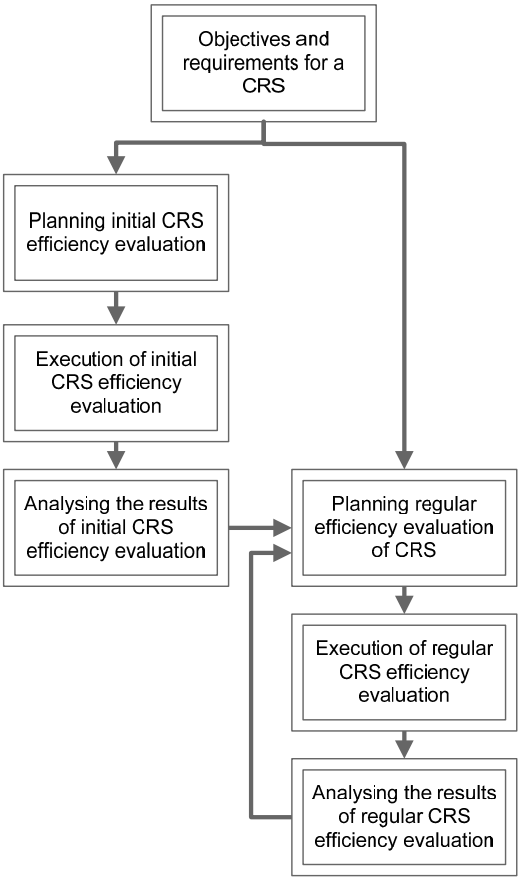

Fig. 2. The initial and regular CRS efficiency evaluation stages and their relationships

The sponsor and initiator of CRS implementation in a company and managers and experts of computerised CRM processes and IT divisions should also participate in the preparation of the plan for evaluation and analysis of evaluation.

The objectives and requirements for CRS efficiency evaluation must arise from the CRM objectives and requirements of a company. On the other hand, CRM objectives and requirements must arise from the CRM strategy and the CRM strategy must arise from the general strategy of a company.

In the case of the initial CRS efficiency evaluation, in order to select the main CRS alternatives, a two-stage evaluation is suggested. In the first stage of initial evaluation, an evaluation plan is made that should include only the critical indicators of evaluation groups, weight of indicators, and values of evaluation indicators that must be achieved.

It is proposed to set a minimal acceptable value for critical CRS efficiency indicators R:

$$R \leq R_{\min} .$$

When planning the budget allocated for CRS efficiency evaluation, it is recommended to rely on the practice of using application software for preparing an evaluation budget and allocating up to 4–6% of the entire budget for CRS acquisition/development/rent, implementation, and use to the CRS efficiency evaluation.

During execution of CRS efficiency evaluation, information on the evaluation indicators is collected (calculated). In the case of a CRS in use, evaluation should be a regular process carried out at defined intervals.

The analysis of the CRS efficiency evaluation establishes which objectives of the CRS efficiency evaluation have been achieved, which outcomes are positive and negative, what unplanned results were achieved, which could be better results, and how to achieve them. A comparative analysis of the outcomes during several periods of time is carried out, and conclusions are made that will serve as the basis for formulating the new objectives of a CRS for another period.

Both in the case of the system already in use and when justifying CRS acquisition/development/rent and implementation, an evaluation is made of the beneficial outcome, namely, efficiency. In order to evaluate CRS efficiency in a complex way, the author of the thesis suggests evaluating CRS efficiency using economic, social, and technical aspects and applying the evaluation criteria identified (Fig. 3). The list of economic, social, and technical evaluation criteria is concluded on the basis of the analysis of scientific and practical literature and the 5-year experience of the author working on the projects involved in CRS implementation in Lithuanian companies operating in various fields.

In order to compare the CRS alternatives considered and their different characteristics, an introduction to the complex CRS efficiency indicator E and the application of the formulae for CRS efficiency calculation were suggested (Fig. 3).

$$E = \left(w_{ej} \sum_{i=1}^{n} s_{ei} w_{ei} \right) + \left(w_{sj} \sum_{i=1}^{m} s_{si} w_{si} \right) + \left(w_{tj} \sum_{i=1}^{k} s_{ti} w_{ti} \right)$$

Economic evaluation		**Social evaluation**		**Technical evaluation**	
Initial evaluation	Regular evaluation	Initial evaluation	Regular evaluation	Initial evaluation	Regular evaluation
• Expenses • Benefit • TCO • ROI • IRR • NPV • PP • PI • EVA	• Expenses • Benefit • TCO • ROI • PP (discounted) • EVA • IRR • NPV • PI	• Customer relationship software user interface convenience, consistency, intuition • CRS administration convenience • Correspondence of the customer relationship software and the defined ergonomical requirements • Conditions of user trainings • Conditions of system administrator trainings	• General satisfaction of employees working with CRS • Customer relationship software user interface convenience, consistency, intuition • Frequency of use of a CRS • CRS importance for the fulfilment of the user's work functions	• Correspondence of the functionality of the customer relationship software and the defined requirements • Possibility to generate defined reports • Adaptability of reports to new requirements and complexity thereof • Maintenance and support conditions of the CRS • Possibilities of CRS expansion and growth • Compliance of the planned customer relationship software with the company's IT infrastructure • Other criteria	• CRS stability • CRS speed • The number of errors the customer relationship software has during the period • The number of resolved/unresolved errors the customer relationship software has during the period • Frequency of errors the customer relationship software has during the period • Complexity of errors the customer relationship software has • Complexity of using the new customer relationship software • Other criteria

Fig. 3. Model of CRS efficiency evaluation

In the mathematical formulae for CRS efficiency calculation w_{ej} means the weight of the group of economic indicators; s_{ei} – the value of the indicator *i* of the group of economic indicators; w_{ei} – the weight of the indicator *i* of the group of economic indicators; *n* – the number of indicators evaluated in the group of economic indicators; w_{sj} – the weight of the social group of indicators; s_{si} – the value of indicator *i* of the social group of indicators; w_{si} – the weight of the indicator *i* of the group of social indicators; *m* – the number of evaluated indicators in the group of social indicators; w_{tj} – the weight of the technical group of indicators; s_{ti} – the value of indicator *i* of the technical group of indicators; w_{ti} – the weight of the indicator *i* of the group of technical indicators; *k*- the number of evaluated indicators in the group of technical indicators; $w_{ej} + w_{sj} + w_{tj} = 1$; $\sum_{i=1}^{n} w_{ei} = 1$; $\sum_{i=1}^{m} w_{si} = 1$; $\sum_{i=1}^{k} w_{ti} = 1$.

When identifying the respective weight of indicators or group of indicators, the proposed theoretical CRS efficiency evaluation model must be applied by differentiating among the fields of operation of companies, computerised CRM processes and their scope and priorities, the type of evaluation (initial or regularly scheduled evaluation), the budget allocated for evaluation, and the available experts. When all the aforementioned reasons are considered, the actual amount of evaluation indicators applied and their respective weight may vary. The selected CRS efficiency evaluation criteria (indicators) must be as follows: meaningful, valuable, related to respective divisions and those responsible for achievement of indicators, practical, comparable, reliable, simple, and duly accessible.

In order to evaluate various types of quantitative and qualitative indicators in a unified manner, a five-level quantitative rating scale has been proposed.

Hypothetic Example of CRS Efficiency Evaluation According to the Proposed Model. To demonstrate the possibilities applying the proposed CRS evaluation model, using MS Excel calculator created by work author and web-based desicion support system created by V. Urbanavičienė, A. Kaklauskas, E. K. Zavadskas and M. Seniut a hypothetic example initial CRS efficiency evaluation is provided when two CRS alternatives are considered and a decision to acquire and implement one of them is justified.

General Conclusions

1. So far, in the scientific literature no specialised CRS efficiency evaluation models have been proposed. After the critical analysis of the most frequently applied methods for economic efficiency evaluation and their application in CRS acquisition/development, implementation, use, and expansion, it was established that these methods do not evaluate (do not consider) non-financial–type criteria (factors) or their groups (technical, social, etc.). During practical observation, the author of the thesis established that at the time of the initial CRS efficiency evaluation, when the evaluation and implementation of alternative CRSs is considered and a decision is made regarding the choice of the specific CRS, not only economic factors, but also technical and/or social factors play a decisive role and subsequently have an impact on the economic indicators of the CRS. Also, the decision regarding further use and expansion of a CRS is most frequently made after considering the evaluation of technical or social indicators rather than economic ones. Therefore, to carry out a complex evaluation of CRS efficiency, the evaluation of financial indicators is not sufficient. Kaplan and Norton Balanced Scorecard, H. Kim and Y. Kim and CMAT methods can be applied only for efficiency evaluation of a CRS in use. These methods cannot be applied to the initial evaluation of system efficiency when different options for the acquisition of a CRS are considered. In addition, these methods have insufficient efficiency evaluation indicators identified for CRS efficiency evaluation.

2. On the basis of the results of the research carried out by the author, the small percentage of companies that perform an evaluation of CRS economic efficiency, the reasons specified by the companies for not carrying out an evaluation, and the relatively large percentage of companies using their own ROI spreadsheet tools demonstrated that economic evaluation methods were not adequate for the companies' needs to evaluate the efficiency of developed, implemented, used, and expanded CRSs.

3. The proposed new concept of CRS efficiency evaluation includes evaluation not only of economic, but also of technical and social criteria. A range of evaluation methods and models have been proposed for a complex quantitative and qualitative evaluation of the CRS efficiency phenomenon.

4. The CRS efficiency evaluation process has been divided into these stages: 1) making a plan to evaluate CRS efficiency, 2) executing CRS efficiency evaluation, and 3) analysing the CRS efficiency evaluation.

5. The author of the thesis completed a list of economic, social, and technical evaluation criteria on the basis of which the efficiency of a CRS may be evaluated. In order to evaluate various types of quantitative and qualitative

indices in a unified manner, a five-level quantitative rating scale has been proposed. In order to compare the CRS alternatives considered and their different characteristics or the efficiency of CRSs used over different periods of time, an introduction to the complex CRS efficiency indicator *E* has been suggested and the application of the mathematical formulae to calculate CRS efficiency has been proposed.

6. The advantages of the proposed CRS efficiency evaluation model: 1) the complex evaluation model proposed creates the possibility to examine CSR efficiency holistically; 2) the model applied is used both for initial evaluation and regular evaluation of efficiency of a CRS already in use; 3) in the case of an initial evaluation, the quantitative evaluation of both quantitative and qualitative indicators of CRS efficiency creates the possibility for a comparative analysis of the CRS alternatives considered and justification for decisions that are made; when evaluating the efficiency of a CRS already in use, the possibility is created to perform comparative analysis of CRS use over a period of time and to prepare proposals for the improvement and expansion of a CRS in use; 4) the CRS efficiency evaluation model can be flexibly applied to the needs of companies in various fields of activities and companies of various sizes; the classification of indicators into groups allows a company to eliminate individual indicators or include new ones and also to identify validity evaluations of a group of indicators or an individual indicator within a group.

List of Published Works on the Topic of the Dissertation
In the reviewed periodical scientific editions

Jasilionienė, R.; Tamošiūnienė, R. 2009. Evaluation of Customer Relationship System Efficiency: Applying of Total Cost of Ownership Approach, *Journal of Business Economics and Management* 10(4): 343–347. ISSN 1611-1699 (EBSCO *Business Source Complete*).

Jasilionienė, R.; Tamošiūnienė, R. 2008. Ryšių su klientais valdymo sistemų investicijų efektyvumo vertinimas: investicijų grąžos metodo taikymo teoriniai ir praktiniai aspektai, *Verslas: teorija ir praktika* [Business: Theory and Practice] 9(3): 221–228. ISSN 1648-0627 (EBSCO *Business Source Complete*).

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Tamošiūnienė, R.; Jasilionienė, R. 2008. CRM application cost determination, in *The Scientific Proceedings – of the Scientific – Technical Union of Mechanical Engineering*, *VI International Conference "Management and Engineering'08"*. June 19–21. Sofia, Bulgaria, 179–182. ISSN 1310-3946.

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Regina Jasilionienė was born in Šilutė, on 30 of November 1978. In 2001, she graduated from Vilnius University, Faculty of Communication, and was awarded the Bachelor's Degree in Communication and Information. In 2003, she graduated from Vilnius Gediminas Technical University, Faculty of Business Management, and was awarded the Master's Degree in Management and Business Administration. In 2004–2010 – PhD student of VGTU. Since 2003 Regina Jasilionienė has been worked in JSC "Alna Business Solutions" and JSC "Elsis Verslo Sprendimai" as Consultant in projects concerned with CRS implementations. At present she is Assistant in Finance Engineering Department of VGTU.

RYŠIŲ SU KLIENTAIS SISTEMŲ EFEKTYVUMO VERTINIMAS

Mokslo problemos aktualumas

Dėl globalizacijos įmonės susiduria su visame pasaulyje didėjančia konkurencija. Vartotojai gali rinktis iš vis didesnio skaičiaus prekių ir paslaugų tiekėjų: kur pirkti maistą, kur atostogauti, kurios telekomunikacijų bendrovės ryšių paslaugomis naudotis, kur skolintis ar laikyti savo uždirbtus pinigus ir t.t. Buvusių valstybinių monopolinių įmonių privatizavimas ir įvairių apribojimų naikinimas dar labiau skatina konkurenciją ir verčia įmones mažinti išlaidas. Tačiau vien tik išlaidų mažinimo taktika neleidžia geriau tenkinti klientų poreikių. Pastaruosius keliolika metų galima stebėti ryšių su klientais valdymo (RKV*)* koncepcijos iškilimą. Panaudojant šiuolaikines informacijos sistemas bei technologijas galima sugrįžti į praeitį – suasmeninti masinę rinkodarą, pardavimus bei klientų aptarnavimą. Dar praeito šimtmečio pradžioje parduotuvės savininkas žinojo maždaug 100 savo klientų bei jų pirkimo įpročių. Šiandieninės ryšių su klientais sistemos (toliau tekste – RKS) duomenų bazė gali sutalpinti informaciją apie 100 tūkstančių klientus ir remiantis ja, įmonė gali pasiūlyti būtent tai, ko klientui reikia. Įmonėms, planuojančioms kurti RKS, labai aktualu, pritaikius adekvačius vertinimo metodus, nustatyti svarstomų RKS alternatyvų efektyvumą ir sudaryti prielaidas priimti objektyvius sprendimus. Įdiegtų ir jau naudojamų RKS atveju, taip pat labai svarbu taikant atitinkamus vertinimo metodus periodiškai vykdyti efektyvumo vertinimus, kurie turi padėti atskleisti faktinius naudojamos RKS privalumus ir trūkumus bei parodyti iškeltų tikslų įgyvendinimo lygį.

Siekdamos įgyvendinti į klientus orientuotą strategiją, daugelis pasaulio bei dalis Lietuvos organizacijų ėmėsi kurti RKS. Sėkmingos RKS kūrimo įmonėje tikslas yra kompiuterizuoti su klientais susijusius įmonės procesus, padidinti pardavimo komandų ir klientų aptarnavimo centrų darbo efektyvumą bei duomenų analizės pagalba tiksliau planuoti ir vykdyti rinkodaros akcijas. Šios iniciatyvos pasekmė turėtų būti geresnė įmonės finansinė padėtis. Mokslas ir praktika ieško atsakymų į klausimus, kaip turi būti vykdomas tiek išankstinis RKS efektyvumo vertinimas, kai priimamas sprendimas dėl RKS įsigijimo ir diegimo, tiek naudojamos RKS efektyvumo vertinimas, kai atskleidžiamas turimos RKS tinkamumas bei plėtojimo galimybės. Tyrėjų paieškas skatina įvairių mokslinių bei praktinių šaltinių skelbiama statistinė informacija, jog pasaulyje apie 60% visų įmonių, iki šiol bandžiusių įsidiegti RKS, patyrė didesnes ar mažesnes nesėkmes. Iki šiol ekonomikos teorijoje nėra sukurta tinkamo instrumentarijaus, kurio pagalba būtų galima vertinti RKS efektyvumą. Nemaža tyrėjų dalis RKS efektyvumo vertinimo problemą siūlo spręsti taikant

ekonominius efektyvumo vertinimo metodus: grynosios dabartinės vertės, vidinės grąžos normos, investicijų grąžos, atsipirkimo laikotarpio, kuriuose vertinami tik finansinio pobūdžio veiksniai. Tačiau egzistuoja daugybė nefinansinio pobūdžio veiksnių (techniniai, socialiniai, psichologiniai, kultūriniai, teisiniai, administraciniai ir kt.), kurie turi įtakos RKS efektyvumui. Tai skatina sukurti vertinimo modelį, kurį taikant būtų galima RKS efektyvumą įvertinti visapusiškiau bei objektyviau. Remiantis aukščiau minėtomis aplinkybėmis, galima teigti, kad verslas neturi adekvačios RKS efektyvumo vertinimo metodikos. Taigi disertacijoje nagrinėjama RKS efektyvumo vertinimo problema, siekiant nustatyti kiekybinius ir kokybinius veiksnius, turinčius įtakos RKS efektyvumui, bei sukurti modelį, kurio pagalba būtų galima vykdyti išankstinius perkamos ir diegiamos bei periodinius naudojamos RKS efektyvumo vertinimus.

Mokslinių tyrimų objektas

Ryšių su klientais sistemos didėjančio šių sistemų kūrimo, naudojimo bei plėtojimo kokybės poreikio bei augančios globalios konkurencijos sąlygomis.

Darbo tikslas ir uždaviniai

Darbo tikslas – nustačius kiekybinius ir kokybinius veiksnius (veiksnių grupes), turinčius įtakos RKS efektyvumui, sudaryti modelį, įgalinantį iš planuojančios kurti arba naudojančios RKS įmonės pozicijos įvertinti RKS efektyvumą. Sudarytas modelis turi leisti visapusiškiau ir objektyviau įvertinti RKS efektyvumą, atlikti svarstomų kurti ir diegti RKS alternatyvų ir periodinę naudojamų RKS lyginamąją analizę, nustatant santykinę RKS kokybę bei sudarant prielaidas pagrįsti priimamus sprendimus bei siūlymų gerinti bei plėtoti naudojamą RKS rengimą.

Siekiant nustatyto tikslo darbe iškelti šie uždaviniai:

1. Atskleisti RKS koncepciją, apibrėžti RKS vietą bendroje įmonės informacinių sistemų struktūroje, išnagrinėti šių sistemų kūrimo, naudojimo bei plėtojimo įmonėje ypatumus bei principus.
2. Atlikti kritinę teorinių efektyvumo vertinimo metodų ir jų taikymo galimybių kuriant, naudojant bei plėtojant RKS analizę.
3. Empiriniu tyrimu patikrinti praktinį ekonominio efektyvumo vertinimo metodų RKS kūrimui bei naudojimui taikymą (Lietuvos pavyzdžiu), atskleisti kompleksinio RKS efektyvumo vertinimo modelio sukūrimo poreikį.
4. Nustatyti RKS efektyvumą apibūdinančius aspektus, identifikuoti veiksnius (veiksnių grupes), turinčius įtakos šių sistemų efektyvumui bei turinio požiūriu juos suklasifikuoti pagal nustatytus efektyvumą apibūdinančius aspektus.
5. Sudaryti kompleksinio RKS efektyvumo vertinimo modelį, apimantį tiek išankstinį, tiek periodinį naudojamos RKS efektyvumo vertinimą bei su-

jungiantį vertinamus efektyvumo aspektus į visumą ir sudarantį prielaidas visapusiškiau ir objektyviau vykdyti šių sistemų efektyvumo vertinimus.

6. Praktiškai pademonstruoti siūlomo RKS efektyvumo vertinimo modelio taikymo galimybes atliekant dviejų alternatyvių ryšių su klientais sistemų efektyvumo vertinimus bei pagrindžiant sprendimą įsigyti ir diegti šią sistemą.

Mokslinis darbo naujumas

1. Susisteminta mokslinė bei specializuota literatūra apie RKS, papildyta naujomis įžvalgomis apie šių sistemų kūrimą, diegimą, naudojimą bei plėtojimą.

2. Atlikus sisteminę efektyvumo vertinimo metodų bei jų taikymo galimybių RKS kurti (įsigyti), diegti, naudoti bei plėtoti analizę bei empiriškai patikrinus dažniausiai pasaulyje ir Lietuvoje taikomų ekonominio efektyvumo vertinimo metodų taikymą RKS efektyvumui vertinti, pagrįstas kompleksinio RKS efektyvumo vertinimo modelio kūrimas;

3. Pasiūlytas originalus RKS efektyvumo vertinimo modelis, suteikiantis galimybę visapusiškiau ir objektyviau įvertinti RKS efektyvumą, atlikti svarstomų kurti (įsigyti) ir diegti RKS alternatyvų ir periodinę naudojamos bei plėtojamos RKS lyginamąją analizę, nustatant santykinę RKS kokybę bei sudarant prielaidas pagrįsti priimamus sprendimus bei siūlymų gerinti bei plėtoti naudojamą RKS rengimą.

Ginamieji teiginiai

1. RKS efektyvumą galima vertinti sisteminiu požiūriu taikant metodus, kuriais šių sistemų efektyvumas vertinamas kaip visuma.

2. Kompleksiniam RKS efektyvumo fenomeno kaip visumos vertinimui turi būti taikoma vertinimo metodų ar modelių grupė.

3. Pasiūlytas išankstinio bei periodinio naudojamos RKS efektyvumo vertinimo modelis, suformuotas remiantis ekonominių, daugiakriterinių, subalansuotų rodiklių bei informacinių sistemų efektyvumo vertinimo metodų sinteze, grindžiamas išsamia RKS efektyvumą apibūdinančių kiekybinių bei kokybinių rodiklių sistema, sudaro prielaidas įvairiapusiškiau vertinti RKS efektyvumą bei priimti objektyvesnius sprendimus dėl šių sistemų įsigijimo ir diegimo ar tolimesnio naudojimo bei plėtojimo.

Praktinė vertė

Remiantis pasiūlytu RKS efektyvumo vertinimo modeliu, kuris pagrįstas kiekybine ekonominių, techninių bei socialinių vertinimo aspektų išraiška, praktikams sudaromos galimybės objektyviau ir įvairiapusiškiau atlikti išankstinę svarstomų RKS alternatyvų bei įvairių laikotarpių naudojamų RKS palyginamąją analizę bei pagrįsti priimamus sprendimus.

Panaudojus darbo autorės Microsoft Office Excel programoje sukurtą skaičiuoklę bei V. Urbanavičienės, A. Kaklausko, E. K. Zavadsko ir M. Seniut

sukurtą internetinę sprendimų paramos sistemą praktiškai pademonstruotas pasiūlyto RKS vertinimo modelio taikymas, projektuojant išankstinio RKS efektyvumo vertinimą, kai svarstomos dvi RKS alternatyvos ir pagrindžiamas sprendimas įsigyti ir diegti šią sistemą.

Darbo autorės susisteminta moksline bei praktine medžiaga apie RKS, šių sistemų kūrimą, diegimą, naudojimą bei plėtojimą, taip pat - apie ryšių su klientais valdymą galės pasinaudoti dėstytojai, ruošdamiesi ryšių su klientais valdymo, RKS kūrimo bei diegimo studijų moduliui.

Tyrimo rezultatų aprobavimas ir skelbimas

Disertacijos tema perskaityti 7 pranešimai Lietuvos bei kitų šalių konferencijose ir paskelbta 10 mokslinių straipsnių: du – tarptautiniame žurnale, įtrauktame į Mokslinės informacijos instituto pagrindinį sąrašą (Thomson ISI Web Science); vienas – konferencijų medžiagoje, referuotoje ISI duomenų bazėje; vienas – Lietuvos mokslo tarybos patvirtinto sąrašo tarptautinėse duomenų bazėse referuojamame leidinyje; trys – recenzuojamoje tarptautinių konferencijų medžiagoje; trys – tarptautinių ir respublikinių konferencijų medžiagoje.

Darbo apimtis ir struktūra

Disertaciją sudaro įvadas, trys skyriai, rezultatų apibendrinimas, literatūros sąrašas nagrinėjama tema (168 šaltiniai), autorės publikacijų sąrašas disertacijos tema (10 publikacijų) bei 11 priedų (elektroninėje laikmenoje). Disertacijos apimtis – 146 puslapiai. Vaizdinė darbo medžiaga apibendrinta 15 lentelių ir 34 iliustracijose.

Pirmame disertacijos skyriuje nagrinėjama RKS samprata, apžvelgiamos įmonių informacinės sistemos, jų architektūra bei klasifikacija, apibrėžiama RKS sudėtis, klasifikacija, kompiuterizuojamos veiklos funkcijos ir procesai, apžvelgiama pasaulio ir Lietuvos RKS rinka ir jos kitimo tendencijos. Taip pat skyriuje apibrėžiamas RKS diegimas, naudojimas ir plėtojimas įmonėje: RKS pasirinkimo ir pirkimo procesas bei jo žingsniai, RKS diegimo projekto etapai, rengtini projekto dokumentai bei projekto valdymo ypatumai.

Antrame disertacijos skyriuje nagrinėjamas RKS išlaidų ir naudos vertinimas, analizuojami ekonominiai, informacinių sistemų, subalansuotų rodiklių, specializuoti RKV veiklos efektyvumo vertinimo metodai bei jų taikymo galimybės kuriant, naudojant ir plėtojant RKS.

Trečiame disertacijos skyriuje pristatomi darbo autorės atlikto taikomų RKS ekonominio efektyvumo vertinimo metodų empirinio tyrimo rezultatai, pateikiamas darbo autorės sudarytas kompleksinis RKS efektyvumo vertinimo modelis: apibrėžiamas tiek planuojamos įsigyti ir diegti, tiek naudojamos RKS efektyvumo vertinimo proceso etapai bei tarpusavio ryšiai, identifikuojami vertinimo aspektai bei kriterijai, RKS efektyvumo vertės apskaičiavimas bei

rodiklių parinkimo ir rengimo charakteristikos. Taip pat skyriuje pateikiamas hipotetinis išankstinio RKS efektyvumo vertinimo pavyzdys pagal siūlomą kompleksinį RKS vertinimo modelį.

Bendrosios išvados

1. Iki šiol mokslinėje literatūroje specializuotų RKS efektyvumo vertinimo metodų nebuvo pasiūlyta. Atlikus kritinę dažniausiai taikomų ekonominių efektyvumo vertinimo metodų bei jų taikymo galimybių RKS kūrimui (įsigijimui), diegimui, naudojimui bei plėtojimui analizę, nustatyta, kad šiuose metoduose nėra vertinami (ignoruojami) ne finansiniai kriterijai (veiksniai) ar jų grupės: techniniai, socialiniai ir pan. Praktinių darbo autorės stebėjimų metu nustatyta, kad išankstinio RKS efektyvumo vertinimo atveju, kai svarstomos RKS kūrimo ir diegimo alternatyvos, priimant sprendimą dėl konkrečios RKS sistemos pasirinkimo, labai dažnai lemiamą įtaką turi ne tik finansiniai, bet ir techniniai bei (arba) socialiniai veiksniai, kurie, savo ruožtu, turi įtaką RKS ekonominiams rodikliams. Taip pat sprendimas dėl tolimesnio RKS naudojimo ar plėtojimo priimamas dažniausiai atsižvelgiant ne į finansinių, bet į techninių ar socialinių veiksnių įvertinimus. Taigi kompleksiniam RKS efektyvumo fenomeno įvertinimui nepakanka tik finansinių rodiklių įvertinimo. Išanalizuotuose Kaplan ir Norton subalansuotų rodiklių, H. Kim ir Y. Kim bei CMAT ryšių su klientais valdymo vertinimo metoduose keliais rodikliais vertinamas tik naudojamos RKS efektyvumas. Taigi minėti metodai nėra taikytini išankstiniam sistemos efektyvumo vertinimui, kuomet svarstomos skirtingų RKS įsigijimo alternatyvos. Taip pat šiuose metoduose RKS efektyvumui įvertinti yra apibrėžtas nepakankamas efektyvumo vertinimo rodiklių kiekis.

2. Remiantis darbo autorės atlikto empirinio tyrimo rezultatais, mažas procentas įmonių, vykdančių RKS ekonominio efektyvumo vertinimus, apklausoje nurodytos priežastys, dėl kurių nėra atliekami tokie vertinimai, bei sąlyginai didelis procentas įmonių, kurios naudojasi savo sukurtomis ROI skaičiuoklėmis, parodė, kad iki šiol taikyti ekonominiai efektyvumo vertinimo metodai yra neadekvatūs įmonių poreikiams vertinti kuriamų, diegiamų, naudojamų bei plėtojamų RKS efektyvumą.

3. Pasiūlyta nauja RKS efektyvumo vertinimo koncepcija, apimanti ne tik finansinių, bet ir techninių bei socialinių kriterijų vertinimą. Kompleksiniam RKS efektyvumo fenomeno kiekybiniam bei kokybiniam įvertinimui pasiūlyta taikyti vertinimo metodų ar modelių grupę.

4. RKS efektyvumo vertinimo procesas apibrėžtas tokiais etapais: 1) RKS efektyvumo vertinimo plano sudarymas; 2) RKS efektyvumo vertinimo vykdymas; 3) RKS efektyvumo vertinimo analizė.

5. Darbo autorė sudarė detalų ekonominių, socialinių bei techninių kriterijų sąrašą, kurio pagalba gali būti vykdomas RKS efektyvumo vertinimas. Sie-

kiant vieningai įvertinti skirtingų tipų tiek kiekybinius, tiek kokybinius kriterijus, pasiūlyta taikyti penkių lygių kiekybinio vertinimo skalę. Siekiant palyginti svarstomų RKS efektyvumo alternatyvas bei skirtingas jų charakteristikas arba skirtingų laikotarpių naudojamos RKS efektyvumą, pasiūlyta įvesti kompleksinį RKS efektyvumo rodiklį *E* ir taikyti RKS efektyvumo apskaičiavimo formulę.

6. RKS efektyvumo vertinimo modelis sudarytas remiantis ekonominių, daugiakriterinių, subalansuotų rodiklių bei informacinių sistemų efektyvumo vertinimo metodų sinteze. Pasiūlyto RKS efektyvumo vertinimo modelio privalumai: 1) pasiūlytas kompleksinis vertinimo modelis sudaro prielaidas nagrinėti RKS efektyvumą kaip visumą; 2) modelis, taikomas tiek išankstiniams, tiek periodiniams naudojamos RKS efektyvumo vertinimams; 3) išankstinio RKS efektyvumo vertinimo atveju, kiekybinių ir kokybinių RKS efektyvumo rodiklių kiekybinis įvertinimas sudaro prielaidas atlikti svarstomų RKS alternatyvų palyginamąją analizę bei pagrįsti priimamus sprendimus; atliekant naudojamos RKS efektyvumo vertinimus, sudaromos prielaidos atlikti RKS naudojimo laikotarpių palyginamąją analizę bei siūlymų gerinti bei plėtoti naudojamą RKS rengimą; 4) RKS efektyvumo vertinimo modelis gali būti lanksčiai pritaikomas įvairių veiklos sričių bei dydžių įmonių poreikiams – rodiklių klasifikavimas į grupes sudaro galimybę šalinti atskirus rodiklius arba įtraukti naujus, taip pat nustatyti rodiklių grupės ar atskiro rodiklio reikšmingumo vertinimus grupės viduje.

Trumpos žinios apie autorių

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EVALUATION OF CUSTOMER RELATIONSHIP SYSTEM EFFICIENCY

Summary of Doctoral Dissertation
Social Sciences, Economics (04S)

Regina JASILIONIENĖ

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