6th International Scientific Conference
May 13–14, 2010, Vilnius, Lithuania
BUSINESS AND MANAGEMENT 2010
Selected papers. Vilnius, 2010

ISSN 2029-4441 print / ISSN 2029-428X CD
doi:10.3846/bm.2010.012
http://www.vgtu.lt/en/editions/proceedings

INITIAL CUSTOMER RELATIONSHIP SYSTEM EFFICIENCY EVALUATION

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Abstract. In order to implement a customer–oriented strategy, many organisations around the world and some organisations in Lithuania have undertaken development of customer relationship systems (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. However statistical information published in various scientific and practical sources says that about 60 % of the companies who try to implement a CRS suffer failure to a lesser or greater extent.

Initial evaluation of CRS efficiency is analysed in this paper. Authors of this paper provide identified quantitative and qualitative factors that have an impact on CRS efficiency and introduce model that assist in carrying out efficiency evaluation of a CRS prior to purchase, development or rent.

Keywords: customer relationship system (CRS), customer relationship system efficiency, initial customer relationship system efficiency evaluation.

1. Introduction

Over the past few decades, one may observe the emergence of the concept of the customer relationship management. 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 can store information about 100,000 customers and on the basis of historical information, the company can offer each customer what he needs.

In order to implement a customer-oriented strategy, many organisations around the world and some organisations in Lithuania have undertaken development of a customer relationship system. The goal of successful development of a customer relationship system 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 customer relationship system efficiency evaluation when a decision is made to acquire and/or develop the customer relationship system and also efficiency evaluation of customer relationship system being used when the suitability as well as expansion possibilities of the available customer relationship system 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 customer relationship system suffer failure to a lesser or greater extent (Amerongen 2004; Bordoloi 2000; Chase 2001; Kim H., Kim Y. 2007; Ramdas 2001; Silvon Software 2005; Korsakienė, Tvaronavičius, Mačiulis 2008; Korsakienė 2009).

It is essential for the companies planning to develop a customer relationship system to use adequate evaluation methods to identify the efficiency of the customer relationship system under consideration and form the basis for objective decisions. A fairly large proportion of researchers suggest solving the problem of evaluating customer relationship system efficiency by using economic efficiency evaluation methods such as Net Present Value (NPV), Internal Rate of Return (IRR), Return on Investment (ROI), Total Cost of Ownership (TCO) and Payback Period (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 customer relationship system efficiency. This encourages development of a model that when applied would enable more comprehensive and objective evaluation of customer relationship system efficiency. In accordance with what is mentioned above, the problem of evaluating initial customer relationship system efficiency is therefore analysed in this pa-

per in order to identify quantitative and qualitative factors that have an impact on customer relationship system efficiency and to create a model that would assist in carrying out efficiency evaluation of a customer relationship system prior to purchase and/or development.

To achieve purpose of this study were used research methods: scientific and specialized comparative literature analysis, generalization, practical experience generalization and empirical research of Lithuanian companies.

2. Efficiency Evaluation Methods and Possibilities to Apply Them When Purchasing, Developing or Renting a Customer Relationship System

The customer relationship system (CRS) of a company is described as an information system used to plan, fulfil, store, and control the customer–related activities of the company (Nguyen *et al.* 2007; Urbanskienė *et al.* 2008). 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 (Brown, Gravely 2003; Bose 2002). 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 (Chen, Popovich 2003; Zvireliene *et al.* 2008).

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 (Vasilecas *et al.* 2007).

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.

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 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 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 or financial but also by technical and/or social factors which, on the other hand, have an impact on CRS financial indicators. Thus, to make a complex evaluation of initial CRS efficiency, evaluation of indicators of financial origin is not sufficient.

The Balanced Scorecard (Kaplan and Norton, 1996), H. Kim, Y. Kim (2007) customer relationship management evaluation tools and QCi Ltd Customer Management Assessment Tool (Woodcock 2000) 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 insufficient 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. 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 authors (Jasilionienė, Tamošiūnienė 2008; Jasilionienė, Tamošiūnienė 2009) 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 (Jasilionienė, Tamošiūnienė 2008): a) it is difficult to calculate (41.67 %); b) they do not have an initiator (16.67 %); c) they see no sense in it (16.67 %); d) they do not have a tool that would help perform such an evaluation (16.67 %), e) they do not have experts (8.32 %).

Among the companies that do evaluate outcomes of CRS acquisition and implementation, financial methods are most popular (Jasilionienė, Tamošiūnienė 2008): NPV–29.8 %, IRR–24.6 %, and PP–22.8 %. In Lithuania, ROI (35.7 %) and IRR (14.4 %) financial methods are mostly used to evaluate CRS economic efficiency. However, 21.5 % of the respondents representing Lithuanian companies stated that they were using their own ROI calculation tool.

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.

4. Stages of Initial CRS Efficiency Evaluation Process

The initial CRS efficiency evaluation process can be delineated by these stages (Fig. 1): 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.

The sponsor and initiator of CRS implementation in a company and managers and experts of computerised customer relationship management 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 customer relationship management objectives and requirements of a company. On the other hand, customer relationship management objectives and requirements must arise from the customer relationship management strategy and the customer relationship management strategy must arise from the general strategy of a company.

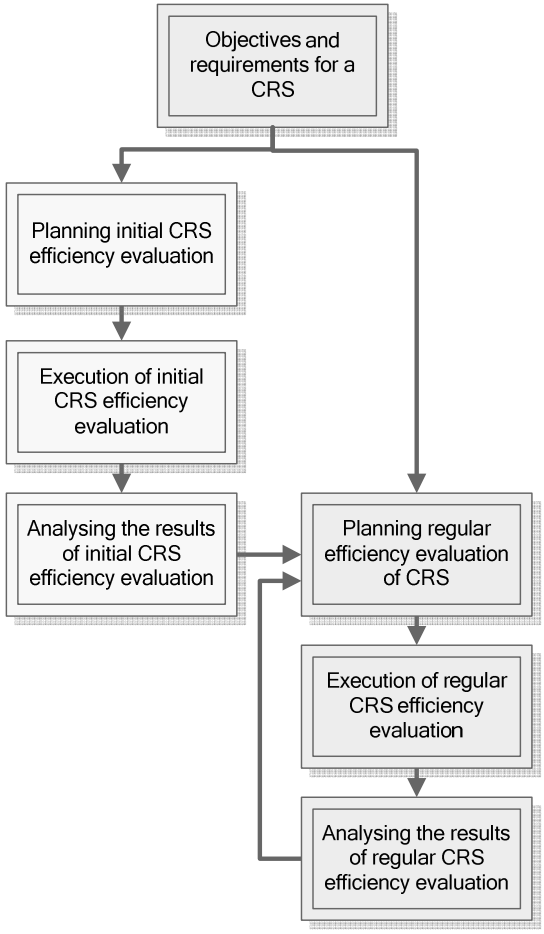

Fig. 1. The initial CRS Efficiency Evaluation Stages and their Relationships with Regular CRS Efficiency Evaluation Stages

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 sought.

Authors propose to set a minimal acceptable value for critical CRS efficiency indicators (I):

$$I \leq I_{\min} \tag{1}$$

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 (Jones 2008).

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.

5. The Proposed Initial CRS Efficiency Evaluation Model

When justifying CRS purchase, development or rent and implementation, an evaluation is made of the beneficial outcome, namely, efficiency. In order to evaluate CRS efficiency in a complex way, the paper authors suggests evaluating CRS efficiency using economic, social, and technical aspects and applying the evaluation criteria identified (Fig. 2). The list of economic, social, and technical evaluation criteria is concluded on the basis of the analysis of scientific and practical literature (Simanauskas 2000; Vasilecas *et al.* 2007) and the 5–year experience of one the author's working on the projects involved in CRS implementation in Lithuanian companies operating in various fields.

Because efficiency of CRS depends on many different criteria, for complex this phenomenon evaluation must be applied multicriteria evaluation methods (Ginevičius 2006; Ginevičius, Podvezko 2005; Ginevičius 2008; Ginevičius 2009; Ginevičius, Zubrecovas 2009; Ginevičius *et al.* 2008a; Ginevičius *et al.* 2008b). Authors suggest apply direct evaluation when experts (CEO, managers, project sponsor of CRS purchase, implementation or rent, managers of computerized customer relationship management processes and IT divisions and other responsible employees) indicate weights by parts of unit of CRS efficiency criteria.

In order to compare the CRS alternatives considered and their different characteristics, paper authors suggest using complex CRS efficiency indicator (E) and applying the formulae for CRS efficiency calculation:

$$E = \left(w_{ej} \sum_{i=1}^{n} s_{ei} w_{ei} \right) + \left(w_{sj} \sum_{i=1}^{m} s_{si} w_{si} \right) + \left(w_{tj} \sum_{i=1}^{k} s_{ti} w_{ti} \right), \quad (2)$$

Where:

w_{ej} – 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,

$$w_{ej} + w_{sj} + w_{tj} = 1;$$

$$\sum_{i=1}^{n} w_{ei} = 1; \sum_{i=1}^{m} w_{si} = 1; \sum_{i=1}^{m} w_{ti} = 1.$$

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 company, computerised customer relationship management processes and their scope and priorities, 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.

When selecting CRS efficiency criteria, paper authors propose to refer to recommendations of Kaplan and Norton (1996) balanced scorecard indicators selection when 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, paper authors suggest using a five-level quantitative rating scale (Table 1).

When applying proposed quantitative rating scale of CRS efficiency, minimal complex indicator value of CRS efficiency *E* can be 0 (i.e. considered CRS absolutely does not satisfy defined requirements) and maximal value can be 4 (i.e. considered CRS distinctly exceed defined requirements).

Table 1. Evaluation Aspects of Initial CRS Efficiency and Identified Evaluation Criteria

Economic evaluation aspect	– Expenses – Benefit – TCO – ROI – IRR – NPV – PP – PI – EVA
Social evaluation aspect	– Creation of better conditions for employees – Customer relationship software user interface – Complexity of use of the customer relationship software – CRS administration convenience
Technical evaluation aspect	– Correspondence of the functionality of the customer relationship software and the defined requirements – Possibility to generate defined reports – Complexity of reports adaptability to new defined requirements – Support and development possibilities of the customer relationship software – Conditions of new versions of customer relationship software and other software purchase (development or rent) – Possibilities of functional adaptability of customer relationship software – Complexity of using the new functionality of customer relationship software – Compliance of the customer relationship software with the company's IT infrastructure – Integration possibility with other software – Complexity of using the new functionality of customer relationship software – Possibility of CRS to create and use workflows – Possibility to work with CRS offline – Possibility to use the same database of CRS in remote offices of company

Table 2. Five-level Quantitative Rating Scale of CRS Efficiency Evaluation

No	*Description of possible values of indicators*	*Rating*
1	Absolutely does not satisfy requirement	0
2	Partly does not satisfy requirement	1
3	Satisfy requirement	2
4	Slightly exceed requirement	3
5	Distinctly exceed requirement	4

6. Conclusions

After the critical analysis of the most frequently applied methods for economic efficiency evaluation and their application in CRS purchase, development or rent and implementation, 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 authors 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.

On the basis of the results of the research carried out by the authors, 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 purchased, developed or rented and implemented, CRSs.

The proposed new concept of initial CRS efficiency evaluation includes evaluation not only of economic, but also of technical and social criteria. The authors of paper completed a list of economic, social, and technical evaluation criteria on the basis of which the efficiency of a CRS may be evaluated. For complex CRS efficiency evaluation application of direct multicriteria evaluation method were suggested. In order to compare the CRS alternatives considered and their different characteristics, 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. In order to evaluate various types of quantitative and qualitative indices in a unified manner, a five–level quantitative rating scale has been proposed.

The advantages of proposed initial CRS efficiency evaluation model: 1) the evaluation model proposed creates the possibility to examine CRS efficiency holistically; 2) during 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; 3) the CRS efficiency evaluation model can be flexibly applied to the needs of companies in various fields of activities and companies of various sizes; 4) 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.

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