

Institute for Information System Research  
Leibniz University Hanover

# **A Process Model for Customer Relationship Management System Selection**

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## **Doktor der Wirtschaftswissenschaften – Doctor rerum politicarum –**

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## **Abstract**

Customer relationship management (CRM) systems provide an IT support on a strategic, operative and analytic level to improve and intensify customer business. Therefore, the implementation of CRM systems has increased but success rates still lack. In the area of IT implementation the development of an evaluation framework has started but the specific of CRM was disregarded so far.

This thesis develops a CRM specific process model for CRM system selection (CRMSS) based on the methodical framework by Ahlemann and Gastl. Initially a literature review is conducted to assess the current status on CRM and IT system selection to develop an initial model. The findings are evaluated in two phases discussing the process, a criteria catalogue and possible evaluation methods with CRM experts from science, consulting and customer perspective in direct interviews as well as through two online surveys. The model was refined and expanded to a more detailed level in two cycles. The final CRMSS process model describing all phases, management streams, four selection criteria categories (quality, cost, functional and technical) is enhanced by a system selection tool specifically focusing on CRM systems using the weighted scoring method (WSM). All findings are verified in a practical test in a case study with an automotive supplier. The process model was further refined to result in its current form.

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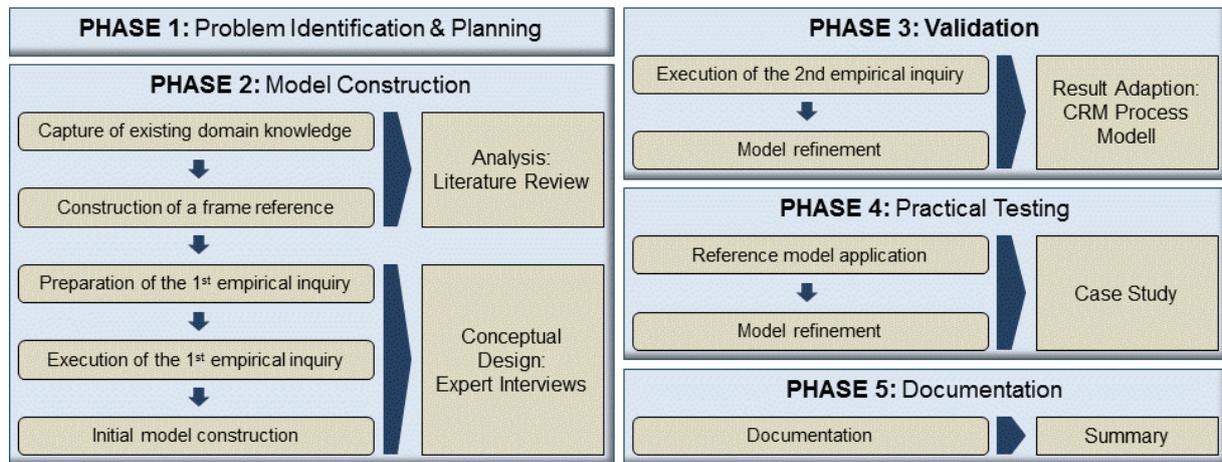
## **0 Management Summary: General overview of published papers**

The software systems market for diverse IT support solutions has increased significantly in the last years covering vertical solutions as well as integration topics. Therefore, identifying and selecting the most suitable solution for a company has become a complex decision problem (Jadhav and Sonar, 2009a). IT departments regularly need to make decisions on hard- and software investments as well as consulting support and other services (Yazgan et. al., 2009). Due to high costs for those IT investments and application maintenance evaluation of software systems should not be a gut feeling but strategically prepared and conducted. The decision problem of selecting a suitable solution has become a complex problem as the number of available solutions is constantly increasing, the variety of hard- and software incompatibilities need to be taken into account, and decision makers do not have all required information to make such decisions (Lin et. al., 2006). Furthermore, the decision should not only be made by IT or business managers, but with shared responsibility, especially to achieve alignment and buy-in within the organization when making new investment decisions (Chen and Wu, 2011; Howcroft and Light, 2010). For this reason, an IT evaluation methodology should be part of every IT/IS management in companies. The main decision parameters cover adaptability of the business processes, flexibility in terms of market and strategy changes, IT architecture fit, as well as implementation, configuration and maintenance costs.

A CRM system selection (CRMSS) process model was constructed and evaluated to support the evaluation of CRM system solutions. Selection of a CRM system is a challenging software engineering process (Jadhav and Sonar, 2009a) and implementation of a CRM system imposes significant changes to business processes and the organization (Chen and Popovich, 2003; Finnegan and Currie, 2009). Although parts of the model can be used for other IT selection projects as well there are specific areas like functional criteria and a provided system selection tool which are tailored for CRMSS. This section provides an overview of all published papers and the underlying methodology to develop the CRMSS process model.

There are differing definitions of process models in the literature, all of which refer to the representation of a class of domains (Frank 1999; Rohloff 2008) as a starting point for the development of new applications (Banker et al. 2010; Braunwarth and Friedl, 2010). The CRMSS process model was developed in four phases based on the methodology suggested by Ahlemann and Gastl (2007). Phase 1 included the challenges of problem identification and planning. The model construction of phase 2 was based on a comprehensive literature review and on expert interviews. In phase 3, a second and third empirical study with the intention of validating results of the former phases and refining the CRMSS approach were conducted discussing the model with international CRM experts. This paper presents the

results and conclusions of phase 4. The CRMSS process model was applied to a case study in the automotive industry using qualitative interviews to evaluate all aspects with project members from all interest groups.



**Figure 1: Overview on applied research approach to process model development (Adapted from Ahlemann and Gastl (2007))**

The model construction in phase 2 bases on a literature review. This work was conducted in cooperation with Dr. Jon Sprenger and Prof. Dr. Michael H. Breitner in 2009 and published at the Multikonferenz der Wirtschaftswissenschaften (MKWI) in 2010. To validate the initial model an interview guideline was created and tested in expert interviews in 2010. After the refinement of the questionnaire an online survey was conducted which resulted in a paper with Dr. Jon Sprenger and Prof. Dr. Michael H. Breitner published at the AMCIS in 2011. The results were used to refine the process model and the questionnaire and to conduct a second online survey with a more international focus. The results were published and in Review at ICIS 2012. To achieve a practical validation a case study was initiated with an automotive supplier resulting in a paper which is presented at European Conference on Information Systems (ECIS) 2012. All findings of the expert evaluation and the case study were the basis for the development of a supporting system selection tool. The results are currently in review at ICIS 2012.

Beside the research approach to develop the CRMSS process model a few further papers were published in cooperation with researchers from the institute of information system research (ISR), Leibniz University of Hanover. An overview of all published papers is provided in the following table.

Date of publication	Title	Authors	Conference / Journal / Book	VHB WKWI*	VHB JQ2**	Appendix
02/2010	CRM Evaluation – An Approach for Selecting Suitable Software Packages	Friedrich, I. Sprenger, J. Breitner, M. H.	Tagungsband Multikonferenz Wirtschaftsinformatik (MKWI 2010), February 23.-25., Göttingen, Germany.	C	D	A1
11/2010	Discussion of a CRM System Selection Approach with Experts: Selected Results from an Empirical Study	Friedrich, I. Sprenger, J. Breitner, M. H.	IWI Discussion Paper #44, 20 Seiten, Leibniz Universität Hannover, Institut für Wirtschaftsinformatik, Hannover, Germany.			A2
08/2011	Discussion and Validation of a CRM System Selection Approach with Experts	Friedrich, I. Sprenger, J. Breitner, M. H.	Proceedings of the 17th Americas Conference on Information Systems (AMCIS 2011), August 4.-8., Detroit, USA.	B	D	A3
01/2012	Requirements Analysis for a Student Relationship Management System - Results from an Empirical Study in Ivy League Universities	Lechtchinskaia L. Friedrich, I. Breitner, M. H.	Proceedings of the 45th Hawaii International Conference on System Sciences (HICSS 2012), January 4.-7., Maui, HI, USA.	B	C	A4
02/2012	Towards a Process Model for Efficient Customer Relationship Management System Selection	Friedrich, I. Breitner, M. H.	Tagungsband Multikonferenz Wirtschaftsinformatik (MKWI 2012), February 29.- March 2., Braunschweig, Germany.	C	D	A5
06/2012	Acceptance of a Process Model for Customer Relationship Management System Selection an Automotive Case Study	Friedrich, I. Kosch L. Breitner, M. H.	Proceedings of the 20th European Conference on Information Systems (ECIS 2012), June 10-13, Barcelona, Spain, 2012	A	B	A7
12/2012	Validation of a Customer Relationship Management (CRM) System Selection Model Based on International Expert Interviews	Friedrich, I. Breitner, M. H.	Submitted to: Proceedings of the International Conference on Information Systems, ICIS 2012, Orlando, Florida, USA, December 16-19, 2012.	A	A	A6
12/2012	Towards a Multi-Criteria Decision Support Framework for Customer Relationship Management (CRM) System Selection	Zakhariya, H. V. Kosch, L. Friedrich, I. Breitner, M. H.	Submitted to: Proceedings of the International Conference on Information Systems, ICIS 2012, Orlando, Florida, USA, December 16-19, 2012.	A	A	A8

\* Classification through academic commission of information system research association of professors (wissenschaftliche Kommission Wirtschaftsinformatik im Verband der Hochschullehrer für Betriebswirtschaft e.V. und den Fachbereichen Wirtschaftsinformatik der Gesellschaft für Informatik), (2010)

\*\* Classification through Business Research (BuR) – Verband der Hochschullehrer für Betriebswirtschaft e.V. (2011)

# 1 Introduction

The market for software systems on diverse IT support solutions has significantly increased in the last years covering vertical solutions as well as integration topics. Therefore, identifying and selecting the most suitable solution for an individual company has become a complex decision problem. The main decision parameters cover adaptability of the business processes, flexibility in terms of market and strategy changes as well as IT architecture fit. Customer Relationship Management (CRM) was discussed in the literature since the nineties. IT evaluation, on the other hand, dates back to the eighties starting with a more contemporary approach (Farbey et al. 1999). CRM system solutions range from simple address and activity management applications to integrated software packages linking front office and back office functions (Chen and Popovich 2003). Hence, there exists a multitude of different characterizations for CRM. For the context of this paper a definition by Goldenberg (2000) is used, who describes CRM as a cross-functional, customer-driven, technology-integrated business process management strategy that aims at maximizing relationships and encompasses the entire organization. This definition thereby incorporates all three dimensions of the CRM implementation model (people, process and technology) by Chen and Popovich (2003). The goal of CRM is to support business units through technology to not only gain insights into the behavior and value of their customers but also to fulfill their needs and satisfaction to effectively increase revenue.

As reported by earlier works, the success rate of CRM implementation projects still is not satisfactory up to today (Finnegan and Currie 2009; Becker et al. 2009). Reasons for failing expectations of involved parties are diverse, but can be summarized under the three already mentioned dimensions (Figure 2). Mendoza et al. (2007) recently proposed similar critical success factors for an efficient implementation of a CRM strategy.



**Figure 2: Reasons for failing CRM implementations (own illustration)**

New CRM solutions or updated versions of established products continuously enter the market. Due to the described quality problems and to how quickly evaluation results become

outdated this work proposes a new approach for the evaluation of a suitable CRM software solution avoiding the identified failures.

The CRM system selection (CRMSS) methodology covers the whole process of selecting packaged CRM software, after a CRM strategy was defined, and before the implementation project begins. The proposed methodology applies to tender evaluation and may be adopted for other purposes. Furthermore, the differences to General IT evaluation are shown.

The thesis is structured as follows:

Within the first section an introduction to the major published papers as well as the underlying research questions is given. Each subsequent paper provides a more detailed view on the underlying methodology, an overview on the results and findings as well as a critical assessment which leads to the next research question. Section 2 presents the initial literature review to assess the current status in 2009 on CRM and IT system selection. The search was conducted via three major research portals in the information system research area. The results were read double-blinded and resulted in an initial CRMSS model. Section 3 evaluated the initial model in two phases. In phase 1 the outcome was discussed with CRM experts from science, consulting and customer perspective. The initial model was refined and expanded to a more detailed level to be presented on an international level using a broader questionnaire and statistical tools to analyze the quantitative results. The CRMSS process model was further refined and expanded to a broader level. Section 4 presents the full CRMSS process model describing all phases, management streams, four selection criteria categories (quality, cost, functional and technical). Section 5 presents the development of a CRMSS tool using the WSM as an evaluation technique to calculate the multi-criteria problem. The tool incorporates findings from other works on IT selection tools and adds a further component. Section 6 verifies the practical validity of the CRMSS process model and all former findings in a case study with an automotive supplier. The process model was extended once more to result in its current form. Section 7 discusses all findings and provides an outlook on future publications.

In the following, the motivation for each field of study in the successive sections is presented.

## **Section 2: Literature review on a methodology to select suitable software packages**

The paper FRIEDRICH ET AL. (2010) is the foundation work to validate the current research status in the literature. A discussion between researchers and practitioners has shown that process models are available in consulting companies but in science only little work was published especially regarding CRM systems. It is essential to evaluate the current research status in science literature to design an initial model for CRMSS to initiate a scientific discussion on the topic. The central research question is:

1. What is the current status of science research on CRM evaluation methodology?

### **Section 3: Validation of initial CRMSS process model based on international expert interviews and online surveys**

The paper FRIEDRICH ET AL. (2011 and 2012b) validate the proposed CRMSS framework initially developed on the basis of the results of the literature review. After each review cycle the framework was refined. In the discussion with CRM practitioners from business and IT areas also researchers and customers of CRMSS projects were contacted to get all dimensions of CRMSS. The central research questions are:

1. What do experts think of the proposed CRM system selection approach?
2. Which criteria of the proposed approach need to be changed or optimized?
3. Is an Analytic Hierarchy Process (AHP) approach the preferred technique for evaluating CRM systems?

### **Section 4: Towards the process model for efficient CRMSS**

The paper FRIEDRICH AND BREITNER (2012) utilizes all results from the different evaluations and summarizes those in a CRMSS process model for the categories method, criteria and evaluation technique on a detailed level focusing especially on the criteria part as an essential component of the CRMSS process model. The fourth category tool is discussed in section 5 as there were no findings from the evaluations. The central research questions are:

1. What are the core components of an efficient CRMSS process model?
2. What criteria must be taken into consideration in an efficient CRMSS process model?

### **Section 5: Multi-criteria decision support framework for CRMSS**

The paper ZAKHARIYA et, al. (2012) analyzes the current research status on the weighted scoring method (WSM) to outline a best practice proposal for CRMSS. The focus is not only on the mathematical derivation but also on the process steps to apply the tool in practice. The findings are incorporated into a CRMSS tool contemplating the four major CRM systems. The central research question is:

1. How can WSM be applied as a feasible evaluation technique to support CRMSS?

### **Section 6: Acceptance of CRMSS process model – An automotive case study**

The paper FRIEDRICH ET AL. (2012) describes the application of the CRMSS process model in a case study with an automotive supplier. Selected project members from all areas were interviewed after the CRMSS project was completed. The findings resulted in a final refinement of the CRMSS process model. The central research question is:

1. Is the CRMSS process model applicable in practical testing and which model elements need to be refined?