Impact of Social CRM Technology Use on Social CRM Performance – an Organizational Perspective

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Torben Küpper

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Germany

Approved on the application of

Prof. Dr. Reinhard Jung

and

Prof. Dr. Rainer Alt

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Papers

Paper A   Küpper, T. 2014. "Measuring the Success of Social CRM - First Approach and Future Research," in *Proceedings of the 16th International Conference on Enterprise Information Systems*, Lisbon, Portugal, pp. 573–582.

Paper B   Küpper, T., Jung, R., Lehmkuhl, T., and Wieneke, A. 2014. "Features for Social CRM Technology - An Organizational Perspective," in *Proceedings of the 20th Americas Conference on Information Systems*, Savannah, USA, pp. 1–10.

Paper C   Küpper, T., Wieneke, A., Lehmkuhl, T., Jung, R., Walther, S., and Eymann, T. 2015. "Measuring Social CRM Performance: A Preliminary Measurement Model," in *Proceedings of the 12th International Conference on Wirtschaftsinformatik*, Osnabück, Deutschland, pp. 887–901.

Paper D   Küpper, T., Lehmkuhl, T., Wieneke, A., and Jung, R. 2015. "Technology Use of Social Media within Customer Relationship Management: An Organizational Perspective," in *Proceedings of the 19th Pacific Asia Conference on Information Systems*, Singapore, pp. 1–15.

Paper E   Küpper, T., Wieneke, A., Lehmkuhl, T., and Jung, R. 2015. "Evaluating Social CRM Performance: An Organizational Perspective," in *Proceedings of the 19th Pacific Asia Conference on Information Systems*, Singapore, pp. 1–16.

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Summary of Contents

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List of Abbreviations

2nd-order	Second-order
AISeL	Association for Information Systems Electronic Library
AMA	American Marketing Association
AMCIS	Americas Conference on Information Systems
ANOVA	Analysis of variance
AVE	Average variance extracted
B2B	Business-to-business
B2C	Business-to-customer
Cap.	Capability perspective
Cas. Rel.	Causal relationship
cf.	Compare
Coef.	Coefficient
Com R.	Composite reliability
Con.	Conceptual
CRM	Customer relationship management
Cust. Seg.	Customer segmentation
DAX	Deutscher Aktien Index (German)
e.g.	For example
ECIS	European Conference on Information Systems
EMAC	European Marketing Academy
Emp.	Empirical
et al.	Et alii (masculine) (latin)
etc.	Et cetera (latin)
F	Number of judgments on which the judges agree
f^2	F squared (size effect, statistics)
Form.	Formative
GoF	Goodness of fit
Holist.	Holistic
I	Inter-rater reliability
i.e.	That is
ICEIS	International Conference on Enterprise Information Systems
ICIS	International Conference on Information Systems
Ind.	Individual

IS	Information systems
IT	Information technology
k	Number of coded categories
KPI	Key performance indicator
Lit.	Literature grounded
Load.	Loading
MISQ	Management Information Systems Quarterly
N	Total number of judgments
n	Sample size
N. Ap.	New approach
N.-cas. Rel.	Non-causal relationships
Org.	Organizational
p.	Page
P. C.	Path coefficient
PACIS	Pacific Asia Conference on Information Systems
Part.	Partial
PhD	Philosophiae doctor (latin)
PLS	Partial least square
p-val.	probability-value
R^2	R squared (coefficient of determination, statistics)
RBV	Resource-based view
Refl.	Reflective
RMT	Relationship marketing theory
RO	Research objective
ROI	Return on investment
RQ	Research question
SCRM	Social customer relationship management
SCT	Social capital theory
SEM	Structural equation model
SM	Social media
SMI	Swiss Market Index
TAM	Technology Acceptance Model
Tr. Ap	Traditional approach
Ubiq. Int.	Ubiquity interaction
VIF	Variance inflation factor

w.	Weight
WI	Wirtschaftsinformatik (German)
z. B.	Zum Beispiel (German)

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Abstract

The dissertation investigates and evaluates the impact of Social CRM technology use on Social CRM performance, from an organizational perspective. The topic is highly relevant for both research and practice. On the one hand, companies are still struggling to realize and assess the benefits of their implemented Social CRM technologies (Social CRM tools like Hearsay Social). On the other hand, evidence on a corresponding approach to link Social CRM technology use to Social CRM performance is still lacking in the academic literature. Thus, the objective of the dissertation is to develop a structural model for identifying features of Social CRM technology (e.g., analytical features), whose use has a positive impact on performance (e.g., increased revenue).

In order to address this objective, the dissertation follows both a qualitative and quantitative research approach. The qualitative phase is exploratory and focuses on the conceptualization of Social CRM technology use and performance, containing literature reviews, a market study and semi-structured interviews. The quantitative phase evaluates the previous findings of the qualitative phase through a confirmatory factor analysis and a structural equation model.

In six individual articles, the dissertation presents three major results. Firstly, 23 performance measures, classified into four dimensions, comprise a Social CRM performance measurement model. Secondly, 18 features, classified into two dimensions, contain a measurement model for Social CRM technology use. Thirdly, a positive impact of Social CRM technology use on Social CRM performance is highlighted, concerning the fact that management features are more valuable than others.

The practical implications entail an assessment approach to Social CRM tools and Social CRM activities. Additionally, a company should invest in a Social CRM technology specifically with management features, in order to increase performance. The theoretical contribution entails a structured approach for Social CRM technology use and Social CRM performance, two new measurement models, and extends an existing conceptual framework.

Kurzfassung

Die Dissertation untersucht und evaluiert die Auswirkung von der Social CRM Technologienutzung auf die Social CRM Leistung aus einer Unternehmensperspektive. Das Thema ist für die Forschung und Praxis von hoher Relevanz: Zum einen kämpfen Unternehmen noch immer damit die Vorteile ihrer implementierten Social CRM Technologien (Social CRM Tools wie Hearsay Social) zu bewerten. Zum anderen fehlt in der wissenschaftlichen Literatur immer noch der Nachweis eines entsprechenden Ansatzes die Technologiennutzung von Social CRM mit der Social CRM Leistung zu verknüpfen. Daher ist das Ziel dieser Dissertation, ein Strukturmodel zu entwickeln, das die Möglichkeit bietet Funktionen von Social CRM Technologien (z. B. Analyse-Funktionen) zu identifizieren, deren Nutzung eine positive Auswirkung auf die Leistung hat (z. B. Umsatz steigern).

Um das Ziel zu adressieren, folgt die Dissertation einem qualitativen und quantitativen Forschungsansatz. Der qualitative Teil ist explorativ und fokussiert sich auf die Konzeption der Social CRM Technologiennutzung und Leistung, indem Literaturrezensionen, eine Marktstudie und halbstrukturierte Interviews durchgeführt wurden. Der quantitative Teil evaluiert die zuvor gewonnenen Ergebnisse durch eine konfirmatorische Faktorenanalyse und einem Strukturgleichungsmodell.

In sechs Beiträgen zeigt die Dissertation drei wichtige Resultate auf. (1) 23 Leistungsgrössen, klassifiziert in vier Dimensionen, umfassen ein Messmodell für die Social CRM Leistung. (2) 18 Funktionen, klassifiziert in sechs Dimensionen, beinhaltet ein Messmodell für die Social CRM Technologienutzung. (3) Eine positive Auswirkung der Social CRM Technologienutzung auf die Leistung von Social CRM wird aufgezeigt, hinsichtlich der Tatsache, dass Management-Funktionen einen grösseren Mehrwert haben als andere.

Die praktische Schlussfolgerung ist durch einen Bewertungsansatz von Social CRM Tools und Social CRM Aktivitäten begründet. Ein Unternehmen sollte in Social CRM Technologien mit Management-Funktionen investieren, um die Leistung zu steigern. Der theoretische Beitrag konstituiert einen strukturierten Ansatz für die Technologienutzung von Social CRM und Social CRM Leistung, zwei neuen Messmodellen und eine Erweiterung eines bestehenden, konzeptionellen Rahmenwerks.

Part A: Research Summary

1 Introduction

1.1 Background

New Internet-based applications (e.g., Social Media) enable a new mode of communication and interaction between companies and their customers. Social Media complement one-directional communication (e.g., e-mail newsletters) (Choudhury and Harrigan 2014, p. 150) through multi-directional communication. Multi-directional means that the interaction does not take place exclusively between the company and customer, but also between customers, their friends and other web users (e.g., consumers) (Choudhury and Harrigan 2014, p. 151; Faase et al. 2011, p. 2; Lehmkuhl 2014, p. 19). Through Social Media, companies have additional access to public and private information (e.g., profiles, activities, interests, relationships) of consumers (e.g., followers of a company's social media account) as well as customer's friends (Reinhold and Alt 2012, p. 158). This gives an indication of their opinions, experiences and needs (Alt and Reinhold 2012, p. 287), which can be useful in developing individual customer relationships and making them more profitable. The multi-directional communication and additional access to information change the existing approach to customer relationship management (CRM) (Baird and Parasnis 2013, p. 12). "CRM is a strategic approach that is concerned with creating improved shareholder value […] with customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other stakeholders" (Payne and Frow 2005, p. 168). In order to exploit Social Media, companies need to enrich their traditional CRM approaches (Dutot 2013, p. 56).

The integration of Social Media into CRM is a rising phenomenon, leading to a new scientific paradigm (Askool and Nakata 2010, p. 205) referred to as Social Customer Relationship Management (Social CRM) (Choudhury and Harrigan 2014, p. 151). It is a holistic, customer-centric and strategic management approach defined by Greenberg (2010) as "[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted & transparent business environment" (Greenberg 2010, p. 413). The objective

of Social CRM is to use the potential offered by Web 2.0[1] for CRM "to build up mutually beneficial long-term relationships based on a high customer engagement" (Lehmkuhl and Jung 2013, p. 197). Social CRM activities include the interaction and collaboration between companies and customers, as well as with other (potential) customers on Social Media, and the collection as well as analysis of Social Media data through appropriate technologies (i.e., Social CRM tools) (Greenberg 2010, p. 414; Woodcock, Broomfield, et al. 2011, p. 253).

1.2 Motivation

Reports from Gartner (Alvarez 2013; Sarner and Sussin 2012) reveal an initial indication of the practical relevance, but fail to provide substantial statements and detailed insights. Thus, the research team performed a study on "Social CRM - state of practice" in 2013[2], which revealed an increasing interest in the topic and highlighted the substantial potential for companies. In order to obtain detailed information from practice, semi-structured interviews with four experts from large companies were conducted in 2014[3].

To realize the potential, and given that Social CRM is defined as a business strategy, its implementation requires holistic "transformational efforts among all organizational parts" (Lehmkuhl and Jung 2013, p. 190). Today, companies transform their business by applying new strategies, processing organizational change, developing new capabilities and implementing new Social CRM technologies to increase their performance (Trainor et al. 2014, p. 1201). Thus, performance measurement is crucial, in order to assess the Social CRM activities and determine the company's objectives (Lehmkuhl 2014, p. 161). The conceptualization and measurement of a holistic approach to Social CRM performance is essential for companies, as demonstrated by three statements from the interviews.

1. A holistic approach to Social CRM performance enables the control of current Social CRM activities from different departments (e.g., assessment of campaigns (markting department), purchases on Social Media (sales department)) [Interview 1, Interview 2].

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[1] A definition is given in Section 2.1.1.

[2] Two PhD students and a professor were included in the research team. The study was an online survey of German-speaking experts in this field with n = 56 responses.

[3] Interview protocols are presented in the appendix.

2. Measurement enables the justification of future initiatives (e.g., new investments) [Interview 3] and further engagements within Social CRM (e.g., detecting added value for the company) [Interview 3, Interview 4].

3. Measuring Social CRM performance enables the determination of fixed objectives (e.g., increasing customer interaction online for 10%) [Interview 1, Interview 2].

Within the research topic of Social CRM, investigating impact factors is of considerable interest (Trainor et al. 2014, p. 1202). The use of Social CRM technologies is a relevant impact factor (Choudhury and Harrigan 2014, p. 151), which enables companies to capture, analyze and exploit "the customers content on the companies' Social Media platforms (e.g., Facebook, Twitter, Blogs, etc.)" (Küpper 2014a, p. 573). One viable option for companies is the implementation of Social CRM technologies. Vendors like Jive, Salesforce, Batchblue Software etc. offer various tools (e.g., Hearsay Social, Radian6, Batchbook). However, practice has revealed problems in implementing Social CRM technology successfully (Alvarez 2013; Sarner et al. 2012). The practical relevance of investigating Social CRM technology use is thus as follows:

1. By identifying different aspects of Social CRM technologies (e.g., different features) a company is able to compare and assess Social CRM tools, using an assessment application (Küpper, Wieneke, Wittkuhn, et al. 2015).

2. The measurement of Social CRM technology use has a control function (e.g., controlling sales departments using different tools) [Interview 4] and can help save IT costs, given that unused technology licences can be terminated or modified [Interview 1].

While technology use is a relevant impact factor for performance within the CRM context (e.g., Chang et al. (2010), Rapp et al. (2010), Zablah et al. (2012)), Social CRM technology use is also "expected to positively contribute to the performance outcomes" (Trainor 2012, p. 328). Concerning the fact that different Social CRM technologies have different features, an answer to the following question is still needed: which features offer the most value (i.e., have the most impact on performance)? Companies are still struggling to realize and assess the benefits of their implemented Social CRM technologies. Therefore, the impact of Social CRM technology use on Social CRM performance is investigated and evaluated. The practical relevance has two main aspects:

1. The investigation and evaluation of the impact enables a prioritization of Social CRM technologies features [Interview 4]. The prioritization supports companies in evaluating new Social CRM technologies (e.g., investing in a new tool with a valuable feature) [Interview 1].

2. The prioritization enables a better allocation of resources (e.g., the IT budget can be distributed efficiently, costs can be saved through not requiring certain staff training) [Interview 4].

1.3 Research Problems and Research Gaps

The general research problem is to understand the impact of Social CRM technology use on Social CRM performance. According to the abovementioned motivation, this section reveals the research problems, presenting an overview of the scholarly literature, and derives the research gaps for the three parts of the dissertation: Social CRM performance, Social CRM technology use and evaluation of the impact.

Concerning the performance topic, previous research focuses on CRM-related performance measurement models[4], inlcuding different dimensions of performance (e.g., process, customer dimenion). Despite the structured holistic approach of the articles, the Social CRM topic is not investigated. An overview of previous articles is depicted in Table 1[5], containing the level of analysis (Markus and Robey 1988, p. 584), scope of the approach (partial or holistic approach)[6] (Küpper 2014a, p. 577), and the topic of the article (CRM or Social CRM). Most articles focus on an organizational level of analysis, determining a holistic approach and are CRM-related. Given the novelty of the topic and the lack of research, no article so far conceptualizes and measures Social CRM performance holistically, i.e., including different dimensions (e.g., infrastructure, processes, customer and organizational performance) in one model.

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[4] A definition is given in Section 2.1.5.

[5] To give an appropriate scope, only topic-related performance measurement models are listed.

[6] According to Küpper (2014a, p. 577), a partial approach covers only one specific dimension of performance. By contrast, the holistic approach highlights different dimensions of performance.

Table 1: Overview of performance measurement models in the literature

Authors	Level of analysis		Scope		Topic	
	Ind.	Org.	Part.	Holist.	CRM	SCRM
Jain et al. (2003)		x	x		x	
Kim et al. (2003)	x		x		x	
Zinnbauer and Eberl (2005)		x	x		x	
Lin et al. (2006)		x		x	x	
Grabner-Kraeuter et al. (2007)		x		x	x	
Kim and Kim (2009)		x		x	x	
Kimiloglu and Zarali (2009)		x		x	x	
Llamas-Alonso et al. (2009)		x		x	x	
Sedera and Wang (2009)		x		x	x	
Wang et al. (2009)		x		x	x	
Öztayşi, Sezgin, et al. (2011)		x	x		x	
Öztayşi, Kaya, et al. (2011)		x		x	x	
Shafia et al. (2011)		x		x	x	
This dissertation		**x**		**x**		**x**
Ind. = Individual level; Org. = Organizational level; Part. = Partial approach; Holist. = Holistic approach; SCRM = Social CRM						

Concerning Social CRM technology use, previous academic articles develop Social CRM architectures (e.g., Woodcock, Broomfield, et al. (2011, p. 253)), identifying individual features of Social CRM technologies (e.g., analytical features) without investigating their actual use within companies. Zablah et al. (2012, p. 423) measure CRM technology use from an organizational perspective (i.e., investigating CRM technology features). Regarding the different tools and features for CRM technology and Social CRM technology, the article does not provide a Social Media perspective. In contrast, the previous work of Rodriguez et al. (2012, p. 374) and Trainor et al. (2014, p. 1202) investigates and measures Social Media technology use, i.e., questioning about the use of Facebook, Twitter, YouTube etc. Given the fact that companies use tools to communicate about several Social Media channels on different Social Media accounts, the previous approach covers a customer perspective, rather than a company perspective. Table 2 provides an overview of the literature. In order to limit the scope, the focus was on investigated and measured use constructs within the IS/IT, CRM, Social Media and Social CRM contexts. The relevant articles are classified

within the type of measure (i.e., reflective or formative)[7], and the investigated topic. However, the evidence regarding a conceptual and empirical research approach is contradictory, because no article both conceptualizes and measures the use of Social CRM technology in detail (i.e., with formative indicators).

Table 2: Overview of technology use in the literature

Authors	Type of measure		Topic			
	Reflective	Formative	IS/IT	CRM	SM	SCRM
Bhattacherjee (2001)	x		x			
Venkatesh et al. (2003)	x		x			
Jayachandran et al. (2005)	x			x		
Bhattacherjee et al. (2008)	x		x			
Chang et al. (2010)	x			x		
Abdul-Muhmin (2012)	x			x		
Rodriguez et al. (2012)	x				x	
Zablah et al. (2012)		x		x		
Trainor et al. (2014)	x				x	
This dissertation		**x**				**x**
SM = Social Media; SCRM = Social CRM						

Regarding the evaluated impact of Social CRM technology use on Social CRM performance, a previous article highlights the final research problem, "[…] measuring the performance of IT applications […] implemented in companies has become critically important in order to evaluate whether the investments directed to these areas are worthwhile" (Kimiloglu and Zarali 2009, p. 248). Table 3 presents an overview of current scholarly literature[8]. Most of the articles evaluate the impact of CRM technology use on CRM performance. The articles of Choudhury and Harrigan (2014, p. 172), Rodriguez et al. (2012, p. 374) and Trainor et al. (2014, p. 1202) evaluate the impact of Social Media technology use on CRM performance. However, research evaluating the impact of Social CRM technology use on Social CRM performance is lacking.

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[7]According to Diamantopoulos and Winklhofer (2001, p. 271), a reflective indicator covers the whole construct, while formative indicators determine the construct of interest.

[8] Only publications later than 2009, with a significant direct or indirect impact, are investigated.

Table 3: Overview of models, evaluating the impact of technology use on performance in the literature

Authors	Topic of technology use				Topic of performance		
	IT/IS	CRM	SM	SCRM	IT/IS	CRM	SCRM
Chang et al. (2010)		x				x	
Harrigan et al. (2010)	x					x	
Keramati et al. (2010)		x				x	
Rapp et al. (2010)		x				x	
Akroush et al. (2011)		x				x	
Coltman et al. (2011)		x				x	
Ernst et al. (2011)		x				x	
Rodriguez et al. (2012)			x			x	
Wang and Feng (2012)		x				x	
Zablah et al. (2012)		x				x	
Chuang and Lin (2013)		x				x	
Choudhury and Harrigan (2014)		x	x			x	
Trainor et al. (2014)			x			x	
This dissertation				**x**			**x**
SM = Social Media; SCRM = Social CRM							

1.4 Research Objective

The general research objective (RO) is to develop a structural model, linking Social CRM technology use to Social CRM performance. The impact of Social CRM technology use on Social CRM performance is evaluated through hypothesis tests. In particular, the findings of the evaluation reveal features of a Social CRM technology (e.g., analytical features), whose use has a positive impact on performance (e.g., increases revenue). A previous conceptualization and measurement of different constructs (e.g., construct of Social CRM technology use and Social CRM performance) is indispensible (Küpper 2014b, p. 3). According to the three parts of the dissertation, the three specific ROs are as follows (Figure 1):

RO 1: Conceptualization and measurement of Social CRM technology use.

RO 2: Conceptualization and measurement of Social CRM performance.

RO 3: Evaluation of the impact of Social CRM technology use on Social CRM performance.
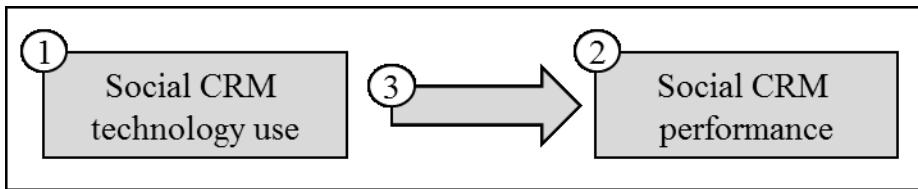
Figure 1: Connection between the three specific research objectives

1.5 Research Questions

The motivation and corresponding research problems support the evidence that neither practice nor research provides a sufficient solution to the current challenges. The identified research gaps yield the following research questions (RQs), which are published[9] in the proceedings of the doctoral consortium on the International Conference on Enterprise Information Systems 2014 (Küpper 2014b, p. 4).

RQ 1.1: What are the features and constructs for Social CRM technology use?

RQ 1.2: What are appropriate performance measures and constructs for Social CRM performance?

RQ 2.1: Which instruments of Social CRM technology use measure the corresponding constructs?

RQ 2.2: Which instruments of Social CRM performance measure the corresponding constructs?

RQ 3: What impact does Social CRM technology use have on Social CRM performance?

Table 4 presents the degree of coverage (no, partial, detailed, or full coverage) of the five RQs and the associated three specific ROs, as mentioned above.

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[9] The RQs are an updated version of the RQs in Küpper (2014b, p. 4).
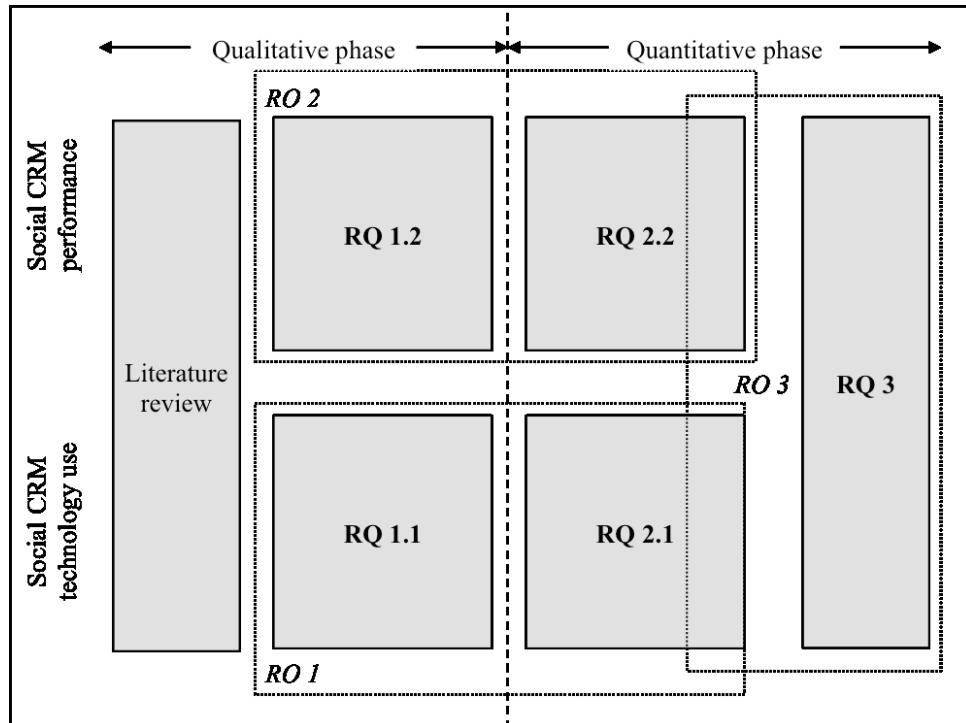
Table 4: Research questions and research objectives

Research objectives	Research questions				
	RQ 1.1	RQ 1.2	RQ 2.1	RQ 2.2	RQ 3
RO 1	◐	○	◐	○	○
RO 2	○	◐	○	◐	○
RO 3	○	○	◔	◔	●
	○ No coverage	◔ Partial coverage	◐ Detailed coverage	● Full coverage	

1.6 Research Design

In order to answer the RQs, the overall research is conducted in a two-stage multi-method approach (Creswell 2003, p. 15; Venkatesh et al. 2013, p. 23). It comprises (1) an explorative qualitative phase and (2) a confirmatory quantitative phase. The former is qualitative in nature and conceptual. The latter is empirical and based on a specially conducted survey, aimed at confirming the previous findings on Social CRM technology use and Social CRM performance. Figure 2 depicts the research design, including the corresponding RQs and the specific ROs.

Figure 2: Research design

The result of the literature review is the conceptual foundation of Social CRM measurement, as described in vom Brocke et al. (2009, p. 3232). The results for RQ 1.1 entail a two-step approach (literature analysis and market study) for Social CRM technology features. The results of RQ 1.2 are obtained from semi-structured interviews for Social CRM performance, according to Paré (2004, p. 258). The findings of RQ 2.1 and RQ 2.2 entail a confirmatory factor analysis, applying a redundancy analysis (Diamantopoulos and Winklhofer 2001, p. 273). The answer to RQ 3 is provided by a structural equation model (SEM), with a partial least square (PLS) method (Hair et al. 2011, p. 141).

1.7 Contribution to the Field and Target Audience

Both scholars and practitioners are the target audience for the dissertation. The research is of value particularly to scholars in the research domain of Social CRM, and especially academics from information management, information systems, as well as marketing, can profit from the newly generated insights and results. Based on the data collection (e.g., semi-structured interviews, surveys) from Germany, Switzerland and Austria, the research focuses on large companies within the German-speaking countries.

This research is targeted at the two stated audience groups, and the theoretical contributions, as well as the practical implications are threefold, according to the three specific ROs. Regarding the theoretical aspect, the first contribution is a structured approach for Social CRM performance (i.e., different *performance* dimensions) and Social CRM technology use (i.e., different *technology* dimensions). Secondly, based on the rigorous methodology, the research reveals two corresponding and independent measurement models. Thirdly, the developed structural model extends the existing conceptual framework of Trainor et al. (2014) in several ways, generating detailed insights from a company perspective.

In terms of practical implications, the first is provided by an assessment application for Social CRM tools. The application is based on the dimensions of Social CRM technologies, aimed at comparing tools in the acquisition phase. Secondly, a company should design a KPI system, in order to assess their Social CRM activities. The KPI system can be based on the dimensions of Social CRM performance, which are linked to the strategic firm's objectives. Thirdly, a company should invest in a Social CRM technology with a management feature like Viralheat, Engagor etc., in order to increase performance.

1.8 Structure of the Dissertation

The dissertation consists of two main parts: Part A presents an overall summary of the research, starting with an introduction. The conceptual background is described in Section two. An overview of the results is given in Section three, and a summary in Section four. Part B consists of the academic papers published within this research phase.

Part A, the introductory section (Section 1) starts with a description of the research background (Section 1.1), followed by the motivation (Section 1.2), the description of research problems and research gaps (Section 1.3), the stated ROs (Section 1.4), the RQs (Section 1.5), the overall research design (Section 1.6), the contribution and the target audience (Section 1.7), and concludes with this section (Section 1.8), the structure of the dissertation. Section two presents the conceptual background, including the conceptual foundations (Section 2.1) and the conceptual model (Section 2.2). Section three provides an overview of the results: first, the connection between the RQs and the papers comprising the dissertation, demonstrating a connection between paper's contribution and the research characteristics (Section 3.1), and secondly, the specific findings (Section 3.2). The summary section (Section 4) highlights the main results, discusses the development process of the findings and sheds some light on the limitations (Section 4.1), contains theoretical and practical implications (Section 4.2), and concludes with a critical reflection of the theoretical framing, research methodology and theoretical contribution (Section 4.3).

Part B consists of academic papers (the publications), which address the RQs stated in Part A (Section 1.5). The papers have been re-formatted to fit the layout of the dissertation. The citation style, in particular, has been applied to all papers, and all tables, equations and figures have been numbered continuously and all the references inserted into a single list at the end of the dissertation. Each sub-section of a paper's contribution contains a table with bibliographical metadata, including title, author(s), and publication outlet, type, year, and status.

2   Conceptual Background

This section introduces the conceptual foundations, and contains an overview of the conceptual model.

2.1   Conceptual Foundations

The relevant key terms are as follows: Web 2.0, Social Media, CRM, Social CRM, performance, and technology use.

2.1.1   Web 2.0

The term Web 2.0 was coined by DiNucci (1999, p. 32), then defined and interpreted by Musser and O'Reilly (2007, p. 5). Kaplan and Haenlein (2010, p. 60) mentioned that the term Web 2.0 was first used in 2004 and in the years before 2004, there was Web 1.0. Within the period of Web 1.0, the Internet was understood as an information medium of one-directional communication. Content and applications could only be created and published by individuals with special software know-how (Kaplan and Haenlein 2010, p. 61). In contrast, Web 2.0 is described as the new generation of Internet users (Han 2010, p. 200) and is characterized by the expansion of economic, social and technological trends that enable a new form of communication (i.e., multi-directional commuincation). Internet users are no longer exclusively information receivers, but have the possibility to create, modify and exchange their own content and applications (Dearstyne 2007, p. 25; Kaplan and Haenlein 2010, p. 61). Building on these characteristics, Web 2.0 can be defined as

> *"a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet−a more mature, distinctive medium characterized by user participation, openness, and network effects."*
>
> (Musser and O'Reilly 2007, p. 5)

2.1.2   Social Media

Social Media comprises a group of Internet-based applications, enabling the exchange of digital content. Social Media presents a front-end for the Internet user and enables the characteristics of Web 2.0. According to Kaplan and Haenlein (2010, p. 62), Social Media can be classified into six categories: social networking sites (e.g., Facebook, Google+), blogs (inlcuding microblogs, e.g., Twitter), collaborative projects (e.g., Wikipedia), content communities (e.g., YouTube), virtual social worlds (e.g., Second

Life), and virtual game worlds (e.g., World of Warcraft). Different functionalities are recommended by Kietzmann et al. (2011, p. 243), e.g., relationships (e.g., Linkedin, Xing allows users to see how they are related to other users), groups (e.g., a user can be part of a special Facebook event), and sharing (e.g., a user can share pictures with Instagram). Social Media can be defined as

> *"a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content."* (Kaplan and Haenlein 2010, p. 61)

2.1.3 Customer Relationship Management

Lehmkuhl (2014, p. 28) categorizes the term *relationship management* into internal (e.g., employees, managers) and external relationships (e.g., customers, government, suppliers, joint ventures)[10]. For the external relationships, relating marketing efforts (e.g., customers, suppliers), Leusser et al. (2011, p. 19) describe *relationship marketing*. CRM is a subset of *relationship marketing* and refers exclusively to the customer.

In the 1990's, CRM changed from a transactional (focusing on company products and brands) to a relationship-based approach (focusing on the customer relationship) (Dutu and Hălmăjan 2011, p. 111; Kumar and Reinartz 2012, p. 16; Lehmkuhl 2014, p. 27). Nevertheless, CRM was still a "predominantly, technological initiative, ignoring the marketing principles" (Choudhury and Harrigan 2014, p. 150). Today, CRM is understood as a strategic and customer-oriented relationship management approach (Kumar and Reinartz 2012, p. 36; Lorenzon and Pilotti 2008, p. 81). The objective of CRM is to establish a company-wide, customer-oriented approach that leads to long-term relationships with customers and the delivery of shareholder results (i.e., increasing company performance) (Payne and Frow 2005, p. 174). Thus, CRM is defined as

> *"a strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders."*
> (Payne and Frow 2005, p. 168)

---

[10] According to Leusser et al. (2011, p. 19), an external relationship constitutes a customer's and three additional relationships: horizontal (e.g., joint ventures), vertical (e.g., suppliers), and lateral (e.g., government) relationships.

2.1.4 Social Customer Relationship Management

"With the advent and embedded nature of advanced Web 2.0 used in social media technologies, CRM has another opportunity to grow and prosper" (Choudhury and Harrigan 2014, p. 150). The integration of Social Media into CRM is a rising phenomenon, leading to a new scientific paradigm (Askool and Nakata 2010, p. 205) and is referred to as Social Customer Relationship Management (Social CRM) (Lehmkuhl and Jung 2013, p. 190). Compared to traditional CRM, Social CRM uses the Web 2.0 concept to support the acquisition, maintenance and revitalization of a customer relationship (Lehmkuhl and Jung 2013, p. 199) and is described as a holistic, strategic and customer-centric management approach (Dutot 2013, p. 54; Greenberg 2010, p. 413; Lehmkuhl 2014, p. 67).

The customer relationship is no longer controlled by the company, but based on interactions between company and customer, and between customers, their friends and other web users (e.g., consumers) (Choudhury and Harrigan 2014, p. 151; Faase et al. 2011, p. 2; Lehmkuhl 2014, p. 19). Within Social CRM, the customer is understood as a collaborative partner within a customer-centric environment (Greenberg 2010, p. 413). The objective of Social CRM is to establish a long-term relationship with the customer, in order to provide mutual beneficial value to the company and the customer (Choudhury and Harrigan 2014, p. 151; Greenberg 2010, p. 413). According to Dutot (2013, p. 56), Social CRM does not replace traditional CRM, but enriches existing management approaches. To conclude, Social CRM is defined as

> "a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted & transparent business environment." (Greenberg 2010, p. 413)

2.1.5 Performance

Performance is a superordinate term, considering different specifications such as *performance measure*, *performance measurement* (or measuring), and *performance measurement model*. A defintion of the stated terms is given, followed by a description of *Social CRM performance*.

> "Performance is defined as the potential for [...] successful implementation of actions in order to reach the objectives and targets." (Lebas 1995, p. 23)

Performance measure

With regard to the general definition of performance, *performance measure* describes business actions regarding efficiency and/or effectiveness, or the objective to be achieved. To clarify, *performance measures* are not exclusively financial and company-related, instead, they capture different pespectives (e.g., company, customer, processes) and aspects (e.g., financial, non-finanicial) to be taken into consideration (Kaplan and Norton 1996, p. 83; Marchand and Raymond 2008, p. 668). *Performance measures* answer the question of what is being measured (Küpper et al. 2015, p. 889). An example: a financial *performance measure* is 'financial benefit' or 'profitability' (e.g., Chang et al. (2010, p. 854), Schulze et al. (2012, p. 26)). A non-financial performance measure is 'customer loyalty' (e.g., Rapp et al. (2010, p. 1236), Trainor et al. (2014, p. 1208)).

> *A performance measure "can be expressed either in terms of the actual efficiency and/or effectiveness of an action, or in terms of the end result of that action."*
> (Neely et al. 1995, p. 110)

Performance measurement

Performance measurement describes the process of measuring performance measures. It answers the question of how it is measured (Küpper et al. 2015, p. 889). Continuing the example: the performance measure 'financial benefit' or 'profitability' can be expressed by a key performance indicator (KPI), e.g., return on investment (ROI), or as an item in a survey, according to Ernst et al. (2011, p. 304), Keramati et al. (2010, p. 1184) and Reinartz et al. (2004, p. 295). The performance measure 'customer loyalty' can be measured by analyzing corresponding survey data, as recommended by Chen et al. (2009, p. 292), Chuang and Lin (2013, p. 277) and Trainor et al. (2014, p. 1208).

> *"Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action."* (Neely et al. 1995, p. 80)

Performance measurement model

A *performance measurement model* consists of different performance dimensions, e.g., infrastructure, processes, customer and organizational performance, as recommended by Kim and Kim (2009, p. 483). Each performance dimension includes multiple performance measures. In the context of CRM, a *performance measurement model* enables "managers to anticipate how CRM will work and determine the way CRM will influence the achievement of the strategic firm's objectives" (Llamas-Alonso et al. 2009, p. 3). Thus, a *performance measurement model* answers the question: What di-

mensions (categories) classify performance measures (Küpper et al. 2015, p. 889)? Continuing the example: a *performance measurement model* consists of two dimensions (e.g., customer and company performance). For customer performance, two performance measures are classified ('customer-based relationship performance', 'customer loyalty'), for company performance, the performance measures 'financial benefits' and 'profitability' are relevant. All measures can be evaluated through an online survey (i.e., measurement). However, a clearly stated definition is lacking in the literature, so that a description is based on a previously published article.

> *A performance measurement model describes the classification of performance measures into different dimensions, in order to assess company activities and to achieve its objectives.* (Küpper et al. 2015, p. 889)

Social CRM performance

Social CRM performance consists of various different measures, which are included in a corresponding measurement model. Due to the lack of a definition, the dissertation follows the definition of performance recommended by Lebas (1995, p. 23).

> *Social CRM performance is defined as the potential for successful implementation of Social CRM activities, achieving the objectives and targets.*

2.1.6 Technology Use

A previous defintion of information technology (IT) follows a description of *technology use*, as well as a definition of *Social CRM technology use*.

> *"Information technology is defined as capabilities offered to organizations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes."*
> (Attaran 2003, p. 442)

Technology use

IT use is a widely and vividly discussed topic in the discipline of IS research. Venkatesh et al. (2003, p. 427) highlights two relevant perspectives: intentions to use information technology and actual use of information technology. According to Bhattacherjee et al. (2008, p. 17), the former investigates the user's initial or first-time decision to use IT, e.g., the construct "intention to use" within the technology acceptance model (TAM) (Davis et al. 1989, p. 985; Venkatesh and Bala 2008, p. 280; Venkatesh and Davis 2000, p. 188; Venkatesh et al. 2003, p. 447). The latter focuses

on post-adoption behavior, e.g., continuous behavior (Bhattacherjee et al. 2008, p. 20), IS continuance usage (Limayem et al. 2007, p. 720) or system use (Venkatesh et al. 2008, p. 487). To clarify, the present dissertation focuses on the actual use of an information technology. Burton-Jones and Straub (2006, p. 231) highlight two relevant elements which should be investigated, in this context: first, the system that is being used and second, the function that is being performed. The definition of technology use is based on Reinartz et al. (2004) and described as

"the degree to which firms use supporting information technology."

(Reinartz et al. 2004, p. 296)

Social CRM technology use

Social CRM technology embraces various Social CRM tools (i.e., the system) and contains various different features (i.e., the functions) (Küpper, Lehmkuhl, et al. 2014, p. 1). It is important to investigate not only whether an organization intends to use Social CRM tools, but also whether the tool that has been adopted is embraced by organizational users (i.e., actual use) (Zablah et al. 2012, p. 422). Due to the lack of a Social CRM technology use definition in the literature, the following is adopted from Zablah et al. (2012, p. 422) and (Reinartz et al. 2004, p. 296).

Social CRM technology use is defined as the degree to which Social CRM technology features are being utilized to support organizational work.

2.2 Conceptual Model

The conceptual model is adopted from Zablah et al. (2012) for technology use and Kim and Kim (2009) for performance.

Kim and Kim's (2009) performance measurement model is based on four dimensions (infrastructure, process, customer and organizational performance) and adopted for four reasons, relating to scientific and practical aspects. First, the model was selected after a rigorous and systematic literature review of different performance measurement models, as well as performance measures (Küpper, Jung, et al. 2014, p. 132). Second, it is exclusively CRM-related, covering different dimensions of performance, which is important for the conceptualization and measurement of a holistic approach. Third, the model was published in a highly ranked journal and is widely used, which provides a

high degree of external validity. Finally, after two focus groups with practitioners[11], in which representatives from the company classified Social CRM specific objectives into the different dimensions, it was evident that the model is useful, comprehensive, and easy to communicate.

The approach from Zablah et al. (2012), investigating technology features and categorizing them, is adopted within the Social CRM context for three reasons. First, it is the only article which conceptualizes and measures technology use from an organizational perspective. Particularly Zablah et al. (2012, p. 423) investigate the technology features of a company and measure the actual use of implemented technology. Second, the article was published in an A^+ journal (Verband der Hochschullehrer für Betriebswirtschaft 2015), which indicates high external validity. Finally, the unique characteristic of formative indicators (in contrast to reflective indicators) is investigated, which provides detailed insight into a company (Mathieson et al. 2001, p. 94).

To conclude, Figure 3 presents the composition of the conceptual model. The literature reveals a positive impact of Social CRM technology use on Social CRM performance. This conclusion is supported by Chang et al. (2010), Chuang and Lin (2013), Keramati et al. (2010), Rapp et al. (2010), Wang and Feng (2012), and Zablah et al. (2012), who found a significant positive impact within the context of CRM. A positive and significant impact of Social Media and IS technology use on performance is supported by Harrigan et al. (2010), Rodriguez et al. (2012), Trainor et al. (2014), and Choudhury and Harrigan (2014)[12]. Thus, the hypothesis is as follows:

H_{0A}: Social CRM technology use has a positive impact on Social CRM performance.

In particular, the research addresses the identification of Social CRM technology features, which have a positive impact on performance. Due to the lack of investigations on Social CRM technologies in the literature, the research hypothesizes that all identified features have the same value for the company. Thus, the next hypothesis can be stated:

H_{0B}: The identified Social CRM technology features all have the same positive impact on Social CRM performance.

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[11] At least two decision makers of a company from different departments and positions (e.g., senior social media manager, community manager) are in each focus group.

[12] The measured capability constructs are categorized as performance dimensions, because they describe the efficiency and/or effectiveness of an action, which conforms to the definition of performance measures (Section 2.1.5).
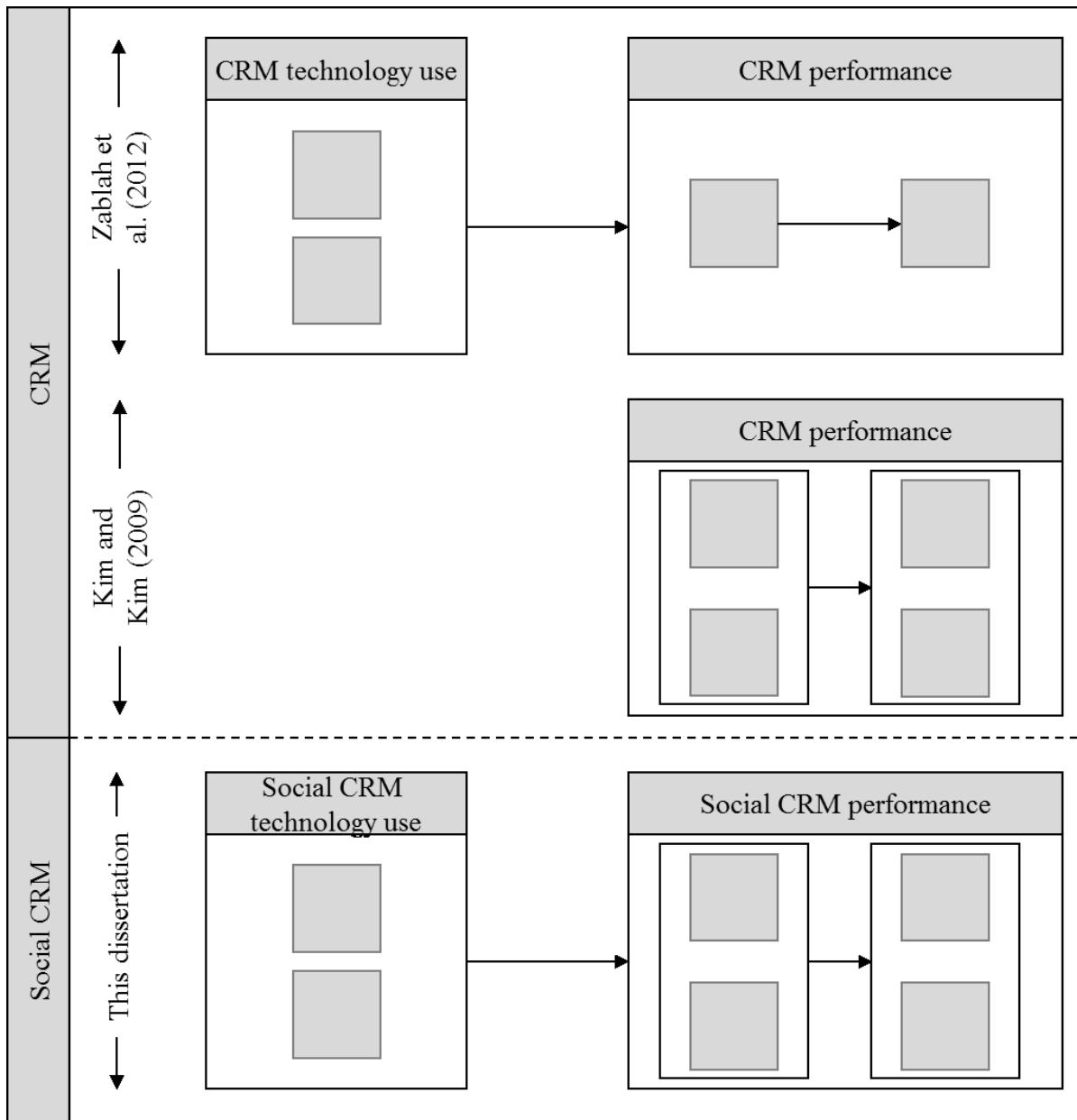
Figure 3: Overview of conceptual model

3 Results

The results of this research are presented in six papers, which jointly address the previously stated RQs. An overview is given in Section 3.1, describing the connection between each paper's contribution and the RQs. In Section 3.2, each paper is summarized.

3.1 Overview

Table 5: Connection between paper's contribution and the research characteristics
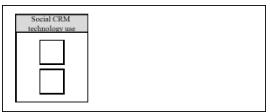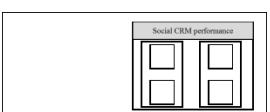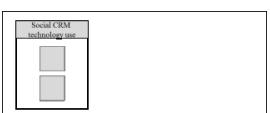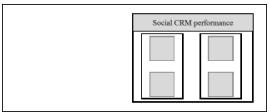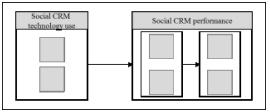
Paper ID: reference to key contribution in paper	Research characteristics				
	RQ	RO	Phase of research design	Applied method	Part of conceptual model
Paper A: Table 14, Section A.3.2	-	-	Qualitative phase	Literature review	
Paper B: Table 6	RQ 1.1	RO1		Literature review, market study	
Paper C: Table 7	RQ 1.2	RO2		Semi-structured interviews	
Paper D: Figure 4	RQ 2.1	RO 1 RO 3	Quantitative phase	Confirmatory factor analysis	
Paper E: Figure 6	RQ 2.2	RO 2 RO 3		Confirmatory factor analysis	
Paper F: Figure 7	RQ 3	RO 3		Structural equation model	

Table 5 presents an overview of the connection between the paper's contribution and the research characteristics, including RQs, ROs, phases of research design, applied methods, and parts of the conceptual model. Specifically, the connection between each paper's contribution and the RQs is as follows: RQ 1.1 is answered in Paper B, through conducting a literature review and market study. Identifying features of Social

CRM technologies are the focus of the article. A further classification within different categories reveals the overall result. Paper C investigates Social CRM performance measures from 15 semi-structured interviews. Findings from a previous literature review are confirmed and extended[13]. The overall result is a list of Social CRM performance measures, categorized into four different dimensions, answering RQ 1.2. Paper D addresses the measurement of Social CRM technology use and answers RQ 2.1. Survey data from IT, marketing and communication managers enables a quantitative evaluation through a confirmatory factor analysis (i.e., tool features serve as indicators and categories as constructs). Paper E covers the answer to RQ 2.2, measuring Social CRM performance. The applied method is the same as in Paper D. The final research question (RQ 3) is answered in Paper F. The PLS-SEM is an appropriate method for testing the hypotheses (H_{0A}, H_{0B}).

3.2 Papers of the Research

The citation, a brief synopsis, a summary of results, the applied method, and the contribution to this research are described for each paper in this sub-section.

3.2.1 Paper A

Citation

Küpper, T. 2014. "Measuring the Success of Social CRM - First Approach and Future Research," in *Proceedings of the 16th International Conference on Enterprise Information Systems*, Lisbon, Portugal, pp. 573–582.

Synopsis

A systematic and rigorous literature review is performed to identify a research gap and to present a future research approach. In total, 38 articles are investigated, classified within a framework and separated across the research topics as either CRM or Social CRM. The literature analysis focuses on the identification of Social CRM measurement and topic-related CRM approaches, especially on measureable constructs within the context.

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[13] The previous literature review is not listed as a paper within the dissertation (Küpper, Jung, et al. 2014).

Result

The major finding is a lack of literature on Social CRM measurement approaches. The relevant articles are listed in Table 14 and categorized either as a new Social CRM approach or traditional CRM approach. All articles related to the new Social CRM approach (four) lack a holistic measurement approach. In particular, no article investigates Social CRM technologies at all and only three focus on a partial approach to Social CRM performance. From this finding, a research gap is identified which reveals the scientific need for an evaluation-based Social CRM measurement approach.

Applied method

A systematic and rigorous literature review is based on vom Brocke's framework for reviewing scholarly literature (vom Brocke et al. 2009, p. 3232). It comprises five steps, namely defining the review scope, topic conceptualization, literature search, literature analysis and synthesis, and the derivation of a research agenda.

Contribution to this research

The paper classifies the measurement approaches and motivates research on the general topic (Social CRM). The findings reveal a lack of literature, and ensuring the appropriate scope of research for the specific topics: Social CRM technology use and Social CRM performance.

3.2.2 Paper B

Citation

Küpper, T., Jung, R., Lehmkuhl, T., and Wieneke, A. 2014. "Features for Social CRM Technology - An Organizational Perspective," in *Proceedings of the 20th Americas Conference on Information Systems*, Savannah, USA, pp. 1–10.

Synopsis

A literature review of 26 research articles is conducted to identify features of Social CRM technology. Subsequently, a market study reveals the practitioner perspective through an investigation and analysis of 40 vendor solutions. The study validates the findings (of the literature review) and gathers additional Social CRM technology features. These findings are consolidated, listed and defined. The summarized findings on features are classified into different categories and a sorting procedure validates the classified categories on a quantitative foundation.

Result

The paper highlights three major results: first, Social CRM technologies can be divided into six categories of monitoring and capturing, analysis, exploitation, IS integration, communication, and management. Second, the analysis of the scholarly literature and of vendor solutions identifies 18 Social CRM technology features. Third, a classification for the corresponding features into the six categories, conducting a sorting procedure, completes the findings of the study. Table 6 depicts the categories of Social CRM technology and corresponding features.

Table 6: Classification of Social CRM technology (based on Paper B, Table 21)

Categories of Social CRM technology	Social CRM technology features
Monitoring and Capturing	Real time data monitoring
	Capturing aggregate data
	Capturing individual data
Analysis	Analysis of content (real time)
	Analysis of aggregate data
	Analysis of individual data
Exploitation	Predictive modeling
	Interconnected consumer network map
	Sales activities
	Reporting
IS Integration	CRM interface
	Information Systems interface
Communication	Communication with a single consumer
	Communication with a group of consumers
	Communication with employees
Management	Community management
	User permission management
	Engagement management

Applied method

A systematic and rigorous literature review is conducted, as recommended by vom Brocke et al. (2009). Regarding the market study, if possible, full demo versions of tools are downloaded and analyzed in detail. Otherwise, brochures and websites are studied intensively, using the empirical research method to analyze information systems, according to Alavi and Carlson (1992, p. 48). The classification is conducted

using a sorting procedure. In sequentially independent rounds, PhD students in the discipline of IS, and practitioners from corresponding operative departments, classify the Social CRM technology features according to the categories. After each round, an inter-rater reliability index is calculated, as proposed by Perreault and Leigh (1989, p. 141), in order to assess the results of the classification.

Contribution to this research

According to the definition of Social CRM technology use (see Section 2.1.6) the investigation of Social CRM technology features is indispensable for the research topic, from an organizational perspective. The qualitative and explorative nature of the paper ensures a reliable investigation of technology features and their classification into different categories. The categorization is also an important part of the next step, serving as constructs for the measurement of Social CRM technology use. However, the findings from Paper B cover only the first part of RO 1 (conceptualization of Social CRM technology use).

3.2.3 Paper C

Citation

Küpper, T., Wieneke, A., Lehmkuhl, T., Jung, R., Walther, S., and Eymann, T. 2015. "Measuring Social CRM Performance: A Preliminary Measurement Model," in *Proceedings of the 12th International Conference on Wirtschaftsinformatik,* Osnabück, Deutschland, pp. 887–901.

Synopsis

In total, 15 semi-structured interviews with IT, marketing and communication managers are conducted, in order to identify appropriate Social CRM performance measures in practice[14] and to develop a preliminary Social CRM performance measurement model[15]. The findings are consolidated, listed and defined. The summarized Social CRM performance measures are classified into four dimensions and validated by a sorting procedure.

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[14] The word "performance factor" in Paper C is synonymous with "performance measure".

[15] The word "preliminary" indicates a conceptual approach. An evaluation characterizes a validated performance measurement model (without "preliminary" up front).

Result

Three major results are presented: first, the analysis of semi-structured interviews reveals nine new explorative findings. Second, a sorting procedure classifies the nine Social CRM performance measures into four dimensions, i.e., infrastructure, process, customer, and organizational performance (Kim and Kim 2009, p. 481). Finally, the developed preliminary Social CRM performance measurement model is presented in Table 7, containing the nine new Social CRM performance measures and 16 Social CRM performance measures from a previously published literature review (Küpper, Jung, et al. 2014, p. 132).

Table 7: Preliminary Social CRM performance measurement model (based on Paper C, Table 27)

Performance dimensions	Performance measures (from previous literature review)	New performance measures (from the 15 semi-structured interviews)
Infrastructure	Social Media Monitoring	Cultural Readiness
	Online Brand Communities	IT Readiness
Process	Customer Insight	Sensibility
	Customer Orientation	Target-Oriented Customer Events
	Customer Interaction	Multi-Channel and Ubiquity Interaction
	Market and Customer Segmentation	Social Selling
	Customer Co-Creation	
Customer	Customer-Based Relationship Performance	Customer Convenience
	Customer Loyalty	Customer Competence
	Peer-to-Peer-Communication	Personal Product and Services
Organizational Performance	Customer Lifetime Value	
	Financial Benefits	
	Brand Awareness	
	Organizational Optimization	
	Competitive Advantage	
	New Product Performance	

Applied method

The semi-structured interviews follow the structured criterion-based process recommend by Paré (2004, p. 258), in the systematic manner of designing, conducting, and analyzing interviews. Subsequently, the classification rigorously follows the process recommended by Nickerson et al. (2012, p. 338). A sorting procedure classifies the findings as mentioned above (Section 3.2.2).

Contribution to this research

Given the exploratory stage of the research, conducting semi-structured interviews yields new practical insights into the research topic (Social CRM performance). The preliminary Social CRM performance measurement model integrates the overall 25 performance measures into a holistic approach. In particular, the categories of the Social CRM performance measures serve as constructs for future research approaches. However, the findings from Paper C cover only the first part of RO 2 (conceptualization of Social CRM performance).

3.2.4 Paper D

Citation

Küpper, T., Lehmkuhl, T., Wieneke, A., and Jung, R. 2015. "Technology Use of Social Media within Customer Relationship Management: An Organizational Perspective," *Working paper*, pp. 1–15.

Synopsis

Data from a survey sample of 122 marketing, communication and IT decision makers are collected and analyzed, in order to develop and evaluate formative indicators and corresponding constructs for Social CRM technology use. The findings of Paper B serve as the conceptual background. After a statistical analysis and re-specification, a formative measurement model emerges.

Result

The paper reveals two major results. First, four formative constructs measure different dimensions of Social CRM technology use, being processing (including the specific dimensions of monitoring and capturing, analysis, and exploitation), communication, IS integration, and management. Second, the evaluated formative indicators (i.e., instruments) are robust and fit the corresponding constructs. No indicator has to be dropped from the measurement model for Social CRM technology use, which is pre-

sented in Figure 4. To conclude, four (even higher-level) constructs and the corresponding 18 indicators of Social CRM technology features constitute the measurement model for Social CRM technology use.
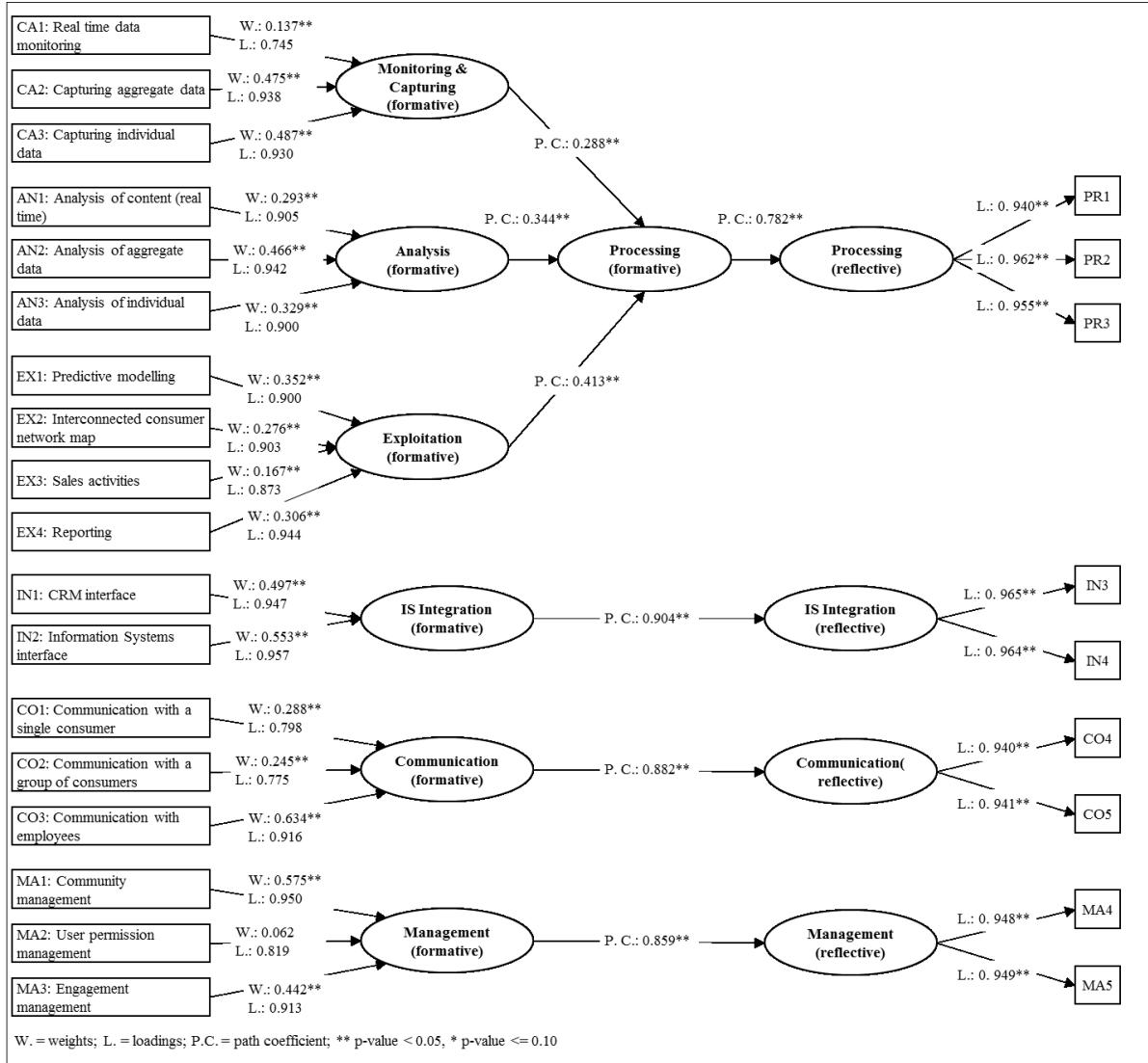
Figure 4: Formative measurement model for Social CRM technology use (based on Paper D, Figure 13)

Applied method

The applied method (confirmatory factor analysis) is the last step within a methodological process, which is designed in a three-stage approach (I. Item Creation, II. Scale Development and III. Indicator Testing), including six sub-stages (Figure 5). The first sub-stage focuses on a literature review, in order to identify Social CRM technology features (Paper B). Second, items are deduced for the Social CRM technology features to operationalize the previous constructs (i.e., the categories). Third, a Q-sorting procedure assesses the content validity with the calculation of an inter-rater reliability in-

dex. The next two sub-stages cover the development and testing of a questionnaire, using a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). The questionnaire was only available online and distributed over Social Media (e.g., Xing, LinkedIn, Twitter). The final sub-stage is based on the process of formative measurements from Cenfetelli and Bassellier (2009, p. 692). The applied confirmatory factor analysis is designed according to Diamantopoulos and Winklhofer (2001, p. 273), and calculated with the statistical software programs SmartPLS and SPSS.
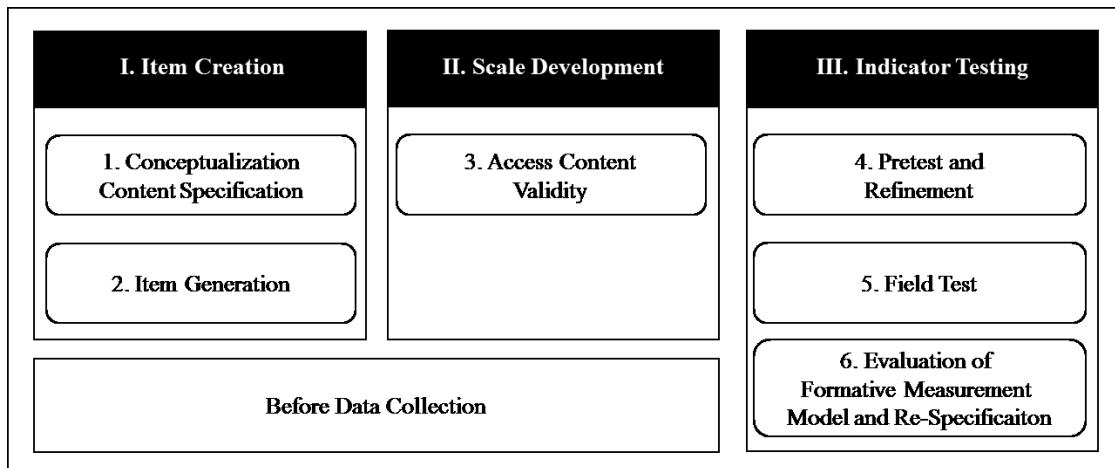
Figure 5: Process of instrument development

Contribution to this research

The results include the quantitative evaluation of findings from Paper B. Thus, the results of Paper D complete RO 1 (Measurement of Social CRM technology use). The rigorously applied methodology of the measurement model provides a vivid and reliable foundation for the further investigation of relationships.

3.2.5 Paper E

Citation

Küpper, T., Wieneke, A., Lehmkuhl, T. and Jung, R. 2015. "Evaluating Social CRM Performance: An Organizational Perspective," *Working paper*, pp. 1–16.

Synopsis

Based on the preliminary Social CRM performance measurement model (Paper C), a survey is conducted and a dataset of 126 responses is analyzed, in order to develop and evaluate formative indicators and corresponding constructs for a Social CRM performance measurement model. After a statistical analysis, new constructs are generated,

followed by a re-specification, so that a formative measurement model for Social CRM performance emerges.

Result

IN2: Online Brand Communities	W.: 0.271** L.: 0.607
IN3: Cultural Readiness	W.: 0.484** L.: 0.859
IN4: IT-Infrastructure	W.: 0.532** L.: 0.8501

Infrastructure performance (formative) — P. C.: 0.829** — Infrastructure performance (reflective)

L.: 0. 943** IN5
L.: 0. 950** IN6

PR1: Customer Insight — W.: 0.264** L.: 0.883
PR3: Customer Interaction — W.: 0.270** L.: 0.920
PR4: Market and Customer Segmentation — W.: 0.430** L.: 0.874
PR5: Customer Co-Creation — W.: 0.175** L.: 0.851
PR7: Target-Oriented Customer Events — W.: 0.175** L.: 0.851

Department specific prcoesses (formative first-order)

P. C.: 0.629**

Process performance (formative 2nd-order) — P. C.: 0.879** — Prcoess performance (reflective)

L.: 0. 957** PR10
L.: 0. 957** PR11

PR2: Customer Orientation — W.: 0.501** L.: 0.925
PR8: Multi-Channel and Ubiquitous Interaction — W.: 0.271** L.: 0.844
PR9: Social Selling — W.: 0.343** L.: 0.897

Companywide processes (formative first-order)

P. C.: 0.392**

CU1: Customer-Based Relationship Performance — W.: 0.380** L.: 0.903
CU2: Customer Loyalty — W.: 0.399** L.: 0.908
CU3: Peer-to-Peer-Communication — W.: 0.350** L.: 0.838

Indirect customer performance (formative first-order)

P. C.: 0.624**

Customer performance (formative 2nd-order) — P. C.: 0.840** — Customer performance (reflective)

L.: 0. 960** CU7
L.: 0. 961** CU8

CU4: Customer Convenience — W.: 0.618** L.: 0.917
CU6: Personalized Product and Services — W.: 0.498** L.: 0.869

Direct customer performance (formative first-order)

P. C.: 0.406**

OR1: Customer Lifetime Value — W.: 0.391** L.: 0.914
OR2: Financial Benefits — W.: 0.348** L.: 0.894
OR6: New Product Performance — W.: 0.380** L.: 0.875

Monetization (formative first-order)

P. C.: 0.522**

Organizaional performance (formative 2nd-order) — P. C.: 0.868** — Organizaional performance (reflective)

L.: 0. 958** OR7
L.: 0. 962** OR8

OR3: Brand Awareness — W.: 0.284** L.: 0.839
OR4: Business Optimization — W.: 0.475** L.: 0.884
OR5: Competitive Advantage — W.: 0.388** L.: 0.883

Intangible assets (formative first-order)

P. C.: 0.504**

W. = weights; L. = loadings; P.C. = path coefficient; 2nd-order = second-order; ** p-value < 0.01

Figure 6: Formative measurement model for Social CRM performance (based on Paper E, Figure 15)

The paper highlights two main results. First, the formative (even higher-level) constructs of infrastructure performance, process performance, customer performance and organizational performance (with six specific dimensions in total) measure the holistic

approach of Social CRM performance. Second, the evaluated formative indicators fit the corresponding construct. Three indicators have to be dropped, due to low loadings and non-significant weights. The Social CRM performance measurement model is illustrated in Figure 6. To conclude, four (even higher-level) constructs and the corresponding 22 indicators constitute the measurement model for Social CRM performance.

Applied method

The methodology and applied method is equivalent to that in Paper D and therefore not mentioned twice.

Contribution to this research

The results cover the quantitative evaluation of the findings from Paper C and complete RO 2 (Measurement of Social CRM performance). The measurement is an important step for further investigation (see Paper F).

3.2.6 Paper F

Citation

Küpper, T., Järvinen, J., Karjaluoto, H., Wieneke, A., Lehmkuhl, T. and Jung, R. 2015. "Impact of Social CRM Technology Use on Social CRM Performance: An Organizational Perspective," *Working paper*, pp. 1-17.

Synopsis

Based on a theoretical framing, hypotheses are derived from current literature, and a conceptual model is presented. A sample size from a survey enables the analysis of a PLS-SEM, evaluating the impact of Social CRM technology use on Social CRM performance. The measurement model is calculated, the path coefficients of the structural model are estimated, and quality criteria presented to validate the results of the paper.

Result

The paper yields three main results. First, the evaluated formative indicators are robust and fit the corresponding constructs (i.e., the measurement model). Second, the results highlight that Social CRM technology use has a significant impact on capabilities (performance dimensions: infrastructure and process)[16], which in turn have a direct impact

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[16] According to the stated definition of capability (see Section F.3.2), the performance dimensions, infrastructure and process (Paper E) serve as relevant constructs.

on Social CRM performance outcomes (performance dimensions: customer and company). Third, the developed model is able to explain over 60% of the variation in the corresponding dependent constructs, which is a moderate result for PLS-SEM. Figure 7 presents the structural model of the paper, including a moderator (Social Media use) and a covariate variable (company size).
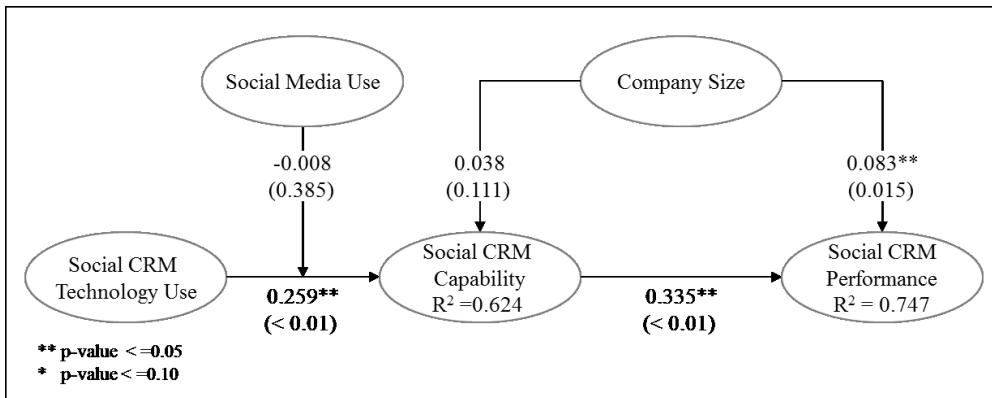
Figure 7: Structural model (based on Paper F, Figure 18)

Applied method

The research methods are quantitative and applied with the statistical software SmartPLS and SPSS. First, the evaluation of the measurement models follows the research methods in Papers D and E. Second, the path coefficients for the structural model are estimated with a PLS method. The moderating effect (i.e., Social Media use) is analyzed using hierarchical regression analysis with SPSS, with a mean centered variable of Social CRM technology use.

Contribution to this research

The measurement models (Papers D and E) are extended with a new higher-level construct for Social CRM technology use and two new specific dimensions, including a new indicator for Social CRM performance. The findings of Paper F cover RO 3 and the hypotheses (H_{0A} and H_{0B}, see section 2.2). Within the sample and cross-section analysis, the hypothsis H_{0A} cannot be rejected, which means that Social CRM technology use has a positive impact on Social CRM performance. In contrast, hypothesis H_{0B} has to be rejected, which means that some features have a stronger impact on Social CRM performance than others.

4 Summary

What can be measured can be improved ...
(Galileo Galilei)

This section highlights the results, discusses the development process of the findings, according to the three specific ROs (see section 1.4), and describes the limitations. Subsequently, the theoretical contributions and practical implications are stated, as well as some critical reflection.

4.1 Discussion and Limitations

This research aims to develop a structural model, linking Social CRM technology use to Social CRM performance. In order to develop the model within Social CRM, Papers A, B and C investigate the research topics with an exploratitve and qualitative approach. Paper A supports the motivation and reveals a research gap. Papers B and C conceptualize Social CRM technology use and Social CRM performance. Papers D, E, and F contain quantitative evaluations of the previous findings. Papers D and E measure individually, the two approaches of Social CRM technology use and Social CRM performance. Paper F tests the hypothses, i.e., evaluates the impact of Social CRM technology use on Social CRM performance.

This research highlights three major results. First, 23 performance measures, classified into eight specific dimensions and four higher-level constructs (dimensions) constitute a Social CRM performance measurement model. Second, 18 features, classified into six specific dimensions and two higher-level constructs (dimensions) contain a measurement model for Social CRM technology use. Third, the findings confirm a positive impact of Social CRM technology use on Social CRM performance, concerning the fact that management features are more valuable than other features.

Concerning RO 1 (conceptualization and measurement of Social CRM technology use), the actual use of Social CRM technologies is conceptualized with six specific dimensions: *monitoring and capturing, analysis, exploitation, IS integration, communication,* and *management*, as proposed in Paper B. The measurement of Social CRM technology use also reveals a higher-level construct, which has to be considered, named *processing* (Paper D). The higher-level construct includes the specific dimensions of *monitoring and capturing, analysis, exploitation. Processing* was generated, due to tools having various features for a specific data type. As an example, the tools

CustomScoop and Excattarget are first captured and then analyzed, followed by the exploitation of aggregate data. Thus, the higher-level construct represents the applied process of specific data types. Within Paper F, a specific dimension was renamed (from *management* to *management-controlling*) and another higher-level construct was generated, named *management*, including *IS integration, communication,* and *management-controlling*. Two comparable higher-level constructs, *processing* and *management*, reduce the complexity of the overall measurement model (e.g., the reported statistical data). To conclude, the measurement model of Social CRM technology use constitutes two higher-level constructs, six specific dimensions and 18 indicators.

Concerning RO 2 (conceptualization and measurement of Social CRM performance), the Social CRM performance is conceptualized by four dimensions: *infrastructure, process, customer* and *company* performance, as proposed in Paper C. Due to the analysis being based on the survey data, six specific dimensions are generated for the Social CRM performance measurement model (Paper E). For *process*, the two specific dimensions *company-wide processes* and *department-specific processes* are generated, for *customer*, the two specific dimensions *direct customer performance* and *indirect customer performance* are developed, and for *company*, the two specific dimensions *monetization* and *intangible assets*. Within Paper F, the specific dimension of *intangible assets* are renamed *non-moneziation performance* and *infrastrucuture* contains the two specific dimensions *cultur* and *IT*[17]. Thus, each higher-level construct contains two specific dimensions, which reduce the complexity and possible missunderstanding of the model in Paper F. Additionally, *infrastructure* and *process* are defined as antecedents for *customer* and *company* performance, based on the capability perspective of Day (1994). To conclude, the measurement model of Social CRM performance constitutes four higher-level constructs, eight specific dimensions and 23 indicators.

Concerning RO 3 (evaluation of the impact of Social CRM technology use on Social CRM performance), the measurement model of Paper D and E serves as the first empircal step for the evaluation. Regarding the findings for H_{0A}, it is evident that Social CRM technology use has a positive impact on Social CRM performance. Based on the rejected hypothesis H_{0B}, it can be stated that management features are more valuable than other features. Particularly the analysis feature of a Social CRM technology has the lowest value (i.e., low weight and weakly significant) for the technolo-

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[17] According to the 22 indicators in Paper E, one additional indicator for the specific dimension *cultur* is added.

gy used within a company. However, the structural model is evidently validated for the Social CRM context.

No research is without limitations and here, they are as follows. First, the number of investigated Social CRM tools is limited. Particularly the analysis does not provide an exhaustive search (e.g., "pipe"-software solutions, industry's specific solutions are excluded from the investigation), only a selected sample is considered (40 vendor solution). Second, the selected twelve companies for the semi-structured interviews are possibly quite heterogeneous, which could bias the results. Third, despite the highly significant values of the final measurement model (i.e., the statistical test values), there may be missing formative indicators, which should be included in the model. Fourth, due to the fact that the dissertation is the first evaluated formative measurement model for Social CRM, conducting a transferability test is not possible. Finally, the survey does not control the maturity level of the companies and reveals less variation in the Social Media use variable, which could also influence the results.

4.2 Theoretical Contribution and Practical Implication

The research findings provide a number of theoretical contributions. First, the research adopts the rigorous approach of CRM technology use, as recommended by Zablah et al. (2012, p. 422), investigating features of different tools. Additionally, the development process of designing a formative measurement model for Social CRM technology use is applied, according to Moore and Benbasat (1991), which is a major contribution to the field. The measurement model improves the current understanding of Social CRM technology use and establishes a new construct, compared to Social Media technology use (Trainor et al. 2014, p. 1207) and CRM technology use (Choudhury and Harrigan 2014, p. 172; Zablah et al. 2012, p. 423), with an additional scale (i.e., formative indicators). As its second major theoretical contribution, the performance approach adopts the measurement model from Kim and Kim (2009) within a Social CRM context. Compared to previous work, which investigates individual dimensions of Social CRM or CRM performance, e.g., infrastructure (Chuang and Lin 2013, p. 277; Rapp et al. 2010, p. 1235), process (Chang et al. 2010, p. 854; Keramati et al. 2010, p. 1184), customer (Choudhury and Harrigan 2014, p. 176; Trainor et al. 2014, p. 1208), and organizational performance (Ernst et al. 2011, p. 304; Keramati et al. 2010, p. 1184), the study investigates all dimensions in one conceptual model. Thus, the dissertation contributes a structured approach for Social CRM performance (i.e., categorized performance measures). Additionally, the development of a Social CRM

performance measurement model, as recommend by Moore and Benbasat (1991), is the first evaluation of Social CRM performance with formative indicators. The new measurement model provides detailed insights for future investigations within this research field. Finally, the developed structural model extends the framework of Trainor et al. (2014, p. 1202)[18], based on the resource-based view and capability perspective (Day 1994; Eisenhardt and Martin 2000; Teece et al. 1997), in three different ways: (1) the resource dimension is evaluated through a company perspective (e.g., Social CRM technology use). (2) All dimensions are measured with formative indicators (even with higher-level constructs). (3) An additional performance dimension (company performance) is evaluated, in contrast to the previous investigation, by a customer performance dimension.

The study yields three practical implications. First, companies should assess their Social CRM tools in a substantial manner, based on a quantitative assessment approach. A valid application for the assessment of Social CRM tools is presented by Küpper, Wieneke, Wittkuhn, et al. (2015). The application is formulated for IT, marketing and communication decision makers in the acquisition phase of a tool. This enables the comparability of Social CRM tools, based on the resulting six specific dimensions and 18 Social CRM technology features. Thus, the application reveals an overview of the tools' possibilities and implemented features. Second, a company should design a KPI system, in order to assess its Social CRM activities and determine their objectives. The KPI system should focus on the four resulting dimensions of the Social CRM performance measurement model. In particular, each of the 23 investigated Social CRM performance measure should have different KPIs, in order to track even single Social CRM campaigns and report the business benefits to management. As a first step, a selection of KPIs (e.g., for every Social CRM performance measure, one KPI) should be evaluated and prioritized. A fixed target value (e.g., increasing customer interaction online for 10%) can be a criterion for assessing the performance of a Social CRM activity and should be part of a strategic objective. A measured KPI can reveal whether a Social CRM campaign is valuable for the company. Third, the findings of the developed structural model reveal that Social CRM technologies with a management feature are more valuable than other features. Thus, a company should implement a tool, for example, with a communication feature, so as to communicate with a group of customers across different social networks (corresponding tools: Engagor, Sproutsocial etc.). Additionally, a user permission management feature is also valuable, which de-

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[18] Linking Social CRM technology use to Social CRM performance.

fines roles and permission for different departments and activities (corresponding tools: MediaFunnel, Viralheat etc.).

To conclude, the investigation of Social CRM technology use, Social CRM performance and the developed structural model enable companies to increase the efficiency and effectiveness of their marketing, communication, as well as technology efforts, generating deeper insights into relevant relationships, in order to improve performance.

4.3 Critical Reflection

Three critical statements about the theoretical framing, research methodology and theoretical contribution reflect the dissertation. First, a theoretical framing of the research is described in Paper F. A previous investigation of appropriate theories would have provided evidence of the theoretical motivation, which could have led to higher-ranked or additional publications during the research phase. Second, the research was very methodologically oriented (i.e., measurement focus), which could be a weakness. Despite the fact that the measurement approach guides the overall research process at an early stage, it is also possible that additional relevant aspects have not been considered in detail. An example could be the intangible resource perspective (e.g., knowledge management), which is specifically mentioned as a limitation of the conceptual model in the last paper. Finally, the theoretical contribution is a major aspect of a research paper, which is not the focus of many articles (except Paper F). A previous understanding of clearly defined and stated theoretical contributions would have fostered articles with stronger results for the scientific community.

Part B: Papers of the Dissertation

Paper A – **Measuring the Success of Social CRM - First Approach and Future Research**

Table 8: Bibliographical metadata on Paper A

Attribute	Value
Title	Measuring the Success of Social CRM - First Approach and Future Research
Author(s)	Küpper, Torben [1] [1] University of St. Gallen, Müller-Friedberg-Strasse 8 9000 St. Gallen, Switzerland torben.kuepper@unisg.ch
Publication outlet	Proceedings of the 16th International Conference on Enterprise Information Systems
Publication type	Conference paper
Publication year	2014
Publication status	Published

Abstract

Web 2.0 and Social Media provide new opportunities for collaboration and value co-creation. Social Customer Relationship Management (CRM) addresses the opportunities and deals with the integration of Web 2.0 and Social Media within CRM. Social CRM has the potential to enable the, e.g., customer-to-customer support, which results in reducing companies' service costs. In order to measure the success (e.g., cost-savings) of Social CRM activities (e.g., customer-to-customer support) a Social CRM measurement model is indispensable and a prerequisite step for future research. At present, scholars conduct research on Social CRM measures and attempt to develop a Social CRM measurement model. This paper presents a systematic and rigorous literature review for the research topic – Social CRM measurement model. The major result reveals the lack of extant literature regarding the research topic. The findings disclose the need for a Social CRM measurement model on an evaluation based foundation.

A.1 Introduction

Social Media is a group of internet-based applications and technology foundations of Web 2.0, which change the approach of online communication towards a dialog among web users (Cheung et al. 2011; Lehmkuhl and Jung 2013). In this context, Social Media enables collaboration between companies and their customers. The customers content on the companies' Social Media platforms (e.g., Facebook, Twitter, Blogs, etc.) provide a two-sided value co-creation (Vargo et al. 2008). The value co-creation becomes apparent, for example, when customers articulate requirements (value for the company) or authentic feedbacks on products (value for other customers). Social Customer Relationship Management (CRM) addresses, among others, this opportunity and deals with the integration of Web 2.0 and Social Media within CRM (Lehmkuhl and Jung 2013).

The challenge for companies to implement a Social CRM approach documents the following facts: first, service demand on Social Media platforms increased by 26 % over the past 4 years (Chui et al. 2012). Second, an increasing number of companies apply a service oriented Social CRM approach (Band and Petouhoff 2010; Bernet PR 2013). Social CRM fosters customer engagement which in turn enables customer-to-customer support, thus reducing companies' service costs. When customers share positive user experiences, customer engagement can also lead to additional sales because indecisive potential customers may be encouraged to purchase.

Measuring Social CRM is essential to assess and monitor the success of Social CRM activities (Sarner and Sussin 2012; Sarner et al. 2011) and the first step to implement a Social CRM management cockpit. In practice, measuring Social CRM is perceived as one of the biggest challenges in the upcoming years (Bernet PR 2013). This view can be confirmed from a scholarly perspective: Reinhold et al. (2012) argue that Social CRM activities have to be analyzed and measured in order to capture the Social CRM success (Reinhold et al. 2012). This demands innovative approaches and measurement models.

According to Moore and Benbasat (1991), a prerequisite for measurement models are well-defined constructs (i.e. measures) with high degrees of validity and reliability. Therefore, the contribution of this article is to discover extant Social CRM measures and based on them to identify current Social CRM measurement models.

Despite this necessity Social CRM measurement models are sparsely addressed in extant literature. Authors focus on CRM measurement models (Chen et al. 2009;

Reinartz et al. 2004; Sedera and Wang 2009; Wang et al. 2009) and illustrate single Social CRM performance measures (Behravan and Sabbirrahman 2012; Farb 2011; Li et al. 2012; Vulic et al. 2012) without proving their applicability (i.e., without an evaluation based foundation). Literature reviews aim "to uncover the sources relevant to a topic under study," (vom Brocke et al. 2009) and make a contribution to the relevance and rigor of research (vom Brocke et al. 2009). This article provides a literature review regarding the research topic - Social CRM measurement model. Therefore, the research question (RQ) is stated as:

RQ: "*What is the current state of knowledge on a Social CRM measurement model?*"

To answer the question, the article is structured as follows: first, a rigorous and systematic **literature review** (section 2) is described. Second, a **literature analysis and synthesis** (section 3) is done in order to identify the research gap. Third, a **research agenda** (section 4) is derived. Finally, a short **conclusion** (section 5) is given.

A.2 Literature Review

A thorough and rigorous literature review is a prerequisite step for a research project and provides a solid theoretical foundation (Levy and Ellis 2006). This literature review is based on vom Brocke's framework for reviewing scholarly literature (vom Brocke et al. 2009). It comprises five steps being definition of review scope (section 2.1), conceptualization of topic (section 2.2), literature search, literature analysis and synthesis (section 3), and the derivation of a research agenda (section 4).

A.2.1 Definition of the Review Scope

The scope of a literature review can be characterized by a taxonomy (vom Brocke et al. 2009). Table 9 describes the scope of the literature review at hand using the taxonomy of Cooper (1988) which differentiates six categories, each having a different number of characteristics. The grey shades indicate the literature review's characteristics. The **focus** is on the identification of the *research outcomes* and the different *research methods*. The **goals** are *integration* and *central issues*. The **organization** of this literature review is related to the same abstract ideas (*conceptual*) and employing similar methods (*methodological*). The **perspective** can be categorized by the characteristic *neutral representation.* Due to the specific research topic, the **audience** is specialized scholars. Finally, the *representative* **coverage** is applied in the literature search (cf. Table 11) reducing the number of articles (hits) to a smaller number of net hits.

Table 9: Taxonomy of literature reviews based on Cooper (1988)

Categories	Characteristics			
Focus	research out-comes	research methods	theories	applications
Goal	integration	criticism		central issues
Organization	historical	conceptual		methodological
Perspective	neutral representation		espousal position	
Audience	specialized scholars	general scholars	practitioners	general public
Coverage	exhaustive	exhaustive and selective	representative	central / pivotal

A.2.2   Conceptualization of the Topic

A literature review has to "provide a working definition of key variable" (Webster and Watson 2002). Table 10 presents an overview of the research topic's **key variables** and their **definitions**: *Web 2.0*, *Social Media*, *CRM*, *Social CRM and Measurement*. Web 2.0 has to be considered, because it is frequently used as a synonym for Social Media (Lehmkuhl and Jung 2013). To conclude, a Social CRM measurement model is defined as follows: a model that measures Social CRM activities in order to assess and monitor the Social CRM success (e.g., sales, cost-savings, etc.) (Faase et al. 2011; Greenberg 2010; Soeini et al. 2011).

Table 10: Overview of Social CRM measurement model definitions

Key Variables	Definition	Author(s)
Web 2.0	"Web 2.0 is a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet - a more mature, distinctive medium characterized by user participation, openness, and network effects."	Musser and O'Reilly (2006)
	"[…] Web 2.0 is a set of dynamic principles and practices such as participation and engagement, collaboration and cooperation or transparency and openness."	Lehmkuhl and Jung (2013)
Social Media	"…a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content."	Kaplan and Haenlein (2010)
CRM	It is supported by both technology and process that is directed by strategy and is designed to improve business performance in an area of customer management.	Richards and Jones (2008)
	"CRM is a strategic approach that is concerned with creating improved shareholder value […] with customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other stakeholders."	Payne and Frow (2005)
Social CRM	"[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment."	Greenberg (2010)
	"Social CRM is about creating a two-way interaction between the customer and the firm. It is a CRM strategy that uses Web 2.0 services to encourage active customer engagement and involvement."	Faase et al. (2011)
Measure-ment	A CRM measurement is "[…] a subset of strategic research, following a research performed on categorizing researchers […] and therefore a mechanism that is supposed to measure CRM performance should notice to various perspective towards effective factors on CRM performance."	Soeini et al. (2011)

A.2.3   Literature Search

A systematic literature search was conducted in order to identify articles relevant to the research topic. Hence, this section follows the search sub-process proposed by vom Brocke et al. (2009) (cf. Figure 8) including (1) a *journal search*, followed by (2) a *database search*, and (3) a *keyword search*, and finally (4) a *forward and backward search*. The application of the search sub-process assures a rigorous, comprehensive and traceable literature search (vom Brocke et al. 2009).
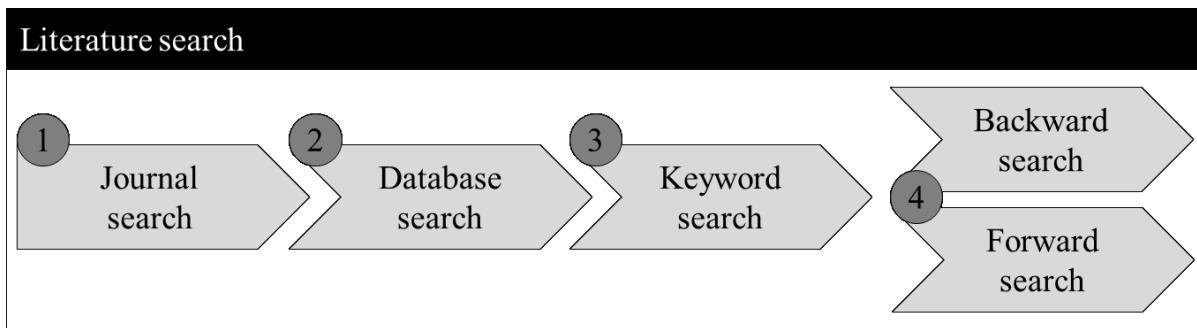
Figure 8: Literature search process

The (1) *journal search* is the first step in the literature search and it may include conference articles. "The major contributions are likely to be in the leading journals," (Webster and Watson 2002) as well as in high ranked, renowned conference proceedings (Rowley and Slack 2004).

Consequently, the scholarly databases, which allow a search of the leading journals and conference proceedings, are primarily queried and investigated (Webster and Watson 2002). According to vom Brocke et al. (2009) and the research topic at hand the relevant journals for the (1) *journal search* are derived from the disciplines Information Systems (IS) and Marketing. Within IS the top-tier journals are: Information Systems Research, MISQ and Journal of Information Technology. High quality Marketing journals are: Journal of Marketing, Journal of Marketing Research, Journal of the Academy of Marketing Science, as well as the Journal of Interactive Marketing. The selection of relevant IS conferences includes the International Conference on Information Systems (ICIS), the European Conference on Information Systems (ECIS), the Pacific Asia Conference on Information Systems (PACIS), as well as the American Conference on Information Systems (AMCIS). The selected high quality Marketing conferences are the American Marketing Association (AMA) and the European Marketing Academy (EMAC).

The (2) *database search* has to make sure that the previously identified journals (*journal search*) are covered. Therefore, the following databases have been queried: EBSCOhost, ProQuest, Emerald, ScienceDirect, Web of Science and the AIS World database (AISeL).

The third sub-process step, the (3) *keyword search*, is the core of the literature search. The applied keywords are precisely documented and sufficiently traceable for a repeatable investigation (vom Brocke et al. 2009). The keywords are derived from the key variables in Table 10 and, consequently, all abbreviations and similar terms are included. The databases have been queried using the following search phrases: *(a)* ("CRM" or "Customer Relationship Management") and ("Web 2.0" or "Social Media") and ("Measure" or "Measurement" or "Measuring"); *(b)* ("Social CRM" or "Social Customer Relationship Management") and ("Measure" or "Measurement" or "Measuring"); *(c)* ("CRM" or "Customer Relationship Management") and ("Measure" or "Measurement" or "Measuring"). An overview of the results for the *(3) keyword search* is given in Table 11 which illustrates the mentioned databases, the corresponding, completed search phrases, and presents the number of hits for the period 2003-2013.

Table 11: Result of the keyword search

Database	Search phrases			Net hits
	(a)	(b)	(c)	
EBSCOhost	**0** (7)	**0** (2)	**10** (46)	**10**
Emerald	**0** (2)	**0** (0)	**0** (2)	**0**
ProQuest	**1** (23)	**0** (18)	**5** (48)	**6**
ScienceDirect	**0** (0)	**0** (0)	**0** (2)	**0**
Web of Science	**1** (4)	**1** (2)	**1** (21)	**3**
AISeL	**0** (0)	**0** (0)	**4** (20)	**4**
Total Net hits				**23**

The number in brackets (hits) represents the number of articles found in the respective database using the specific search phrase. The queried attributes have been *title*, *keywords*, and *abstract*. The search has been extended to *all fields* if the first query produced no hits (e.g., the database Emerald produced no hits for the attributes *title*, *keywords* and *abstract* for the *(a)* search phrase; consequently the search was extended to

all fields and two hits were found). Furthermore, the initial search for search phrase *(c)* *in EBSCOhost* produced 974 hits. In order to reduce this result to a manageable number of articles we restricted the search to *title* and *keywords*, thus reducing the number to 46 hits. The inherent risk of omitting articles is later on mitigated by applying a *backward reference search*. The articles have been further evaluated by manually analyzing (reading) title, abstract and introduction and eliminating duplets. The number in bold represents the number of articles considered relevant in the latter step. The **total net hits** have been calculated as the sum of articles considering all search phrases. The (3) *keyword search* yields **23 articles** in total.

The last sub-process step is the (4) *forward and backward search* and aligns on the approach by Levy and Ellis (2006) *backward references search* and *forward references search*. A first-level *backward references search* focuses solely on the references of the net hit's articles from the keyword search (Levy and Ellis 2006). In sum, this search yields **2 additional articles**. This small number is due to the fact that the most identified articles were already found in *(3) keyword search*. The *forward references search* focuses on the articles that have been referenced in the net hit's articles. Therefore, each of the 23 net hits was analyzed using Google Scholar and the six databases from sub-process step (2) *database search* (Chen 2010). The *forward references search* yielded **14 additional articles** (cf. Table 12). This leads to a total of **39 relevant articles** that are used for further analysis.

Table 12: Forward reference search

Database	Net hits
Google Scholar	**3** (1376)
EBSCOhost	**0** (11)
Emerald	**0** (4)
ProQuest	**0** (5)
ScienceDirect	**4** (66)
Web of Science	**7** (289)
AISeL	**0** (10)
Total Net hits	**14**

A.3 Literature Analysis and Synthesis

The core of a literature review is to analyze and synthesize the relevant articles based on selected informative characteristics and to categorize them within a framework (Webster and Watson 2002).

A.3.1   General Findings

A first content analysis of the 39 relevant articles reveals five different categories of Social CRM measurement models, which partly cover the research question (RQ: "*What is the current state of knowledge on a Social CRM measurement model?*"). Table 13 depicts the **categories** found and presents the corresponding **characteristics**. The number in brackets represents the number of articles that use the respective characteristic as a descriptive means. All of the mentioned characteristics are mutually exclusive.

Table 13: Categories of Social CRM measurement models

Categories	Characteristics			
Measurement perspective	company-perspective (25)		customer-facing (14)	
Measurement object	company (27)	customer (6)	company & customer (2)	none (4)
Measurement type	indirect (9)		direct (30)	
Measurement scope	holistic (13)		partial (26)	
Measurement framework	business-to-business (1)	business-to-customer (34)	business-to-business & business-to-customer (4)	

Measurement perspective comprises two characteristics. The *customer-facing* perspective includes the building of a single view of a customer across all contact channels and the distribution of customer intelligence to all customer-facing functions (Reinartz et al. 2004). The *company-perspective* covers all company functions involved in CRM or Social CRM. The **measurement object** defines which unit of analysis (*company* and / or *customer*) is analyzed (Markus and Robey 1988). The *indirect* and *direct* measures are the characteristics of the category **measurement type**. A direct measure "focuses on the achievement level of CRM related processes and tries to find an answer for the question: how good are we doing in CRM process?" (Öztayşi,

Sezgin, et al. 2011), while indirect measurement models do not consider direct impact. The **measurement scope** comprises two characteristics (Chen et al. 2009). According to Öztayşi, Sezgin, et al. (2011), the "*partial* measurement models do not mention the area," i.e. they do not cover the whole Social CRM processes. Öztayşi, Sezgin, et al. (2011). While "the *holistic* models cover CRM process to some degree" Öztayşi, Sezgin, et al. (2011). The category **measurement framework** defines the context of analysis. A *business-to-business* (B2B) framework (e.g., Zablah et al. 2012) differs from a *business-to-customer* (B2C) framework (e.g., Reinartz et al. 2004), has different assumptions and initial positions (e.g., volumes of B2B transactions are much higher than the volume of B2C transactions; B2B focused companies have a lower number of sellers than B2C companies). The number of relevant articles (39) within the categories and corresponding characteristics distributes as follows: 25 articles cover the *company-perspective* and 27 articles measure the *company* as the measurement object. The *direct* measurement type is mentioned in 30 articles and the *partial* approach is the most common measurement scope with a count of 26. In addition, 34 articles engage with an underlying B2C framework. To conclude, the current state of Social CRM literature focuses on a *company-perspective*, which measures a *direct* impact on performance by *companies* within a *partial* scope and an underlying B2C framework.

A.3.2   Findings on a Framework

A second content analysis focuses on categorization within a framework in order to identify a research gap. Therefore, a primarily holistic framework was sought, which had a sufficient and diverse quantity of process dimensions to categorize all of the 39 relevant articles. Regarding these restrictions, the Payne and Frow (2005) framework which was identified during the *backward reference search*, was chosen for four reasons. First, the existing Social CRM literature mainly bases on a partial approach (cf. Table 13) and misses a quantitatively evaluated foundation (Lehmkuhl and Jung 2013). Second, the framework from Payne and Frow (2005) is a widely used success framework (e.g., on 20th April, 2013, a total amount of more than 700 citations were archived on Google Scholar) and therefore provides a high degree of external validity. Third, the *holistic* approach covers a wide range of CRM process dimensions, wherein each of the 38 articles (the 39 relevant articles include Payne and Frow (2005)) can be exclusively assigned. Finally, five out of seven A and A+ journal articles as well as 66% of the investigated 39 articles refer to this framework.

The corresponding framework includes five process dimensions: *(1) strategy development process*, *(2) value creation process*, *(3) multichannel integration process*, *(4) information management process*, and *(5) performance assessment process*. The *(1) strategy development process* has two different focus areas. On the one hand it describes an organization's business strategy and on the other hand a customer strategy. The *(2) value creation process* "transforms the outputs of the strategy development process into programs that both extract and deliver value" (Payne and Frow 2005). Furthermore, it involves a process of co-creation and segments the customers to maximize the lifetime value. The *(3) multichannel integration process* describes the most common appropriate combinations of channels, which has a highly positive interaction with customers. The *(4) information management process* "is concerned with the collection, collation, and the use of customer data the collection, collation, and the use of customer […] to generate customer insight […]" (Payne and Frow 2005). The *(5) performance assessment process* ensures that the organization's strategic aims are effected in an acceptable standard and that future improvements are derived from this process.

In order to answer the research question completely Table 14 reveals an overview of the investigated literature. The 38 relevant articles are described in the rows and the five process dimensions are shown in the columns, which are separated in a new Social CRM approach (*N. Ap.*) and a traditional CRM approach (*Tr. Ap.*). The **x** marks the articles' classification within the process dimensions of Payne and Frow (2005). According to the classification, no article was categorized in the *(1) strategy development process*, *(3) multichannel integration process* and *(4) information management process* for the *N. Ap*. Regarding these results only a few articles classify the *N. Ap*. for the *(2) value creation process* and *(5) performance assessment process*. The appropriate articles (Behravan and Sabbirrahman 2012; Farb 2011; Li et al. 2012; Vulic et al. 2012) use conceptual, as well as illustrative research methods (Alavi and Carlson 1992) without an evaluation based foundation. Furthermore, three out of the four *N. Ap*. articles, which are categorized to *(5) performance assessment process* focus especially on a *partial* measurement scope and measure through a *company-perspective* (Farb 2011; Li et al. 2012; Vulic et al. 2012). The remaining fourth paper (Behravan and Sabbirrahman 2012) provides a *customer-facing* measurement scope and describes an *indirect* measurement type.

All articles related to *N. Ap.* (4 articles) lack a *direct holistic* measurement approach with an evaluation based foundation. Regarding this finding a *Social CRM measurement model* is sparsely addressed in extant literature and thus a research gap is identified.

Table 14: Content analysis based on the framework by Payne and Frow

Articles	Strategy development process		Value creation process		Multi-channel integration process		Information management process		Performance assessment process	
	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.
Padmavathy et al., (2012)		x		x				x		x
Reinartz et al. (2004)		x		x				x		x
Öztayşi, Sezgin, et al. (2011)b		x		x						
Llamas-Alonso et al. (2009)		x		x		x		x		x
Jain et al. (2003)				x		x				x
Chen et al. (2009)										x
Ahearne et al. (2007)								x		x
Lindgreen et al. (2006)		x		x				x		x
Saccani et al. (2006)				x						x
Borle et al. (2008)				x						
Farb (2011)			x						x	
Kim and Kim (2009)		x		x				x		x
Shaw (1999)				x						x

(Left vertical label spanning all article rows: **Keyword search**)

Articles		Strategy development process		Value creation process		Multi-channel integration process		Information management process		Performance assessment process	
		N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.
	Zinnbauer and Eberl (2005)				x		x				
	Jafari (2012)		x				x				x
	Ryals et al. (2005)				x						
	Vulic et al. (2012)									x	
	Li et al. (2012)			x						x	
	Wang and Feng (2012)		x		x				x		
	Wang et al. (2009)		x		x		x		x		x
	O'Reilly and Dunne (2004)				x				x		x
	Sedera and Wang (2009)		x		x				x		x
	Shang and Lin (2005)		x								x
Forward search	Chang et al. (2010)		x						x		x
	(Öztayşi, Kaya et al. (2011)		x		x				x		x
	Rapp et al. (2010)		x		x				x		x
	Becker et al. (2009)		x						x		x
	Zablah et al. (2012)				x				x		
	Kim et al. (2012)				x						x

	Articles	Strategy development process		Value creation process		Multi-channel integration process		Information management process		Performance assessment process	
		N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.	N. Ap.	Tr. Ap.
	Coltman et al. (2011)		x						x		x
	Hillebrand et al. (2011)				x				x		x
	Gharibpoor et al. (2012)		x		x		x		x		x
	Soeini et al. (2011)		x		x				x		x
	Peltier et al. (2013)								x		x
	Shafia et al. (2011)		x		x				x		x
	Ernst et al. (2010)		x		x		x		x		x
	Behravan and Sabb. (2012)			x							
*	Kim et al. (2003)			x		x					x
Hits		**0**	20	**3**	26	**0**	8	**0**	22	**3**	28

* Backward search

A.4 Research Agenda

The results from the current literature review and the identified research gap confirm the need for extensive research regarding the research topic. The research agenda describes the process steps, according to (Peffers et al. 2007) for a Social CRM measurement model in order to develop and implement a Social CRM management cockpit.
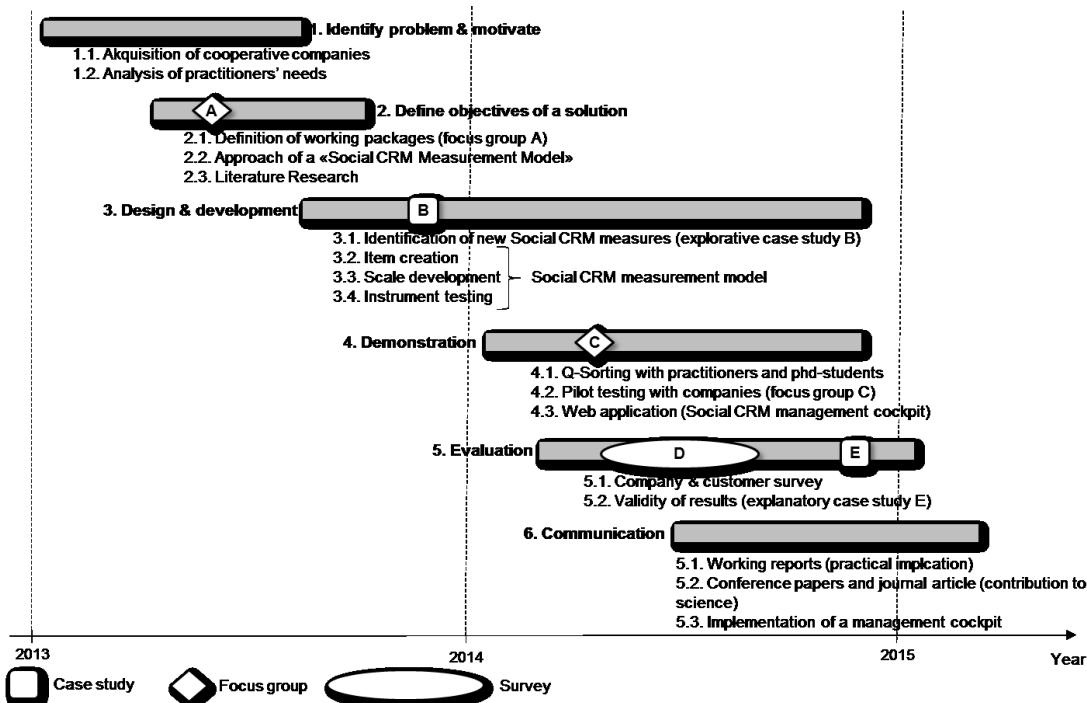
Figure 9: Research agenda

Figure 9 depicts the **research agenda** over time (axis of abscissae) and shows the six design science research process phases (marked in grey boxes), namely *(1) identify problem & motivate, (2) define objectives of a solution, (3) design & development, (4) demonstration, (5) evaluation and (6) communication*. The first process phase (*identify problem & motivate*) was done in 2013.

Practitioners' needs were recorded, processed and analysed, which were summarized in working reports. The current and future cooperation with Swiss and German companies (listed in "Deutscher Aktien Index" (DAX) and "Swiss Market Index" (SMI)) confirms the motivation and practical need for further research. This article is part of the second process phase (*define objectives of a solution*) and sheds light the scientific research gap. A practical solution was detained in a working package, which results from a focus group with the cooperative companies. The resulting Social CRM measurement model is determined by the end of 2015. Within the third phase (*design & development*) an explorative case study identifies new Social CRM measures. The new measures will be analyzed, categorized and results in a new Social CRM approach. Their measurement follows the three step approach (as mentioned in the introduction) according to Moore and Benbasat (1991): (1) item creation, (2) scale development, and (3) instrument testing. It is an iterative process with the phases four (*demonstration*) and five (*evaluation*). In the first step (item creation), new items will be developed for

the new Social CRM measures. Secondly (scale development), a content validation confirms the reliability of the items. For example, the demonstration of the scale development will be conducted through a Q-Sorting approach with practitioners and PhD-students (Petter et al. 2007). In the final step (instrument testing) the designed scale development will be demonstrated with different practitioner pilots and evaluated with a company and customer survey. The survey data will be analyzed with SmartPLS (a software program for structured equation models) according to Hair et al. (2013). The overall result of the third process phases will be a Social CRM measurement model, which is demonstrated on a prototype web application (a Social CRM management cockpit). The results will also be evaluated with additional explanatory case studies to falsify the practical need. The last process phase (*communication)* includes several working reports, conference papers, a journal article, and the implementation of a management cockpit with one of the cooperative companies.

A.5 Conclusion

The goal of this paper is to analyze the current literature for the research topic *Social CRM measurement model*. A systematic and rigorous literature review, according to vom Brocke et al. (2009), is conducted to derive a research gap and depicts further research project steps. Consequently, 39 relevant articles were analyzed, structured in five different categories (cf. Table 13) and synthesized within the framework of Payne and Frow (2005). The major finding reveals the lack of extant literature regarding the research topic and discloses the need for a *Social CRM measurement model* based on a direct holistic measurement approach.

Three apparent limitations restrict the results of the paper. First, the journals and conferences proceedings as well as the search phrases from the literature search process provide no sufficient guarantee that all relevant articles were taken into account. Secondly, the key variables are certainly not all-encompassing, even though they are derived from extant literature. Other and additional key variables lead to different articles and could influence the result. Finally, the mentioned framework (Payne and Frow 2005) is based on CRM literature and constitutes a possibly inappropriate framework for the research topic. The development of a new Social CRM framework covers the limitations for a thoroughly rigorous literature analysis and synthesis.

Paper B – **Features for Social CRM Technology - An Organizational Perspective**

Table 15: Bibliographical metadata on Paper B

Attribute	Value
Title	Features for Social CRM Technology - An Organizational Perspective
Author(s)	Küpper, Torben[1]; Jung, Reinhard[1]; Lehmkuhl, Tobias[1]; Wieneke, Alexander[1] [1] University of St. Gallen, Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland torben.kuepper@unisg.ch, reinhard.jung@unisg.ch, tobias.lehmkuhl@unisg.ch, alexander.wieneke@unisg.ch
Publication outlet	Proceedings of the 20th Americas Conference on Information Systems
Publication type	Conference paper
Publication year	2014
Publication status	Published

Abstract

The new paradigm Social Customer Relationship Management (Social CRM) deals with the integration of Social Media into CRM. Social CRM is a business strategy supported by technology platforms to provide mutually beneficial value for companies and their customers. In this context, many companies evaluate the implementation of Social CRM tools in order to achieve and analyze customer's content on their Social Media platforms. However, only little research has been conducted investigating technology features and their corresponding categories a Social CRM technology has to fulfill. To address this gap in research, the article presents the qualitative part of a two-stage multi-method approach comprising a literature review, a market study containing 40 vendor solutions and a first validation approach. In this effort, 18 Social CRM technology features and four categories of Social CRM technology are identified. A sorting procedure validates the corresponding classification and ensures a high degree of external validity.

B.1 Introduction

Social Customer Relationship Management (Social CRM) is emerging as a new paradigm (Askool and Nakata 2011) and defined as "[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment" (Greenberg 2010). Additionally, Faase et al. (2011) describes Social CRM as "[…] creating a two-way interaction between the customer and the firm. It is a CRM strategy that uses Web 2.0 services to encourage active customer engagement and involvement" (Faase et al. 2011). Consequently, Social CRM deals with the integration of Web 2.0 and Social Media into CRM (Lehmkuhl and Jung 2013) and enables collaboration which provides mutually beneficial value.

The exploitation of customer information is "expected to positively contribute to the performance outcomes" (Trainor 2012) and possibly enhance the company's business success. One viable option for companies to achieve and analyze "the customers' content on the companies' Social Media platforms …" (Küpper 2014a) is the implementation of Social CRM tools (e.g., Lithium, Jive, etc.). However, research and practice have encountered problems implementing Social CRM tools successfully. This is due to the fact that the features a Social CRM technology has to fulfill, have so far not been clearly structured and defined (Küpper 2014a). Within the context of this article, the Social CRM technology structure is introduced in terms of several categories. Each category (e.g., communication) covers a number of features (e.g., communication with a single consumer). The utilization of the different categories for Social CRM technology constitutes a measureable construct in order to assess the use of Social CRM technology from an organizational perspective.

Furthermore, companies striving for constant improvement of their Social CRM initiatives face the challenge of identifying and measuring the use of Social CRM technology constructs. Therefore, the identified features enable a structured assessment of the corresponding categories (Alvarez 2013; Sarner and Sussin 2012). Single features of vendor solutions are studied in the literature (e.g., Alt and Reinhold (2012), Reinhold and Alt (2013)), without a structured research approach which provides measurable constructs. Contributions in the current literature either lack robust, validated constructs for a measurement model which can evaluate the use of Social CRM technology or measure their use in terms of impacting on company

performance. Only the model of Zablah et al. (2012) has derived measurable constructs of technology use (e.g. "CRM interaction support tools") in the CRM context. Given the lack of research concerning the identification and validation of Social CRM technology features and corresponding categories, the paper aims to answer the following research question:

What are the features and corresponding categories for Social CRM technology?

This research approach has new practical and theoretical implications. Firstly, the measurement of Social CRM technology constructs reveals best practices of competitors and therefore uncovers potential areas of improvement for the company. Secondly, the identification of new features enhances the body of scientific knowledge. The empirical investigation of CRM technology constructs is redefined with the new Social CRM and therefore complete the artifact of Social CRM technology.

The remainder of the paper is structured as follows. First, the research design is introduced and reveals the focus of the paper. Second, the methodology is described, including the literature review and a market study. The subsequent section reveals the findings and results. Finally, the paper presents a conclusion, limitations and further research approaches.

B.2 Research Design

The overall research project is conducted in a two-stage multi-method approach (Creswell 2003; Venkatesh et al. 2013), which is described by Wang et al. (2009) and depicted in Figure 10. The research design aims at developing and measuring the use of Social CRM technology constructs with their corresponding features. It comprises (1) an explorative qualitative part and (2) a confirmatory quantitative part, the latter conducting a survey to confirm the aforementioned categorization of Social CRM technology features. Accordingly, the paper focuses on the first part of the overall research project, which is qualitative in nature and adheres to a conceptual approach. The explorative qualitative part consists of four steps.

First, a **literature review** of scholarly research articles is conducted to identify preliminary Social CRM technology features, based on conceptual arguments. Second, a **market study** reveals the practitioner's perspective through an investigation of current vendor solutions. The study validates the findings (in the literature review) and gathers additional Social CRM technology features. Third, these findings are **consolidated**, listed and **defined**. Next, the summarized Social CRM technology features are **classi-**

fied into different categories and a sorting procedure **validates** the classified categories on a quantitative foundation. Going beyond the first part of the overall research project, the next steps entail the development of formative survey instruments and the execution of a survey. The subsequent data analysis validates the formative scale and confirms the classification with a corresponding confirmatory factor analysis.
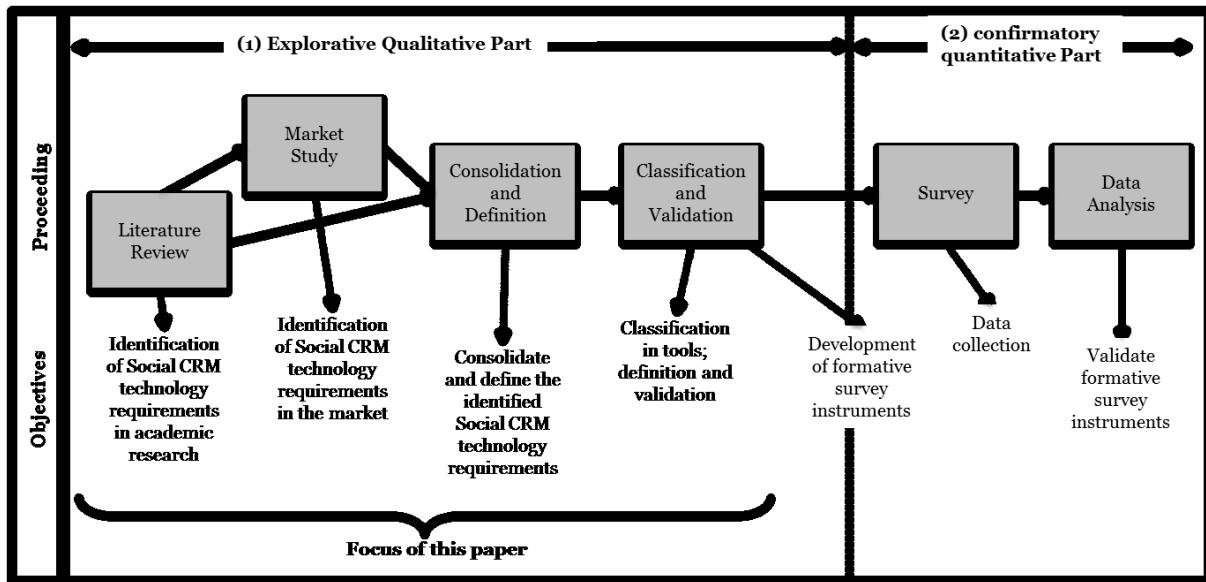
Figure 10: Research design

B.3   Methodology

This section describes the method entailing four sequential steps.

B.3.1   Literature Review

The literature review follows the argumentation of Küpper (2014b). That is, a rigorous and systematic literature review is a prerequisite for the explorative qualitative part (see Figure 10) and provides a solid theoretical foundation (Levy and Ellis 2006). According to vom Brocke's framework (vom Brocke et al. 2009), this literature review investigates only scholarly literature. The methodology comprises three process steps, being (1) definition of review scope, (2) conceptualization of topic, and (3) literature search.

The (1) scope of the literature review adopts the taxonomy of Cooper (1988), which differentiates between six categories (focus, goal, organization, perspective, audience, and coverage), each having a different number of characteristics. Only the characteristics (in italics) actually used are described as follows. The focus is on the identification of *research outcomes* in order to conform to the research question (mentioned above).

The goal is to identify the *central issues* from the corresponding articles. Given the focus of the paper (see Figure 10), the organization of the literature review conforms to a *conceptual* approach. The perspective can be categorized by the characteristic of *neutral representation*. Considering the specific research topic and the following market study, the audience is that of *specialized scholars*. Finally, the *representative* coverage is applied to the literature search.

Table 16: Overview of Social CRM technology definitions

Key Variables	Definition	Author(s)
Web 2.0	"Web 2.0 is a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet - a more mature, distinctive medium characterized by user participation, openness, and network effects."	Musser and O'Reilly (2006)
Social Media	"…a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content."	Kaplan and Haenlein (2010)
CRM	"CRM is a strategic approach that is concerned with creating improved shareholder value […] with customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other stakeholders."	Payne and Frow (2005)
Social CRM	"[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment."	Greenberg (2010)
Information Technology	"the study, design, development, application, implementation, support or management of computer-based information systems"	Allison (2001)

The conceptualization of the topic (2) must "provide a working definition of key variable[s]" (Webster and Watson 2002). Table 16 presents the **key variables** and their **definitions**, which are derived from the term Social CRM technology: Web 2.0 should be investigated additionally, due to the fact that it is frequently used as a synonym for Social Media (Lehmkuhl and Jung 2013).

The final process step (3) ensures a rigorous, comprehensive and traceable literature search in order to identify relevant articles. "The major contributions are likely to be in the leading journals," (Webster and Watson 2002) as well as in highly ranked, renowned double-blind conference proceedings (Rowley and Slack 2004). Leading journals and conferences emerge from the disciplines Information Systems (IS) and Marketing. Consequently, the scholarly databases (EBSCOhost, ProQuest, Emerald, ScienceDirect, Web of Science and the AIS World database) ensure that the previously identified disciplines are covered and subsequently investigated. Search phrases are derived from the key variables in Table 16, hence, a keyword search is applied. Consequently, all abbreviations and similar terms are included. The inherent risk of omitted articles is mitigated by applying a backward reference search as proposed by Levy and Ellis (2006). A first-level backward reference search focuses solely on references for the articles from the keyword search (Levy and Ellis 2006). The final literature search process is the forward reference search, which focuses on the articles that are referenced in the keyword search.

B.3.2   Market Study

Given the limited amount of scholarly literature in this specific field of Social CRM, an analysis of current vendor solutions in the market (market study) is chosen, in order to obtain a holistic overview and conduct a representative academic and practitioner search. The vendor solutions are listed during the literature review, which was completed with an additional search in Google with the search term: "Social CRM or Social Media and CRM Features or Requirements". If possible, a full demo version is downloaded and analyzed in detail. Otherwise, brochures and websites are intensively studied using the empirical research method to analyze information systems according to Alavi and Carlson (1992). A two-step approach is conducted to analyze the current vendor market. Firstly, the features that are substantiated and identified in the literature search are validated by the assignment of different vendor solutions. Secondly, the analysis of the vendor solutions is exploratory, in order to find additional features not mentioned in the current academic literature.

B.3.3   Consolidation and Definition

The study identifies a number of Social CRM technology features appearing in the literature and in a vendor solution analysis (market study). In the consolidation procedure, the results (all Social CRM technology features) are summarized in one list. Emerging issues and discrepancies (e.g., feature similarities) are reviewed and dis-

cussed in a focus group of PhD students to seek clarification. The result is a completed list with individual disjoint Social CRM technology features. The assignment of definitions for the appropriate features is an important phase in the overall research project. The definitions are derived from corresponding scholarly literature.

B.3.4   Classification and Validation

In organizing the Social CRM technology features into a classification system, this article refers to the definitions of Nickerson et al. (2012) and Bailey (1994). "In this paper, we use the term classification system for the abstract groupings or categories into which we can put objects …" (Nickerson et al. 2012). Bailey (1994) uses the term classification as the process of "ordering entities into groups or classes on the basis of similarity". Firstly, a classification system (aforementioned as Social CRM technology) is derived from the academic literature and describes a set of categories. Particularly, the article follows the "bottom-up" approach, proposed by Gable et al. (2008), which starts "with the data in hand, that is arranged into a logical classification" (Wang et al. 2009). Secondly, the classification rigorously follows the process according recommended by Bailey (1994). In an effort to test the quality of the results, a sorting procedure was conducted to validate the classification. According to Petter et al. (2007) and Walther et al. (2013), "sorting can be one of the best methods to assure content validity" (Walther et al. 2013). In sequentially independent rounds, PhD students in the discipline of IS and practitioners from corresponding operative departments classify the Social CRM technology features according to the categories. Participants are encouraged to carefully read the definitions of the Social CRM technology categories, and then classify the Social CRM technology features descriptions to the appropriate categories. After each round, inter-rater reliability, following Perreault and Leigh's formula (1989), is calculated in order to identify problem areas (e.g., in the definitions, wordings, etc.). The content validation stops when the inter-rater reliability falls within the generally-accepted range of 0.8 – 1.0. After each round, the problem areas are improved, re-written or even totally re-defined to improve understandability. Discrepancies are always reviewed, discussed and clarified with an independent focus group of researchers and one professor.

B.4 Findings and Results

B.4.1 Literature Review

Table 17: Identified Social CRM technology features from literature review

Social CRM technology features	1	2	3	4
Real time data monitoring	3	7	0	0
Capturing aggregate data	6	1	0	0
Capturing individual data	7	2	1	0
Analysis of content (real time)	2	4	1	0
Analysis of aggregate data	12	2	1	0
Analysis of individual data	8	3	2	0
Predictive modeling	0	1	1	0
Interconnected consumer network map	4	1	0	0
Sales activities	1	3	1	0
Reporting	1	1	0	0
CRM interface	3	6	2	0
Information Systems interface	4	3	1	0
Communication with a single consumer	2	1	1	0
Communication with a group of consumers	7	7	1	0
Communication with employees	6	2	0	0
Community management	1	2	1	0

The literature review (including keywords, forward and backward searches) yields to a total of 178 articles. After analyzing (reading) title, abstract and introduction and eliminating duplets 26 relevant articles are identified. All in all, the analysis of current academic literature reveals 16 Social CRM technology features, which were coded for each article, with a number ranging from 1 to 4. Number one is defined as "mentioned in another context (e.g., CRM context) or at an aggregate level of research" (e.g., 'capture data', instead of 'capture individual or aggregate data'). Two reveals the number of specified features which are "only mentioned in a Social CRM context". Three identifies the number of "mentioned and described" Social CRM technology features. Finally, number four sheds light on the features "defined as a measureable dimension of a construct". To conclude the findings, Table 17 contains a summary of the codings in columns, the Social CRM technology features in rows and the total

amount of matches within the table. Not one article specifically identifies Social CRM technology features or categorizes them within Social CRM technology, in order to derive measurable constructs for the utilization of Social CRM technology (defined as 4)[19]. The appropriate articles use conceptual approaches without an evaluation based foundation (a full list of investigated articles can be requested from the authors).

B.4.2   Market Study

Table 18: Validated Social CRM technology features from literature review

Social CRM technology features	Examples	# of vendor solutions hits
Real time data monitoring	Identify content through system keywords algorithm	13
Capturing aggregate data	About consumers, competitors, brand, etc.	36
Capturing individual data	About a single consumer, a new product release, etc.	8
Analysis of content (real time)	Recognition of questions, etc.	12
Analysis of aggregate data	Customers analysis, brand feedback analysis, etc.	36
Analysis of individual data	Personal behavior, etc.	8
Predictive modeling	Forecast consumer behavior, new trends, etc.	2
Interconnected consumer network map	Social Graphs, etc.	4
Sales activities	Advertising campaigns, etc.	4
Reporting	Summary statements on sales, activities	20
CRM interface	Integration of existing CRM systems	9
Information Systems interface	Interface to other IS, integration of other tools	11
Communication with a single consumer	Solve a single consumer issue, etc.	19

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[19] To clarify, the contribution of the article fulfills the ranking number 4 in Table 17.

Social CRM technology features	Examples	# of vendor solutions hits
Communication with a group of consumers	Newsletter, etc.	16
Communication with employees	Cross-functional communication	11
Community manage-ment	Management of social media accounts, communities	14

A total of 40 vendor solutions are investigated and studied intensively. The market study encompasses major established vendors like Oracle, Microsoft, Lithium, Jive, etc., and also new "start-up" companies like SproutSocial, Nimble, Batchbook, etc. so as to obtain a holistic and representative overview of the current vendor market (a full list of investigated vendors can be requested from the authors). The market study results in (1) the validation of 16 identified Social CRM technology features found in the literature and (2) identify two additional features. Table 18 depicts (1) the validated Social CRM technology features from the literature review and Table 19 presents the (2) identified new features from the market study. In both tables, the rows are labeled with the Social CRM technology features and the columns present a practical example, as well as a total number of coded vendor solutions. In part (1), the results from the literature review are coded as validated, if more than one vendor solution contains the corresponding features ("predictive modeling" has the fewest hits). Part (2) highlights the new features ("user permission management" and "engagement management") and their corresponding hits. This rigorous and systematic procedure, according to Wang et al. (2009) ensures a high objectivity of the results and provides a high degree of external validity (due to the academic and scientific approach) for the next consolidation procedure.

Table 19: Identification of new features from market study

Social CRM technology features	Examples	# of vendor solutions hits
User permission management	Allocation of employees' access system rights	4
Engagement man-agement	Applying engagement features like gamifica-tion, etc.	8

B.4.3   Consolidation and Definition

The consolidation procedure results in a list of 18 Social CRM technology features (16 from the literature review and two from the market study). Considering the various features, Table 20 additionally presents the definitions (a full list with corresponding references derived from scholarly literature can be requested from the authors).

Table 20: Definitions of Social CRM technology features

Social CRM technology features	Definitions
Real time data monitoring	Describes the search for different types of content (e.g., postings, comments, etc.) on social media (e.g., with the use of complex keyword combinations and/or adjusted algorithms). The data is processed in real time (e.g., with in-memory technologies), so that no data storage is necessary.
Capturing aggregate data	Describes the collection of information about the company, products, customers, etc. especially on a single social media accounts. The crawled data refers to a longer period (e.g., all posts and comments on Facebook for the last 6 months), is unstructured and stored in a database.
Capturing individual data	Describes the collection of information about a single person (and his/her interactions), a single event, a product, etc. especially on multiple company social media accounts. The crawled data refers to a longer period (e.g., all user posts), is unstructured and stored in a database.
Analysis of content (real time)	Information must be assessed and analyzed in real time regarding any content on social media (e.g., it helped set up an alarm system problems announced by consumers).
Analysis of aggregate data	The unstructured, captured data must be analyzed according to various criteria, e.g. "they are segmented by their use of social media and interactions over time," (Woodcock, Broomfield, et al. 2011) in order to identify trends, new product innovations, profitable and loyal consumers, etc.
Analysis of individual data	The unstructured, captured data about a single artifact must be analyzed. Through assimilating and understanding of the attitudes and behavior of individuals in their social environments, it is possible acquire a much deeper understanding of their likes and dislikes, their thinking, motivations and for some, their passions.
Predictive modeling	Forecasts customer behavior, trend development, etc. with predictive models. Social media data enables a richer propensity to respond modeling, based on analysis results.

Social CRM technology features	Definitions
Interconnected consumer network map	Creates a network map of customers and the relationships between them, based on the results. This identifies communication flows and interconnections between Social Web users, based on, e.g., similar interests, etc.
Sales activities	The utilization of knowledge, based on the analysis of results, supports product demands, increases sales and improves cross- and upselling (e.g., social advertising campaigns).
Reporting	It prepares company activities in the form of summary statements and reports on sales, user activities, their loyalty, changes in behavior and preferences based on the analysis of results.
CRM interface	The social media data is integrated into an existing CRM system in order to enhance a firm's social innovation capability.
Information Systems interface	The interface to integrating the Social CRM tool into operational platforms, other information systems, sales processes and existing technologies, and with other tools along the project lifecycle.
Communication with a single consumer	It is possible to interact personally with a consumer (one-to-one communication). A company can interact with the right people, with the right message, at the right time, through the right media to obtain the right outcome.
Communication with a group of consumers	It is about sharing information between a firm and its customers, as well as conveying offers and advertising campaigns to relevant customers. The company is able to communicate with an entire community of customers.
Communication with employees	Enables employees to communicate with each other cross-functionally throughout the organization. Team members and managers can access and aggregate information about the status of the project in an informal manner.
Community management	Manages company's social media accounts, communities and/or forums, such as process management, reputation, etc.
User permission management	Enables the allocation of rights, and facilitates relevant employees with access to updated and integrated customer information.
Engagement management	The dimension "Engagement Management" describes the use of different engagement features (e.g., gamification, support Facebook app creation, etc.).

B.4.4 Classification and Validation

After defining the Social CRM technology features, different categories of Social CRM technology (i.e. the classification system) are derived and defined from scholarly literature to capture all Social CRM technology aspects. In total, six different Social CRM technology categories are derived, which are conceptually heterogeneous between the categories, and homogeneous within categories. Secondly, the classification is conducted using the sorting procedure. In the first round, the participants reached an inter-rater reliability of 0.78. After the enhancements (as mentioned above), the second round was conducted with two new participants. The calculated inter-rater reliability clearly recommended the threshold of 0.8 with a ratio of 0.92. Table 21 depicts the categories of Social CRM technology (with definitions) and presents the corresponding classified Social CRM technology features.

Table 21: Definition and classification of Social CRM technology

Categories of Social CRM	Definitions	Social CRM technology features
Monitoring & Capturing	"Monitoring & Capturing" describes the real time data observation on social media (e.g., with in-memory technologies) and the collection of different social media data (e.g., with batch processing).	Real time data monitoring
		Capturing aggregate data
		Capturing individual data
Analysis	"Analysis" describes the assessment, segmentation and/or analysis of the monitored and captured social media data.	Analysis of content (real time)
		Analysis of aggregate data
		Analysis of individual data
Exploitation	"Exploitation" describes different activities, which are executed especially after the analysis phase.	Predictive modeling
		Interconnected consumer network map
		Sales activities
		Reporting
IS Integration	"IS Integration" describes transmission and integration functions with other information systems in the company (e.g., other IT-tools in different departments).	CRM interface
		Information Systems interface

Categories of Social CRM technology	Definitions	Social CRM technology features
Communication	"Communication" describes different types of external (B2C) and internal communication.	Communication with a single consumer
		Communication with a group of consumers
		Communication with employees
Management	"Management" describes the support and/or coordination of companywide management functions (e.g., moderation, process management).	Community management
		User permission management
		Engagement management

B.5 Conclusion, Limitations and Further Research

The article investigates scholarly literature and analyzes current vendor solutions in the market (using a market study) for Social CRM technology from an organizational perspective. The research design is explorative and qualitative in nature, and follows the research approach of Wang et al. (2009). Accordingly, 26 articles and 40 vendor solutions are investigated and analyzed. For providing an answer of the research question (*What are the* features *and corresponding categories for Social CRM technology?)* the article highlights three major contributions. First, it can be stated that Social CRM technology tools should include the following six categories, being monitoring and capturing, analysis, exploitation, IS integration, communication, and management. Second, the analysis of the academic literature and the vendor solutions reveals the identification of 18 Social CRM technology features. Third, a classification for the corresponding features into the six categories conducting a sorting procedure ensures external validity and completes the findings of the study.

Three potential limitations restrict the results of this research. First, the literature review may not have considered all relevant articles, due to the aforementioned representative coverage only. The second limitation is based on the 40 vendor solutions. The analysis does not provide an exhaustive search (e.g., "pipe"-software solutions, industry's specific solutions, etc. are excluded from the investigation), only a selected sample is considered. Finally, the derived classification system is based on a conceptual approach and lacks an explorative quantitative evaluation (e.g., explorative factor analysis, principal component analysis, etc.).

An approach for further research is described in Figure 10 and presents the development of formative survey instruments, a survey for collecting data and the subsequent data analysis. The validation of the formative survey instruments, as an objective of the data analysis, can be tested with a measurement model. In particular, the corresponding measurement model can be validated a posteriori with a quantitative measurement (e.g., confirmatory factor analysis), which should eradicate this final limitation. Extending beyond the presented research design and as mentioned in the introduction, it is possible to test the influence of Social CRM technology use on the company performance. This would extend the research of Zablah et al. (2012) from a CRM to a Social CRM context. Therefore, the rigorous and systematically derived results presented the article form the basis for further research projects.

B.6 Acknowledgements

Paper C – **Measuring Social CRM Performance: A Preliminary Measurement Model**

Table 22: Bibliographical metadata on Paper C

Attribute	Value
Title	Measuring Social CRM Performance: A Preliminary Measurement Model
Author(s)	Küpper, Torben[1]; Wieneke, Alexander[1]; Lehmkuhl, Tobias[1]; Jung, Reinhard[1]; Walther, Sebastian[2]; Eymann, Torsten[2] [1] University of St. Gallen, Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland [2] University of Bayreuth, Universitaetsstrasse 30, 95447 Bayreuth, Germany torben.kuepper@unisg.ch, alexander.wieneke@unisg.ch, tobias.lehmkuhl@unisg.ch, reinhard.jung@unisg.ch, s.walther@uni-bayreuth.de, eymann@uni-bayreuth.de
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Abstract

Social Customer Relationship Management (Social CRM) deals with the integration of Web 2.0 and Social Media into CRM. Social CRM is a business strategy supported by technology platforms in order to provide mutually beneficial value for both companies and customers. Gartner has identified Social CRM as one of the top innovation-triggered themes in 2013 (Alvarez 2013). In this context, a constraining factor regarding the implementation of Social CRM and the achievement of its objectives is the lack of an appropriate performance measurement model. Little research has been conducted on the relevant performance factors and Social CRM performance measurement models. To address this gap, the article presents the qualitative part of a two-stage multi-method approach. It comprises findings from a literature review, 15 semi-

structured interviews and a consolidation procedure. A preliminary Social CRM performance measurement model is developed containing four performance dimensions, 25 classified Social CRM performance factors and corresponding performance measures.

C.1 Introduction

Social media enables a new mode of communication and interaction between companies and their customers, which changes the existing approach to customer relationship management (CRM) (Baird and Parasnis 2013; Kumar and Reinartz 2012). Within CRM, companies have only one-directional communication (e.g., e-mail) and gather information on existing customers. Due to multidirectional communication through Social Media, companies now have additional access to public and private information (e.g., profiles, activities, interests etc.) of consumers (e.g., followers of a company's Social Media account) as well as their friends (Alt and Reinhold 2012 p. 287). The integration of Social Media into CRM is a rising phenomenon within Information System (IS) research, leading to a new scientific paradigm (Askool and Nakata 2011) and is referred to as Social Customer Relationship Management (Social CRM) (Lehmkuhl and Jung 2013). It is defined by Greenberg (2010) as "[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment" (Greenberg 2010).

Given that Social CRM is defined as a business strategy, its implementation requires holistic "transformational efforts among all organizational parts" (Lehmkuhl and Jung 2013). Particularly the implementation of Social CRM has the potential to provide mutually beneficial value for a company and its customers (Faase et al. 2011). Today, companies transform their business by applying new strategies, conducting organizational change, and purchasing new Social CRM technology to achieve competitive business benefits (Trainor et al. 2014). Yet, there is a lack of measurement instruments for Social CRM performance and the assessment of Social CRM activities, as well as the achievement of company objectives. Accordingly, the measurement of Social CRM performance constitutes a scientific as well as a practical challenge. "Achieving measurable returns on them is a continuing challenge" (Duncan et al. 2013). To address this challenge, the process of designing a performance measurement model proposed by Nelly et al. (1995), is applied as follows: (1) the identification of perfor-

mance factors, and (2) the classification into a performance measurement model (Neely et al. 1995).

A literature review conducted in 2013 by Küpper et al. (2014), analyzing IS and Marketing articles, reveals the current state of knowledge for Social CRM measurement models, and reveals the lack of clearly defined dimensions and factors as well as corresponding measures (e.g., key performance indicators - KPIs) (Küpper 2014a). The scientific literature focuses on CRM measurement models (e.g., Kim and Kim 2009; Wang et al. 2009) or identifies single performance factors for Social CRM (e.g., Trainor et al. 2014, (Trainor 2012)). An additionally conducted literature review in early 2014 focuses on Social CRM performance factors and their classification into different dimensions (Küpper, Jung, et al. 2014). The previous results provide the conceptual background for this article. Given the novelty of the topic and lack of research, the identification of Social CRM performance factors, which are relevant for business, complete the research gap. Particularly, the development of a rigorous and relevant preliminary Social CRM performance measurement model forms the objective of the article.[20]. The corresponding research question is as follows:

What are the appropriate performance factors for a preliminary Social CRM measurement model?

To achieve the stated objective, 15 semi-structured interviews are conducted and analyzed. The result shows that nine new Social CRM performance factors complete the preliminary Social CRM performance measurement model, including 25 performance factors in total, with examples of operational performance measures. Accordingly, the results constitute scientific as well as practical implications. The practical implications are given through the utilization of a control system for Social CRM activities within large, in order to achieve organizational objectives and track them over time. The rigorous of the results enables researchers to adopt and apply the measurement model for their research, which constitutes a significant contribution to the IS community.

The remainder of the paper is structured as follows. Firstly, the abovementioned conceptual background is introduced, includes the terminology relating to performance and the findings from previous literature in the context of Social CRM performance. Secondly, the research approach and methodology is described, referring to semi-

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[20] The word "preliminary" indicates a conceptual approach. An evaluation characterizes a validated performance measurement model (without „preliminary" up front).

structured interviews, as well as a consolidation and validation procedure. The subsequent section contains the findings and results. Finally, there are conclusions, limitations and suggestions for further research.

C.2 Conceptual Background

C.2.1   Terminology

Performance factors describe business activities regarding effectiveness, or the results to be achieved. It "can be expressed either in terms of the actual efficiency and/or effectiveness of an action, or in terms of the end result of that action" (Neely et al. 1995). Therefore, the performance factors answer the question of what is being measured.

The preliminary performance measurement model consists of different performance dimensions. Each performance dimension contains multiple performance factors. In the context of CRM, the preliminary performance measurement model enables "managers to anticipate how CRM will work and determine the way CRM will influence the achievement of the strategic firm's objectives" (Llamas-Alonso et al. 2009). Generally, the organization will be able to assess its activities and to achieve its objectives (Llamas-Alonso et al. 2009; Winer 2001). To sum up, the categorization of performance factors and the construction of a preliminary performance measurement model answer the following question: What dimensions are measured in order to assess and achieve the organization's objectives?

Performance measurement describes a process of quantification in order to determine the categories for the preliminary performance measurement model. "Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action." (Neely et al. 1995). Therefore, the performance measurement answers the following question: how it is measured?

C.2.2   Previous Findings

The previous literature review in early 2014, according to systematic research process by vom Brocke et al. (2009), was conducted to derive performance factors and to classify them within a preliminary performance measurement approach. The major findings are threefold (Küpper, Jung, et al. 2014). Firstly, the analysis of the literature identifies 16 Social CRM performance factors from 37 relevant IS and Marketing articles. Secondly, a performance measurement approach for Social CRM is adopted from

the CRM performance measurement model of Kim and Kim (2009). The model was selected after an in-depth analysis of different performance measurement models in literature. It is also a high ranked, widely used framework that provides a high degree of external validity. The corresponding measurement model adopts a company perspective and includes four performance dimensions, namely (1) infrastructure, (2) process, (3) customer, and (4) organizational performance. Thirdly, the Social CRM performance factors are classified into the abovementioned dimensions. Through a sorting procedure, the classification process with PhD students and practitioners is validated by a calculated inter-rater reliability ratio (Perreault and Leigh 1989) and therefore ensures a high degree of external validity. The findings are shown in Table 23 (a detailed list with all corresponding references can be requested from the authors).

Table 23: Previous findings (Küpper, Jung, et al. 2014)

Performance dimensions	Performance factors	Examples of references
Infrastructure	Social Media Monitoring	Alt and Reinhold (2012), Reinhold and Alt (2013), Woodcock, Broomfield, et al. (2011)
	Online Brand Communities	Alt and Reinhold (2012), Greenberg (2010), Reinhold and Alt (2013)
Process	Customer Insight	Alt and Reinhold (2012), Chen et al. (2009), Woodcock, Broomfield, et al. (2011)
	Customer Orientation	Rapp et al. (2010), Reinhold and Alt (2013; Tr 2012)
	Customer Interaction	Ernst et al. (2011), Palmatier et al. (2006), Woodcock, Broomfield, et al. (2011)
	Market and Customer Segmentation	Becker et al. (2009), Duńu and Hălmăjan (2011)
	Customer Co-Creation	Nadeem (2012), Nguyen and Mutum (2012), Trainor (2012)
Customer	Customer-Based Relationship Perf.	Kim and Kim (2009), Rapp et al. (2010), Trainor (2012)
	Customer Loyalty	Chen et al. (2009), Öztayşi, Kaya, et al. (2011), Rapp et al. (2010)
	Peer-to-Peer-Communication	Aral et al. (2013), Trainor et al. (2014), Woodcock, Green, et al. (2011)

Performance dimensions	Performance factors	Examples of references
Organizational Performance	Customer Lifetime Value	Borle et al. (2008), Weinberg and Berger (2011)
	Financial Benefits	(Rapp et al. 2010; Weinberg and Pehlivan 2011; Zablah et al. 2012)
	Brand Awareness	Dutot (2013), Harrigan et al. (2010), Nguyen and Mutum (2012)
	Organizational Optimization	Öztayşi, Kaya, et al. (2011), Tan et al. (2002), Trainor (2012)
	Competitive Advantage	Rapp et al. (2010), Trainor (2012), Woodcock, Broomfield, et al. (2011)
	New Product Performance	Ernst et al. (2011), Greenberg (2010), Trainor (2012)

C.3 Methodology

C.3.1 Research Approach
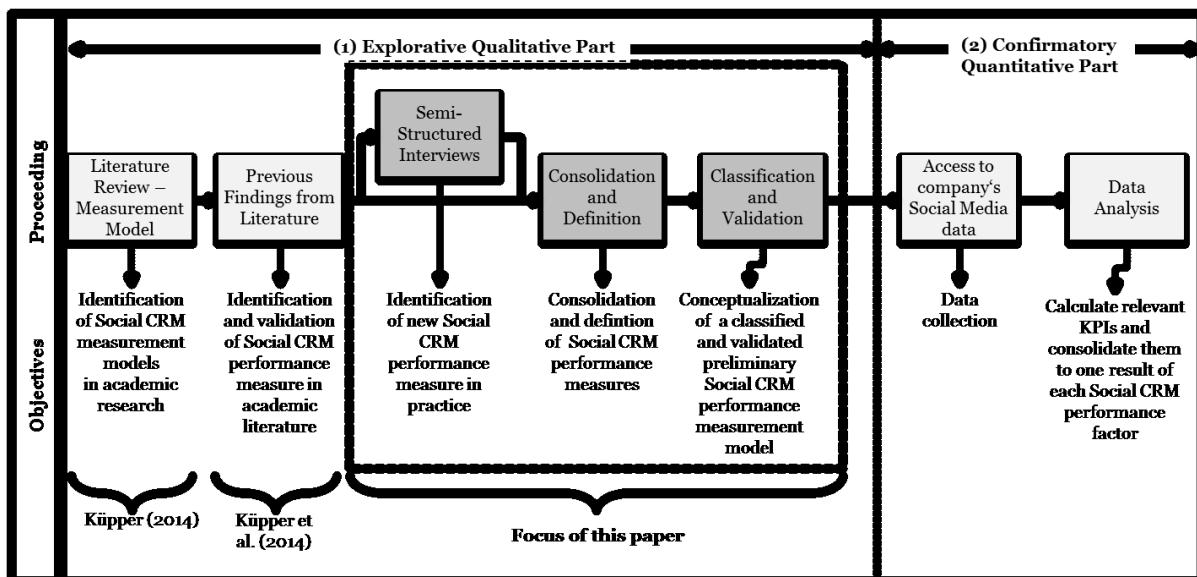
Figure 11: Overview of research approach

Figure 11 depicts the research design for the project, showing a two-stage multi-method approach (Creswell 2003; Venkatesh et al. 2013; Wang et al. 2009). The overall research design develops and measures Social CRM performance, comprising (1) an explorative qualitative part and (2) a confirmatory quantitative part. Particularly the initial step is a literature review, which identifies the research gap. Subsequently, the identified Social CRM performance factors from the academic literature constitute the

previous findings (cf. Table 23). Accordingly, the paper focuses on the following three steps featuring a preliminary Social CRM performance measurement model. The various steps are qualitative in nature, adhere to a conceptual approach and are structured as follows. First, semi-structured interviews with the respective IT, marketing and communication managers are conducted to validate the previous findings from the literature and to identify further relevant Social CRM performance factors in practice. Second, the findings are consolidated and separately described. Finally, the summarized Social CRM performance factors are classified into the four dimensions of the preliminary performance measurement model. A sorting procedure validates the classification.

C.3.2   Semi-structured Interviews

Given the sparse findings in the current Social CRM literature and especially the lack of practical insights into the identification of Social CRM performance factors, the authors collect data by means of semi-structured interviews. The article completes the initial approach of identifying Social CRM performance factors in order to develop a Social CRM measurement model at an organizational level. Considering the focus of the article, the first step describes the collection of data by means of semi-structured interviews (Yin 2009) with executive directors and managers in the IT, marketing and communication departments of several companies. Given the exploratory stage of research, conducting semi-structured interviews allows an in-depth discussion and yields new practical insights into the topic. This technique is useful because it "ensures that the researcher will obtain all information required, while at the same time gives the participant freedom to respond and illustrate concepts." (Paré 2004).

A structured criterion-based process, proposed by Paré (2004), is adopted in order to (1) design, (2) conduct, and (3) analyze semi-structured interviews in a systematic manner.

The (1) design of semi-structured interviews contains the description of six sub-stages, being: *research questions*, *prior theorizing*, *unit of analysis*, *number of interviews*, *selection of cases* and *interview protocol* (Paré 2004). The research question is introduced in Section 1[21]. The prior theorizing (Keil 1995) is described in Section 2 and is derived from previous findings. The abovementioned unit of analysis is at a specific

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[21] A corresponding interview guideline, containing the specific research questions, can be requested from the authors.

organizational level of research (Markus and Robey 1988). In total, 15 interviews within 12 companies are conducted over 4 months of intensive preliminary work. In one company, three practitioners and in another, two practitioners are interviewed respectively. As the implementation of Social CRM involves substantial effort (Lehmkuhl and Jung 2013), the emphasis in this study is on large enterprises. Table 24 provides an overview of industry segments and corresponding partners[22].

Table 24: Interview informants

Industry Segments	Interview Number [#], Organizational Role	Employees
Insurance	[#1] Product Manager	>50.000
	[#2] Head of Marketing	>50.000
	[#3] Head of IT	>50.000
	[#4] Project Manager	>3.000
	[#5] Head of Digital Innovation	>140.000
Aerospace	[#6] Marketing, Communication Manager	>8.000
	[#7] Manager of Digital Business	>110.000
	[#8] Online Sales Manager	>110.000
Telecommunication	[#9] Head of CRM	>20.000
	[#10] Manager of Customer Intelligence	>4.000
Transport & Logistic	[#11] PR and Social Media Manager	>300.000
	[#12] CRM Manager	>50.000
Production	[#13] Global New Media Manager	>20.000
Retail	[#14] CRM Manager	>50.000
Internet	[#15] Country Sales Manager	>3.000

On average, an interview has a duration of approximately 45-60 minutes. Each interview is recorded and transcribed, all in all producing over 150 pages of interview protocols.

The concepts applied in (2) conducting semi-structured interviews are *qualitative data collection methods*, *sampling strategies for interviews* and *theoretical saturation*. The sources for collecting data are exclusively semi-structured interviews. A snowball sampling strategy is applied, "this technique provides more convincing evidence of the credibility of developed theory, but it also allows answering the question, When can I

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[22] Due to signed non-disclosure agreements, the names of the companies are removed.

stop sampling?" (Paré 2004). Subsequently, theoretical saturation is reached after the 15th interview, with clearly recurring identifications of new Social CRM performance factors.

The (3) analysis of evidence is explained by Eisenhardt (1989), "qualitative data analysis is both the most difficult and the least codified part of the process." (Eisenhardt 1989). The applied concepts are *reflective remarks*, *coding of raw data* and *project reviews*. The interview transcripts are read by two independent PhD students and analyzed with a qualitative content analysis, following Mayring (2008), which enables the identification of unaddressed Social CRM performance factors. An important applied concept is that of reflective remarks, which "are ways of getting ideas down on paper and of using writing as a way to facilitate reflection and analytic insight." (Paré 2004). The reflective remarks are the initial impression of the recurring constructs and followed by a collapsed coding scheme (i.e., coding of raw data) to gain a higher level of abstraction. Finally, the analysis of semi-structured interviews is completed with the project review. The researcher presents interpretations and findings in order to confirm their credibility.

C.3.3 Consolidation and Definition

The study identifies a number of Social CRM performance factors in the semi-structured interviews. In the consolidation procedure, the findings are summarized in one list and compared to the results from previous findings. Emerging issues and discrepancies between individual performance factors (e.g., same meaning, different wording) are reviewed and discussed in a focus group of four PhD students from different universities, all of whom are researching Social CRM. The result is a completed list of previously identified as well as new Social CRM performance factors. Subsequently, the assignment of identified factors is an important step in the research project. The corresponding definitions are derived from the statements made by interviewees.

C.3.4 Classification and Validation

Classifying the new Social CRM performance factors into the performance dimensions of the appropriate performance measurement model of Kim and Kim (2009), we follow the top-down approach proposed by Wang et al. (2009), which "starts with a logical framework or model to categorize the responses" (Wang et al. 2009). Bailey (1994)

describes the term classification as the process of "ordering entities into groups or classes on the basis of similarity" (Bailey 1994). Accordingly, the classification rigorously follows the process recommended by Bailey (1994). In order to test the quality of the results, a sorting procedure classifies the findings. According to Petter et al. (2007) "sorting can be one of the best methods to assure content validity" (Petter et al. 2007). In successive rounds, researchers in the discipline of IS and practitioners from corresponding operative departments assign the Social CRM performance factors to the various performance dimensions. After each round, inter-rater reliability is calculated in order to identify problem areas, e.g. in the definitions, wording, etc. The discrepancies and problem areas are always reviewed and discussed to improve, re-write or even totally re-define the definitions, so as to improve understandability. The inter-rater reliability follows the formula by Perreault and Leigh (1989)[23]:

$$I = (((F/N) - (1/k))(k/(k - 1)))^{0.5} \qquad (1)$$

Compared to other inter-rater reliability indexes (e.g., Cohen's kappa), Perreault and Leigh have established that their index "… will usually be a more appropriate measure of reliability" (Perreault and Leigh 1989). The sorting procedure stops when the inter-rater reliability falls within the generally-accepted range of $0.8 - 1.0$ (Perreault and Leigh 1989).

C.4 Findings and Results

C.4.1 Semi-structured Interviews

The analysis of semi-structured interviews yields 24 Social CRM performance factors. Table 25 depicts all identified Social CRM performance factors in a first column and the total number of hits in a second column.

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[23] I = inter-rater reliability, F = number of judgments on which the judges agree, N = total number of judgments, k = number of coded categories

Table 25: Findings from semi-structured interviews

Identified Social CRM performance factors		Number of hits	Identified Social CRM performance factors		Number of hits
From previous findings	Customer Interaction	15	New findings	Personalized Product and Services	14
	Customer Insights	14		Cultural Readiness	12
	Customer Co-Creation	14		IT Readiness	10
	Customer-Based Relationship Performance	14		Multi-Channel and Ubiquity Interaction	10
	Social Media Monitoring	13		Customer Competence	10
	Online Brand Communities	13		Social Selling	10
	Customer Orientation	13		Sensibility	9
	Customer Loyalty	11		Target-Oriented Customer Events	8
	Organizational Optimization	11		Customer Convenience	6
	Brand Awareness	10			
	Competitive Advantage	9			
	Peer-to-Peer-Communication	8			
	Financial Benefits	5			
	New Product Performance	5			
	Market and Customer Segmentation	3			

The most commonly named performance factor with a total number of 15 references are efficient and effective "customer interaction". "The potential benefit of Social CRM is that we can interact in a more customer-oriented way and respond with a high frequency of contact with low-threshold contact recordings" [interview #5]. Some experts emphasize that through the two-way interaction and potential for customer participation, the "communication between customers and the company can be on the same level" [interview #14]. Despite the fewest hits for an efficient "market and cus-

tomer segmentation", the appropriate performance factor "facilitates another form of customer segmentation" [interview #13]. New customer information and the corresponding analytical tools permit "the identification of new patterns, which can lead to new profitable customer segments" [interview #13].

C.4.2   Consolidation and Definition

Table 26: New findings from semi-structured interviews

Performance factors	Explanations	References
Cultural Readiness	Describes a holistic organizational culture, i.e., the willingness of the employee to share information and to understand as well as accept the company's Social CRM strategy.	"It is useless to implement such technologies or to run processes if you are not willing, in principle, to take the customers to the company through social media." [Interview #4] "We make the employees aware for months that Social CRM is coming and that this leads to change." [Interview #11]
Sensibility	It explains the attentiveness and the regardfulness of actions within the use of customer data and agenda setting, e.g., to respect privacy customer.	The focus on new forms of customer relationship management is seen as an emotionally driven issue that requires very careful and sensitive action [Interview 9], [Interview #13]. This applies to the handling of customer data [Interview #12] and the content of communication.
IT Readiness	It describes the readiness of the IT by means of implemented functions and tools in order to integrate Social Media data with CRM master data in one application.	"Ideally, all information which converges from different social media is stored with the respective customer profile." [Interview #12] "In the future, we just need to combine the two data streams, which are the summation of various social media channels of a user, and then link them to our master data." [Interview #6]

Performance factors	Explanations	References
Personalized Product and Services	Through Social CRM, a customer receives personalized products and services that satisfies individual needs or solves the relevant problems.	In this sense, experts point out that one of the goals of Social CRM is that customers perceive products and services as personalized [Interview #12], which is advantageous for them [Interview #1]. A customer demands, "truly individual solutions tailored to his needs." [Interview #9]
Target-Oriented Customer Events	Customer events are designed more efficiently and effectively through Social CRM as well as used in a more target-oriented manner.	All communication channels are used to indicate and advertise brand themes or specific topics to the customers. [Interview #4] [Interview #7] Customer events could be designed differently, entailing the continuation of physical events to increase their scope. [Interview #1]
Multi-Channel and Ubiquity Interaction	The company is able to ubiquitously communicate or interact with customers through multiple Social Media channels.	We must "be available on the information and communication channels which are used by the customers, as contact and discussion partners." [Interview #3]. This means ensuring adequate availability, "so 24 hours, 7 days a week." [Interview #13]
Customer Convenience	A customer's access to a variety of support options facilitates a much easier, more efficient and effective interaction with the company.	Customers can directly contact a company or its representatives through social media. [Interview #11] In addition, social media has a wide range of functions, especially regarding interaction, "You don't need to fill out any form. You just post your statement to the representatives. Anyway, you are on that platform, so it is easily done." [Interview #5]

Performance factors	Explanations	References
Customer Competence	In the Social CRM context, customer competence describes the influence of the customer on the company's activities, due to transparent communication (e.g., option leader, specialists on a specific topic).	Through social media and within the context of customer relationship management, the customer has a much greater influence on the company's activities. [Interview #13] "This is a change in control and power." [Interview #13] "Today, the transparency effect has changed. This results in less company power and more customer power." [Interview #5]
Social Selling	Service and product sales are supported by recommendations (e.g., by postings, comments etc.) and/or from other customers or friends.	Apparently, evaluations and recommendations from customers on the Internet, of a company's products and services instill more confidence among consumers than other product and service comparisons. [Interview #3] Product information must be launched on social media in such a way that web-users "discuss the meaning and purpose of our products, when and which product is suitable and make specific recommendations." [Interview #4]

The identified 24 Social CRM performance factor are compared to previous findings. The interviewers also stated 15 of 16 Social CRM performance factors from the literature review. Concerning the abovementioned statements from practitioners all 15 performance factors can be considered as valid and confirmed in practice.

The remaining 9 performance factors ("New findings" in Table 25) are identified exclusively from the semi-structured interviews in the Social CRM context. Concerning the various Social CRM performance factors, Table 26 presents the definitions of the remaining performance factors. The abovementioned 15 factors are defined by Küpper, Jung, et al. (2014).

A clear described definition is indispensible for the present research procedure. The precise differentiation of findings structures the body of knowledge and facilitates common principles for ongoing discussions with researcher and practitioners.

C.4.3   Classification and Validation

After defining the new 9 Social CRM performance factors, the classification process is conducted using the sorting procedure. The article focuses on the classification and validation of new results from the semi-structured interviews into the four categories mentioned above in the previous findings (infrastructure, process, customer, organizational performance). In the first round, the inter-rater reliability is calculated with a ratio of 0.56. Conducting a revision and subsequently assigning two new participants, the index yielded a result of 0.68. After additional enhancements in the third round, the inter-rater reliability exceeds the threshold with a ratio of 0.88. Due to some revision in wordings, a final round ensures the classification quality. The calculated ratio yields a value of 0.95, which ensures high reliability. Table 27 depicts the four dimensions of the preliminary Social CRM performance measurement model, presents all corresponding performance factors (i.e., findings from the previous literature review and results from the semi-structured interviews) and depicts exemplary operational performance measures for each performance factor. The operational performance measures are added, because two experts stated that the main task is to identify and operationalize the crucial performance factors, thus demonstrating that Social CRM adds value to the company [interview #4], [interview #12].

The identified performance factor "customer lifetime value" from the previous findings (cf. Table 23) was adopted, despite the lack of mention in the interviews with experts. The evaluation of the net present value of individual customers facilitates an accurate analysis of Social CRM activities. To conclude, the performance factor is a significant part of "organizational performance" and therefore, part of the preliminary Social CRM performance measurement model.

Table 27: Preliminary Social CRM performance measurement model

Performance dimensions	Performance factors	Examples of operational performance measures
Infrastructure	Social Media Monitoring	# of Social CRM supporting tools
	Online Brand Communities	Quality of engagement level
	Cultural Readiness	# of employees trained in Web 2.0 principles
	IT Readiness	Degree of integrated data level

Performance dimensions	Performance factors	Examples of operational performance measures
Process	Customer Insight	Social customer knowledge creation
	Customer Orientation	# of customer oriented activities
	Customer Interaction	# of solved problems
	Market and Cust. Seg.	# of new identified segments (social media)
	Customer Co-Creation	# of received product or service ideas
	Sensibility	# of sensitive post (complaint) per all posts
	Target-Oriented Cust. Events	# of events triggered by social media data
	Multi-Channel & Ubiq. Int.	Distribution of interaction across social media
	Social Selling	# of comments from other users by a purchase
Customer	Customer-Based Relationship Performance	Score on customers satisfaction (survey), views with positive sentiment
	Customer Loyalty	Net promoter score (NPS)
	Peer-to-Peer-Communication	Quantity/frequency of posts etc., amount of brand related user generated content
	Customer Convenience	Score of convenience ratio (survey)
	Customer Competence	# of opinion leader on social media
	Pers. Product and Services	Level of personal service quality (survey)
Organizational Performance	Customer Lifetime Value	Customer social media value
	Financial Benefits	Revenue of sold products or services
	Brand Awareness	Likes per social media platform
	Organizational Optimization	# of successful process changes,
	Competitive Advantage	Score of benchmark system (survey)
	New Product Performance	# of innovative new products

New findings

Table 27 shows the overall results of the investigation. The resulting preliminary So-
cial CRM performance measurement model makes a contribution to the IS research
field and has new practical implications. The ongoing research activities (development
of an evaluated Social CRM performance measurement model) facilitate the use of
validated measures for Social CRM performance. The rigor of the results enables re-
searchers to adopt and apply the measurement process for their research, which consti-
tutes a significant contribution. In practice, a corresponding performance measurement
model facilitates the assessment of Social CRM activities. Four major practical impli-
cations can be stated. First, it facilitates a control system for Social CRM activities,
e.g., which social campaign was good and which one was ineffective. Second, it ena-
bles the justification of current and future Social CRM engagements in a company,
e.g., spending money for new investments. Third, the operational measurement allows
new benchmark systems to compare their Social CRM efforts with competitors. Final-
ly, companies have to reach clearly defined objectives, e.g. 10 percent more customer
interaction on social media. Therefore, a Social CRM performance measurement mod-
el helps to achieve organizational objectives and track them over time (Sarner and
Sussin 2012; Sarner et al. 2011).

C.5 Conclusion, Limitations and Future Research

The article analyzes 15 semi-structured interviews for Social CRM performance fac-
tors, with an organizational perspective. The ultimate objective is to develop a prelim-
inary Social CRM performance measurement model. The study is explorative and fol-
lows the multi-method two-stage research design presented in Figure 11. Considering
the main research question (*What are the appropriate performance factors for a pre-
liminary Social CRM measurement model?)*, three major findings are presented. First,
the analysis of semi-structured interviews reveals 24 Social CRM performance factors
in total, including 9 explorative new findings. Second, a classification for the corre-
sponding new Social CRM performance factors into four dimensions, through a sort-
ing procedure, ensures high external validity. Third, the developed preliminary Social
CRM performance measurement model (including exemplary performance measures)
is presented in Table 27, containing 25 performance factors, and completes the find-
ings of the study.

Two limitations impact on the results. First, the selected 12 companies are possibly
quite heterogeneous, which could bias the results from the interviewees. Second, pos-

sible hierarchical relationships (i.e., differentiations between preconditions and outcomes) are not derived in this article.

Future research directions are presented in Figure 11. According to the procedure proposed by Kim and Kim (2009), the preliminary Social CRM performance measurement model is evaluated on a data set by means of analyzing data across large companies in Germany, Switzerland and Austria (i.e., calculating operational performance measures for the performance factors based on social media data). The exemplary mentioned operational performance measures are advanced, redefined or new measures are developed, in order to identify multiple operational performance measures for each performance factor. A mathematical model is developed to summarize the data for each Social CRM performance factor and performance dimension (i.e., an equation for each performance factor has to developed with different weights for each of the corresponding operational performance measures).

Paper D – **Technology Use of Social Media within Customer Relationship Management: An Organizational Perspective**

Table 28: Bibliographical metadata on Paper D

Attribute	Value
Title	Technology Use of Social Media within Customer Relationship Management: An Organizational Perspective
Author(s)	Küpper, Torben[1]; Lehmkuhl, Tobias[1]; Wieneke, Alexander[1]; Jung, Reinhard[1] [1] University of St. Gallen, Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland torben.kuepper@unisg.ch, tobias.lehmkuhl@unisg.ch, alexander.wieneke@unisg.ch, reinhard.jung@unisg.ch
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Abstract

This paper presents a formative measurement model for Social CRM technology use from an organizational perspective. The current literature measures the usage of Social Media technologies (e.g., Facebook) and single Social CRM features (e.g., information generation) with reflective indicators, but does not provide a structured approach, which would generate deeper insights into this research field (i.e., formative indicators). To address this gap, the article develops and evaluates formative indicators and corresponding constructs of Social CRM technology use, following the procedure of Moore and Benbasat (1991). To evaluate the impact of single indicators on their corresponding constructs, data is analyzed through confirmatory factor analysis with a survey sample of 122 marketing, communication and IT decision makers. The results show that four constructs measure the use of Social CRM technology (Processing,

Communication, IS Integration, and Management), which constitutes the formative measurement model. The construct Processing highlights a second-order construct, including Monitoring and Capturing, Analysis, and Exploitation as first-order constructs. Generally, the developed formative indicators and corresponding constructs generate deeper insights through a control system within a company, so as to increase the efficiency and effectiveness of their marketing, communication as well as IT efforts.

D.1 Introduction

Social media enables a new mode of communication and interaction between companies and their customers, which changes the existing approach to customer relationship management (CRM) (Baird and Parasnis 2013; Kumar and Reinartz 2012). Within CRM, companies have one-directional communication (e.g., e-mail newsletter) and gather information on existing customers. Due to multidirectional communication through Social Media, companies now have additional access to public and private information (e.g., profiles, activities, interests etc.) of consumers (e.g., followers of a company's social media account) as well as their friends (Alt and Reinhold 2012). The integration of Social Media into CRM is a rising phenomenon, leading to a new scientific paradigm (Askool and Nakata 2011) and is referred to Social Customer Relationship Management (Social CRM) (Lehmkuhl and Jung 2013). Social CRM is defined by Greenberg (2010) as "[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment". Gartner has identified Social CRM as one of the top innovation-triggered themes in the next five to seven years (Alvarez 2013).

The exploitation of customer information is "expected to positively contribute to the performance outcomes" (Trainor 2012) and possibly enhance the company's business success. One viable option for companies to achieve and analyze "the customers content on the companies' Social Media platforms …" (Küpper 2014a) is the implementation of tools. Vendors like Lithium, Jive, Salesforce offer various tools (e.g., Hearsay Social, Radian6, ExactTarget) for Social CRM. However, research and practice have revealed problems in implementing Social CRM tools successfully. This is due to the fact that companies striving for constant improvement of their Social CRM initiatives

face the challenge of identifying and measuring the use of Social CRM technology constructs (Alvarez 2013; Küpper, Lehmkuhl, et al. 2014; Sarner and Sussin 2012).

A literature review in 2014 by Küpper et al. (2014), focuses on the current state of knowledge for Social CRM technology features, and reveals the lack of clearly defined and robust constructs and corresponding formative indicators. Previous works conceptualize individual features of Social CRM technologies (Alt and Reinhold 2012; Reinhold and Alt 2013; Woodcock, Broomfield, et al. 2011), evaluate single Social CRM features (e.g., information generation) and measure the usage of Social Media technologies (e.g., Facebook) with reflective indicators (Trainor et al. 2014). Yet, there is a lack of empirical research, because no article measures the use of Social CRM technology from an organizational perspective, i.e. measures the use of tool features (e.g., capture, analysis, exploitation), and develops formative indicators. Concerning the level of attention in current literature, formative indicators (in contrast to reflective indicators) provide detailed insights on specific resources and are "desired as potential leverage points for managerial change" (Mathieson et al. 2001). Given the novelty of the topic, the objective of the present article is to develop and evaluate formative indicators and corresponding constructs for Social CRM technology use, so that a formative measurement model emerges. This first academic evaluation in the context yields new and detailed insights into the technology use of an organization. The corresponding research question (RQ) is as follows:

RQ: What are the formative indicators and corresponding constructs for evaluating a formative measurement model for Social CRM technology use?

To achieve the stated objective, the article follows the process of designing a measurement model, as proposed by Moore and Benbasat (1991). Accordingly, data from a survey sample of 122 marketing, communication and IT decision makers are analyzed through a confirmatory factor analysis, as in Diamantopoulos and Winklhofer (2001), so as to answer the RQ. The results show that four constructs measure the use of Social CRM technology (Processing, Communication, IS Integration, and Management). The practical implications entail a control system for the management of a company, aimed at increasing the efficiency and effectiveness of their marketing, communication and IT efforts. The rigorous methodology enables researchers to adopt and apply the measurement model for their own research, which constitutes a significant contribution.

The remainder of the paper is structured as follows. Section 2 presents the conceptual background and explains the different dimensions of Social CRM technology use. Afterwards, the research design is described. The measurement model with formative indicators is explained in section 4 (results) within six sub-sections (4.1 – 4.6). Section 5 contains the findings from the evaluation and highlights the resulting constructs. Next, a detailed summary of research and practical implications is given. Finally, the paper concludes, covers the limitations, and outlines further research approaches.

D.2   Conceptual Background

Information technology use and information systems (IS) use are widely and vividly discussed topics in the discipline of IS research. For example, Bhattacherjee (2001) and Bhattacherjee et al. (2008) focus on the construct "information technology continuance intention". Venkatesh et al. (2003) discuss the user acceptance of IT, including the construct "use behavior". All recommended constructs ("use behavior" and "information technology continuance intention") are measured with reflective indicators. Due to the fact that this article contributes the first measurement model for Social CRM technology use, the focus is on formative indicators and corresponding constructs, in order to investigate the specific research topic in detail. The CRM and Social Media literature constitute a validated conceptual background, which additionally need to be considered.

Within the CRM as well as Social Media context, information technology use is a central component, and also measured by a single reflective construct. An abstract of IS, CRM and Social Media literature is presented in Table 29. Only Zablah et al. (2012) develop and evaluate formative indicators and corresponding constructs for CRM technology use, which serve as a theoretical framing for the article. CRM technology is understood as the automation of internal (e.g., among employees like sales-, Marketing people) and external information processing (e.g., communication with consumers through IT such as e-mail, supported by systems for customer analytics). Therefore, CRM technology is defined as "the degree to which firms use supporting information technology to manage customer relationships" (Reinartz et al. 2004). Due to the lack of a Social CRM technology use definition in the literature, the authors adopt a previous definition for CRM within the Social CRM context. Thus, Social CRM technology use is defined as the degree to which Social CRM technology features are being utilized to support organizational work.

Table 29: Overview of the literature

References	Level of Analysis		Typ of Construct		Topic of the "Use" Construct			
	Ind.	Org.	Refl.	Form.	IS	CRM	SM	Social CRM
Bhattacherjee (2001)	x		x		x			
Bhattacherjee et al. (2008)	x		x		x			
Venkatesh et al. (2003)	x		x		x			
Jayachandran et al. (2005)		x	x			x		
Chang et al. (2010)		x	x			x		
Zablah et al. (2012)		x		x		x		
Trainor et al. (2014)		x	x				x	
Abdul-Muhmin (2012)		x	x			x		
Rodriguez et al. (2012)		x	x				x	
Sum	4	6	9	1	4	4	2	0
This article		**x**		**x**				**x**
Ind. = Individual; Org. = Organizational; Refl. = Reflective; Form. = Formative; SM = Social Media								

According to Zablah et al. (2012), a necessary first step in assessing the degree of a company's Social CRM technology use is to identify corresponding Social CRM technology features. Therefore, a previous explorative qualitative investigation conceptualizes and validates the current literature and consists of two steps (Wang et al. 2009). First, a literature review, according to vom Brocke et al. (2009), is conducted to identify preliminary Social CRM technology features, based on conceptual arguments. Second, a market study reveals the practitioner perspective through an investigation of current tools from different vendors[24]. The analysis of 26 relevant academic publications reveals 16 Social CRM technology features. The market study (with a total number of 40 investigated vendors) results in (1) the validation of 16 identified Social CRM technology features found in the literature and (2) the identification of two additional features. Thus, a total of 18 Social CRM technology features are identi-

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[24] The vendor solutions are listed by conducting a Google search, using the search term: "Social CRM or Social Media and CRM Features or Requirements". If possible, a full demo version is downloaded and analyzed in detail. Otherwise, brochures and websites are intensively studied using the research method to analyze information systems, according to Alavi and Carlson (1992).

fied (Küpper, Lehmkuhl, et al. 2014). Table 30 presents the previous findings, illustrating examples of references and the number of hits from the market study.

Additionally, the previous findings are challenged by four semi-structured interviews with practitioners being concerned with Social CRM in stock listed companies. The interviewees were asked to name all implemented Social CRM tools from different vendors, as well as the corresponding features. The number of simultaneously used Social CRM tools from different vendors ranges from one to eight. All implemented features of the tools used by the companies conform to one of the 18 identified Social CRM technology features. Consequently, the previous findings do indeed constitute a scientific necessity and satisfy real practical needs.

Table 30: Previous findings (Küpper, Lehmkuhl, et al. 2014)

Social CRM technology features	Example of references	# of hits
Real time data monitoring	Acker et al. (2010), Reinhold and Alt (2013), Reinhold and Alt (2012)	13
Capturing aggregate data	Olszak and Bartuś (2013), Yawised et al. (2013)	36
Capturing individual data	Woodcock et al. (2011), Trainor (2012), Olszak and Bartuś (2013)	8
Analysis of content (real time)	Reinhold and Alt (2013), Alt and Reinhold (2012), Reinhold and Alt (2012)	12
Analysis of aggregate data	Storey et al. (2010), Yawised et al. (2013), Woodcock et al. (2011)	36
Analysis of individual data	Nadeem (2012), Yawised et al. (2013), Alt and Reinhold (2012)	8
Predictive modelling	Woodcock et al. (2011), Olszak and Bartuś (2013)	2
Intercon. consumer network map	Trainor 2012, Askool and Nakata (2011)	4
Sales activities	Acker et al. (2010), Sarner et al. (2012), Woodcock et al. (2011)	4
Reporting	Olszak and Bartuś (2013)	20
CRM interface	Trainor (2012), Yawised et al. (2013), Askool and Nakata (2011)	9

Social CRM technology features	Example of references	# of hits
Information Systems interface	Acker et al. (2010), Trainor et al. (2014), Storey et al. (2010)	11
Com.with a single consumer	Woodcock et al. (2011), Trainor (2012), Bahrami et al. (2012)	19
Com. with a group of consumers	Trainor et al. (2014), Nadeem (2012), Alt and Reinhold (2012)	16
Com. with employees	Yawised et al. (2013), Sarner et al. (2012), Panahi et al. (2013)	11
Community management	Reinhold and Alt (2013), Alt and Reinhold (2012), Reinhold and Alt (2012)	14
User permission management	-	4
Engagement management	-	8

D.3 Research Design

A formative measurement model is designed in a three-stage approach (I. Item Creation, II. Scale Development and III. Indicator Testing), including six sub-stages, as proposed by Moore and Benbasat (1991), see Figure 12. The first sub-stage "Conceptualization Content Specification" focuses on a literature review, in order to identify context-specific constructs and corresponding sub-dimensions. Second, items (i.e., indicators) are deduced to operationalize the previous constructs. Third, a Q-sorting procedure assesses the "Access Content Validity" with the calculation of an inter-rater reliability index (or related indexes, e.g., Cronbach's Alpha). Within the next two sub-stages ("Pretest and Refinement" and "Field Test"), a questionnaire is developed and tested in order to obtain some initial feedback, for instance on problematic areas (definitions, wording), length of the survey etc. Especially for the unique characteristics of formative indicators and the corresponding constructs, the final sub-stage "Evaluation of Formative Measurement Model and Re-Specification" is based on the process of formative measurements from Cenfetelli and Bassellier (2009). The applied confirmatory factor analysis is designed according to Diamantopoulos and Winklhofer (2001), and focuses on a statistical evaluation of formative indicators and the corresponding constructs.

<table>
<tr><td>I. Item Creation</td><td>II. Scale Development</td><td>III. Indicator Testing</td></tr>
<tr><td>1. Conceptualization Content Specification</td><td>3. Access Content Validity</td><td>4. Pretest and Refinement</td></tr>
<tr><td>2. Item Generation</td><td></td><td>5. Field Test</td></tr>
<tr><td colspan="2">Before Data Collection</td><td>6. Evaluation of Formative Measurement Model and Re-Specificaiton</td></tr>
</table>
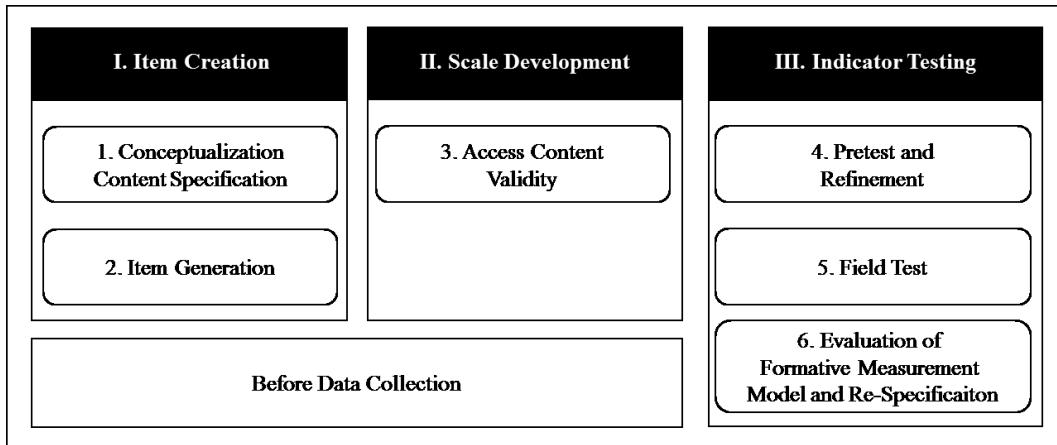
Figure 12: Process of designing a measurement model (Walther et al. 2013)

D.4 Results

D.4.1 Conceptualization and Content Specification

Diamantopoulos and Winklhofer (2001) explicitly mentioned the importance of appropriate content specification for the development and evaluation of formative measurement models. Content conceptualization refers to the formative constructs and is the first step in the development process, "because under formative measurement the latent variable is determined by its indicators rather than vice versa, content specification is inextricably linked with indicator specification" (Diamantopoulos and Winklhofer 2001). The second step refers to the assignment of descriptions for the appropriate constructs, as an important aspect of generating and developing formative constructs. A misinterpretation of the description would neglect sub-dimensions of the constructs. This leads to the last issue in the conceptual specification, because neglecting sub-dimensions would bias the statistical evaluation in the ongoing process of designing a measurement model (MacKenzie et al. 2005).

These three steps – (1) identify relevant sub-dimensions (i.e., Social CRM technology features), (2) develop construct (i.e., dimensions) and (3) define corresponding descriptions in a Social CRM context – are conducted as follows. First, the Social CRM technology features have already been identified (see Section 2). Second, they are classified into different dimensions (Bailey 1994; Nickerson et al. 2012). A sorting procedure validates the classified dimensions on a quantitative foundation, operationalized by PhD students in the discipline of IS and Social Media, as well as CRM prac-

titioners[25]. Finally, the dimensions are described within a Social CRM context. Table 31 presents the six developed and defined constructs of Social CRM technology use, the 18 Social CRM technology features as well as a corresponding example. Examples are provided so as to avoid misinterpretations of the Social CRM technology features.

Table 31: Previous findings (Küpper, Lehmkuhl, et al. 2014)

Constructs of Social CRM technology (dimensions)	Descriptions	Social CRM technology features (sub-dimensions)	Examples	ID
Monitoring and Capturing	"Monitoring & Capturing" describes the real time data observation on social media (e.g., with in-memory technologies) and the collection of different social media data (e.g., with batch processing).	Real time data monitoring	Identify content through system keywords algorithm	CA1
		Capturing aggregate data	About consumers, competitors, brand	CA2
		Capturing individual data	About a single consumer, a new product release	CA3
Analysis	"Analysis" describes the assessment, segmentation and/or analysis of the monitored and captured social media data.	Analysis of content (real time)	Recognition of consumers questions	AN1
		Analysis of aggregate data	Customer analysis, brand feedback analysis	AN2
		Analysis of individual data	Personal behavior	AN3

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[25] For the classification an inter-rater reliability ratio is calculated, according to Perreault and Leigh's formula (1989), to check for external validity.

Constructs of Social CRM technology (dimensions)	Descriptions	Social CRM technology features (sub-dimensions)	Examples	ID
Exploitation	"Exploitation" describes different activities, which are executed especially after the analysis phase.	Predictive modelling	Forecast consumer beh.	EX1
		Interconnected consumer network map	Social Graphs	EX2
		Sales activities	Advertising campaigns	EX3
		Reporting	Summary statements	EX4
IS Integration	"IS Integration" describes transmission and integration functions with other information systems in the company.	CRM interface	Integration of existing CRM systems	IN1
		Information Systems interface	Interface with other IS, integration of other tools	IN2
Communication	"Communication" describes different types of external (B2C) and internal communication.	Communication with a single consumer	Solving a single consumer issue	CO1
		Communication with a group of consumers	Newsletter for an event	CO2
		Communication with employees	Cross-functional communication	CO3
Management	"Management" describes the support and/or coordination of company-wide management functions (e.g., moderation).	Community management	Management of social accounts, communities	MA1
		User permission management	Allocation of employees' access system rights	MA2
		Engagement management	Applying engagement features e.g. gamification	MA3

D.4.2   Item Generation

After conceptualizing the constructs, for all identified sub-dimensions, an item (or indicator) is generated. The formative indicators "must cover the entire scope of the latent variable as described under the content specification" (Diamantopoulos and

Winklhofer 2001). Due to the fact that this is a new research topic, all indicators are newly created to fit into the Social CRM context. In particular, the construct of *Monitoring and Capturing* contains three formative indicators, *Analysis* three, *Exploitation* four, *IS Integration* two, *Communication* three and *Management* three. For each construct, two additional reflective indicators are generated for the ongoing process. This yields a total of 30 indicators (18 formative and 12 reflective indicators).

D.4.3   Assessing Content Validity

"Content validity assesses whether the researcher has chosen measures that appropriately capture the full domain of the construct" (Petter et al. 2007). This present study therefore follows Petter et al. (2007), who stated that content validity for reflective indicators does not have strong validatory power, but is essential for using formative indicators and corresponding constructs. Therefore, the Q-sorting procedure, which is "one of the best methods to assess content validity" (Petter et al. 2007), focuses only on the 18 considered formative indicators. In sequentially independent rounds, a master student, two PhD students in the discipline of IS and one practitioner from the corresponding operative departments classify the indicators according to the constructs. Participants are encouraged to carefully read the definitions of the constructs, and then classify the formative indicators within the appropriate construct. After each round, inter-rater reliability, following Perreault and Leigh's formula (1989), raw agreement and a placement ratio are calculated in order to identify problem areas (e.g., in the definitions, wording etc.). The content validation stops when all ratios fall within the generally accepted range of 0.8 – 1.0. After each round, the problems are eradicated, and the indicators are re-written or even totally re-defined to improve understandability. Discrepancies are always reviewed, discussed and clarified with an independent focus group of researchers and one professor. In the first round, the participants reached an average inter-rater reliability of 0.90, and a raw agreement average of 0.88, which are very reliable results, but two out of six placement ratios were below 0.8. The second round was conducted with four new participants in the same manner. The calculated average inter-rater reliability was 0.96, the raw agreement average was calculated at 0.96 and all placement ratios were above the recommended threshold of 0.8. Table 32 provides an overview of the Q-sorting results.

Table 32: Results of the Q-sorting procedure

Inter-rater Reliability			Raw Agreement			Placement Ratio		
Jud-ges	Round 1	Round 2	Jud-ges	Round 1	Round 2	Constructs	Round 1	Round 2
A+B	0.87	0.98	A+B	0.88	0.98	Monitoring & Capturing	0.90	1.00
A+C	0.94	0.94	A+C	0.87	0.95			
A+D	0.87	0.98	A+D	0.83	0.98	Analysis	1.00	1.00
B+C	0.94	0.92	B+C	0.92	0.93	Exploitation	0.71	0.83
B+D	0.89	0.96	B+D	0.88	0.97	IS integration	1.00	1.00
C+D	0.89	0.96	C+D	0.87	0.93	Communica-tion	1.00	1.00
Aver-age	**0.90**	**0.96**	**Aver-age**	**0.88**	**0.96**	Management	0.70	0.95

D.4.4   Pre-test, Refinement and Field Test

The pre-test is the initial step in launching the final survey. The questionnaire was distributed online to PhD students and some selected practitioners in the appropriate Social CRM context. After some cuts to the introduction, the practitioners stated that screen-out questions are required. These are questions which ensure that only suitable people complete the questionnaire. Therefore, two initial questions were generated. First, "does your company use Social Media?" and second, "do you work in a related department or have a decision function enabling you to answer questions about the use of Social CRM technologies?" If participants answered one of these questions with "no", they were excluded from the online survey. Despite the subsequently lower number of participants, the screen-out questions ensured a high degree of validity and increase the quality of the data.

Subsequently, a field test, with n=10 completes, was conducted in order to check technical aspects and calculate the time that practitioners need to fill out the questionnaire. No technical complaints or issues with the length of the questionnaire arose, so that the final survey was launched. The indicators were measured using a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). As mentioned above, the final questionnaire was only available online and distributed over Social Media (e.g., Xing, LinkedIn, Twitter), focusing on marketing, communication and IT decision makers. After three months, a total of n=126 responds completed the survey. Due to four incomplete questionnaires (i.e., missing data), data from n=122 participants was captured and serve as the basis for further analysis. Due to the distribution via Social

Media channels, no response rate could be calculated. Table 33 presents an overview of the sample characteristics for industry sector, position within the company and number of employees.

Table 33: Overview of the sample characteristics

Industry	Percent	# of Employees	Percent	Position in Company	Percent
Manufacturing & Utility	31.1%	< 10	16.4%	Executives	31.1%
Others	18.0%	10 – 49	17.2%	Team Manager	18.9%
Information & Communication	14.8%	50 – 499	28.7%	Specialized Manager	17.2%
Finance & Insurance	13.9%	500 – 999	9.8%	Department Manager	15.5%
Public Administration & Logistics	11.5%	1000 – 5000	16.4%	Division Manager	14.8%
Health Industry	10.7%	> 5000	11.5%	Others	2.5%

D.4.5   Evaluation of Formative Measurement Model

In order to develop and evaluate formative indicators and the corresponding constructs for Social CRM technology use, the process from Cenfetelli and Bassellier (2009) is applied, which contains a confirmatory factor analysis, according to Diamantopoulos and Winklhofer (2001), as mentioned above. Using the PLS (partial least square) method to analyze the data, SmartPLS (Ringle et al. 2005) and SPSS 21 are the appropriate tools (Hair et al. 2013). For assessing the quality of a newly introduced formative measurement model, the development process of formatively measured indicators and corresponding constructs follows the five steps, recommended by Cenfetelli and Bassellier (2009), namely (1) multicollinearity testing, (2) the effect of the number of indicators and non-significant weights, (3) co-occurrence of negative and positive indicator weights, (4) absolute versus relative indicator contributions and (5) nomological network effects. To rigorously follow the five-step process, each of the six constructs is modeled as an exogenous latent variable with formative indicators, and as an endogenous latent variable with reflective indicators. According to Söllner et al. (2012), "the reflective measurement serves as a benchmark for assessing the quality of the formative measurement model."

Table 34: Test statistics for the reflective measurement model

Reflective indicators		AVE	Com. R.	Load	p-val.
Monitoring & Capturing		0.932	0.965		
CA4**	In general, the company utilizes a tool to monitor and capture social media data.			0.965	< 0.01
CA5**	Overall, the utilization of monitoring and social media data capturing with a tool is high.			0.964	< 0.01
Analysis		0.921	0.960		
AN4**	In general, the company utilizes a tool to assess and analyze social media data.			0.963	< 0.01
AN5**	Overall, the utilization of analysis and assessment of social media data with a tool is high.			0.957	< 0.01
Exploitation		0.901	0.952		
EX5**	In general, the company utilizes the tool for the exploitation of activities after a social media data analysis.			0.953	< 0.01
EX6**	Overall, the utilization of exploited activities after the analysis of social media data is high.			0.954	< 0.01
IS Integration		0.931	0.964		
IN3**	In general, the company utilizes integrated interfaces within a tool with other information systems.			0.965	< 0.01
IN4**	Overall, the utilization of integrated interfaces within a tool with other information systems is high.			0.964	< 0.01
Communication		0.884	0.939		
CO4**	In general, the company utilizes a tool for all forms of communication.			0.940	< 0.01
CO5**	Overall, the utilization of communication within a tool is high.			0.941	< 0.01
Management		0.899	0.947		
MA4**	In general, the company utilizes a tool for supporting and coordinating companywide management functions.			0.948	< 0.01
MA5**	Overall, the utilization of support and coordination of companywide management functions within a tool is high.			0.949	< 0.01
AVE = Average Variance Extracted; Com. R. = Composite Reliability; Load. = Loadings; p-val. = p-value; **p-value < 0.05; *p-value < 0.10					

Concerning the benchmark measures, the quality assessment of the reflective measurement model is the initial approach for the ongoing process. The average variance extracted (AVE), composite reliability value and indicator loading with the respective p-values constitute the quality criteria (Chin 1998). Due to their being six separate reflective constructs, no cross-loadings or co-linearity test have to be considered. Table 34 presents an overview of the calculated values. All recommended thresholds from Söllner et al. (2012) are exceeded. The evaluation of the AVEs (0.932, 0.921, 0.901, 0.931, 0.884 and 0.899) are higher than 0.5, composite reliability values are above the threshold of 0.6, and all indicator loadings yield results above 0.7 and are highly significant with a p-value lower than 0.01. To conclude, the reflective measurement model is appropriate as a benchmark for evaluating the formative measurement model.

After the fulfillment of the quality criteria for the reflective measurement model, the focus is on evaluating the formative measurement model, concerning the abovementioned five-step process. Table 35 provides an overview of the test statistics. For the first step (multicollinearity testing), the variance inflation factors (VIFs) are calculated using SPSS 21. All VIFs are below the maximum threshold of 5.0, recommended by Hair et al. (2011) and Walther et al. (2013). The results reveal that multicollinearity is not an issue in this study. Steps two to five are based on calculated values and test statistics using SmartPLS with settings of 120 cases and 1000 samples. The second step (the effect of the number of indicators and non-significant weights) deals with the problem that a large number of indicators cause non-significant weights. The results show that indicator MA2 (management construct) is not significant and indicator EX3 (exploitation construct) has a high p-value, which has to be considered in the following steps. Cenfetelli and Bassellier (2009) also state that this should not be misinterpreted concerning any irrelevance of the indicators. The only interpretation of this issue is that some indicators have a lower influence than others. In order to gain a deeper understanding, this study continues with step three (co-occurrence of negative and positive indicators weights). No indicator has negative weights; therefore this is not an issue in the study. Step four (absolute versus relative indicator contributions) needs to be conducted by reporting the respective loadings. The loadings indicate that an "indicator could have only a small formative impact on the construct (shown by a low weight), but it still could be an important part of the construct (shown by a high loading)" (Söllner et al. 2012). Concerning the issues with MA2 and EX3, which show non-significant or low weights, but very high loadings, no further improvements (dropping indicators or re-specify constructs) have to be performed (Cenfetelli and

Bassellier 2009; Hair et al. 2011, 2013). To complete the process, the final step (nomological network effects) can proceed by conducting a redundancy analysis. This compares the formative construct with the reflective constructs, which explains the variance in the reflective measured benchmark (reflective construct) and assesses the validity of the formative construct. Due to the fact of having six constructs, six redundancy analyses have to be considered, resulting in values of 0.893 for *Monitoring and Capturing*, 0.896 for *Analysis*, 0.892 for *Exploitation*, 0.904 for *IS Integration*, 0.882 for *Communication* and 0.859 for *Management*. All results are above the recommended threshold of 0.8 (Chin 1998) and are highly significant with a p-value lower than 0.01 (the values from the redundancy analysis are excluded from Table 35). To conclude, all formative indicators and corresponding constructs are suitable for evaluating Social CRM technology use.

Table 35: Test statistics for the formative measurement model

Formative Indicators		VIF	Weights	p-val.	Load
The company utilizes a tool to …					
Monitoring & Capturing					
CA1**	search different type of content (e.g., posts, tweets, etc.) on social media platforms in real time.	1.846	0.171	0.020	0.766
CA2**	collect and store unstructured social media information about the company, product, etc. on their social media platform(s).	2.385	0.535	< 0.01	0.952
CA3**	collect and store unstructured information about a single artifact (e.g., consumer, a single event, etc.) on social media platform(s).	1.540	0.397	< 0.01	0.906
Analysis					
AN1**	analyze and assess different types of content in real time.	2.577	0.213	0.028	0.884
AN2**	analyze unstructured social media data across various criteria (e.g., consumer segmentation) in order to identify general trends, profitable consumers, etc.	2.299	0.476	< 0.01	0.941
AN3**	analyze unstructured data for a single consumer (e.g., a high potential influencer) across one (or more) social media platforms.	2.300	0.397	< 0.01	0.915

Formative Indicators		VIF	Weights	p-val.	Load
Exploitation					
EX1**	forecast consumer behavior, and trends, etc.	2.477	0.264	0.017	0.872
EX2*	create a network map of consumers and their relationships.	3.207	0.177	0.100	0.878
EX3**	support product purchase, increase sales, cross- and upselling (e.g., social advertising campaigns).	3.519	0.325	0.011	0.918
EX4**	prepare summary statements, evaluate user activity and their loyalty, and/or prepare management reports.	4.341	0.331	0.038	0.953
IS Integration					
IN1**	integrate the social media data with an existing CRM system.	1.000	0.497	< 0.01	0.947
IN2**	integrate other information systems, sales processes and existing technologies, and other tools along the project lifecycle (exclude a CRM system).	1.000	0.553	< 0.01	0.957
Communication					
CO1**	interact personally, 1:1 communication, with a single consumer.	1.937	0.288	< 0.01	0.798
CO2**	communicate with an entire community or multiple consumers.	1.369	0.245	< 0.01	0.775
CO3**	communicate with other employees throughout the organization.	1.402	0.634	< 0.01	0.916
Management					
MA1**	manage their social media accounts, communities and forums, such as moderation, internal process management, etc.	2.377	0.575	< 0.01	0.950
MA2	allocate employee access rights.	2.104	0.062	0.342	0.819
MA3**	apply different engagement features (e.g., gamification).	2.230	0.442	< 0.01	0.913
VIF = Variance Inflation Factor; Load. = Loadings; p-val. = p-value; ** p-value < 0.05; * p-value <= 0.10					

D.4.6   Re-Specification and Final Measurement Model

Despite the robust results for all formative indicators and the corresponding constructs, concerning the practical implementations of Social CRM technologies with the respec-

tive 40 investigated vendors, a re-specification, i.e. creating a new second-order construct, is needed. In particular, some of the tools have various features for a special data type (e.g., aggregate data), including the dimensions *Monitoring and Capturing, Analysis and Exploitation*. An example: the tools CustomScoop and ExactTarget capture, analyze and exploit aggregate data, i.e. use predictive modeling, network maps and/or reporting features. Buzzient and Bazaarvoice monitor, analyze data in real-time and have a reporting feature. Kana and Demand Media (Pluck) capture and analyze individual data, including a network map and reporting feature. Therefore, a new second-order construct is created, named *Processing* (Zablah et al. 2012), covering the first-order constructs *Monitoring and Capturing, Analysis and Exploitation*. *Processing* is a higher level construct and represents the applied process of specific data types, e.g., aggregate data is first captured, then analyzed, followed by the exploitation (the same process can be explained in the use of real-time and individual data). To conduct an appropriate redundancy analysis, a new benchmark, i.e. reflective indicators, for evaluating the second-order constructs, has to be created. After re-specifying the formative measurement model, SmartPLS is applied, using the same parameter settings as in the previous sub-section. Table 36 presents the respective test statistics.

Table 36: Test statistics for the re-specified reflective construct Processing

Reflective indicators		AVE	Com. R.	Load	p-val.
Processing		0.736	0.965		
PR1**	The company utilizes a tool to capture, analyze and exploit social media data.			0.940	< 0.01
PR2**	Overall, the utilization of a capturing, analytical and exploitation function within a tool is high.			0.962	< 0.01
PR3**	In general, the company uses a tool to capture, analyze and exploit social media data.			0.955	< 0.01
AVE = average variance extracted; Com. R. = Composite Reliability; Load. = Loadings; p-val. = p-value; ** p-value < 0.05; * p-value < 0.10					

Figure 13 presents an overview of the newly calculated test statistics for the re-specified constructs, as well as the results for the (old) constructs *Communication, IS Integration, and Management* (as mentioned above in Table 35). In particular, the re-specification reveals significant weights and high loadings for all the remaining formative indicators. The path coefficients between the first-order and second-order con-

structs are highly significant, and the path coefficient for redundancy analysis is slight-
ly below the threshold of 0.8 between formative and reflective constructs. Regarding
the minimum value of 0.64 recommended by Söllner et al. (2012), the path coefficient
of the redundancy analysis (0.782) yields reliable results. Consequently, the re-
specification of the constructs *Monitoring and Capturing, Analysis, and Exploitation* is
clearly suitable for evaluating the final measurement model for Social CRM technolo-
gy use, concerning a practical perspective.
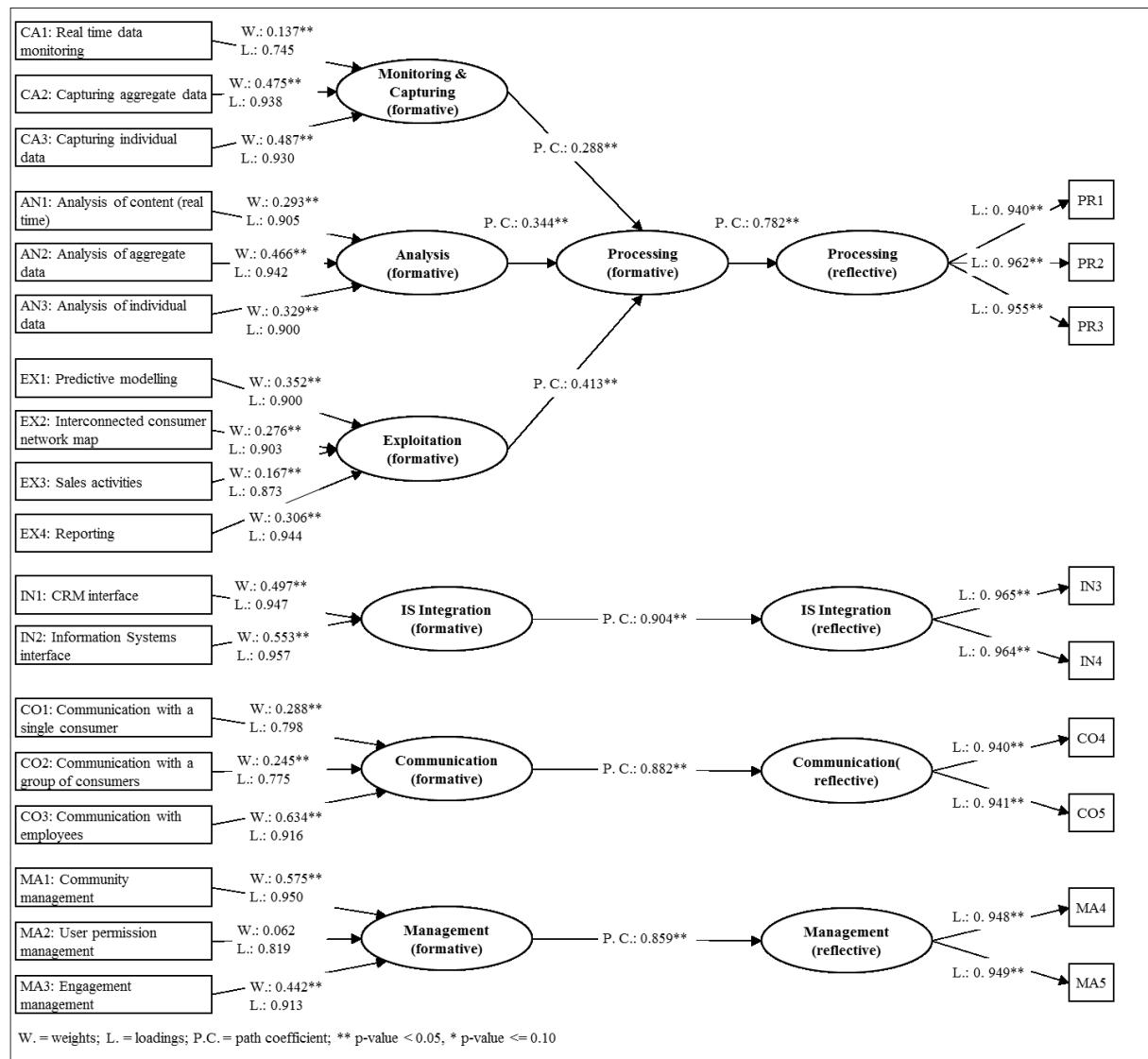
Figure 13: Final formative measurement model for Social CRM technology use

D.5 Discussion

The study makes five important contributions to the field by presenting an empirically
validated formative measurement model for Social CRM technology use. First, it can

be stated that the evaluated formative constructs are well-suited to the Social CRM context, i.e. no indicator is dropped. Second, the *IS Integration* construct is almost equally distributed (same value of indicator weights). Concerning the prevailing attitudes towards data integration from Social Media into CRM systems (IN1), the literature supports the data integration via an IS interface (IN2) as proposed by Chang et al., (2010), measured with reflective indicators. Third, the *Communication* construct presents different results (i.e., unequally distributed indicators). CO3 (communication with employees) has the highest impact (weight: 0.634) on the corresponding construct. This finding is also supported within the CRM and Social Media literature. According to Zablah et al., (2012), communication and "employee coordination across organizational functions" have a high impact on the formative construct named "Use of CRM Interaction Support Tool". Within the Social Media context, Trainor et al. (2014) stated that the communication attribute of employees with other departments has the highest impact on the corresponding construct (reflective). Additionally, interviews with practitioners show that the usage of so-called workflow features are implemented across departments (e.g., marketing, service/support, IT department), in order to communicate with other employees. Fourth, the highest impact on the *Management* construct is operationalized by a community management feature (MA1) with a weight of 0.575. This result is not surprising, given that the central hub (i.e., a centralized platform which is hosted by the company to interact with consumers) is still an online brand community. The conducted interviews reveal that community tools like Lithium are the first investments within the *Management* construct. Fifth, within the second-order construct *Processing*, the first-order construct *Exploitation* reveal the highest impact (path coefficient: 0.413). Despite the relevant dimensions of *Monitoring and Capturing* as well as *Analysis,* companies focus on the added value of a technology and the usage of data. The literature confirms two out of the four indicators. The articles from Chang et al. (2010), Jayachandran et al. (2005) and Zablah et al. (2012) confirm the results, focusing for example on "sales support", "sales activity planning" (EX3). Zablah et al. (2012) address the indicator "forecasting" (EX1) and present a high weight on the corresponding construct named "Use of CRM Prioritization Tools". An additional reason is given by the current technology development. Tools like Hearsay Social, Engagor and the like can monitor social media data in real time (*Monitoring and Capturing* construct), concerning the issues of a suitable sentiment analysis. Therefore, companies use these tools, but control the results manually, which is one possible reason for the lower impacts on the second-order construct *Processing*.

D.6 Theoretical and Practical Implications

The highly significant path coefficients indicate a very robust informative value of the evaluated formative indicators and corresponding constructs, which suggests a well-suited measurement model for Social CRM technology use. Generating the formative indicators and corresponding constructs yields some initial empirical insights into the predefined conceptual research topic and confirms the originality of this study.

The study has various implications for the scientific community. Firstly, the resulting measurement model facilitates the use of new indicators and corresponding constructs for measuring Social CRM technology use. Secondly, the rigorous nature of the study enables researchers to adopt and apply the measurement model for their own research. Finally, the various different dimensions generate deeper insights into Social CRM technology use within a company and guides future research activities (e.g., empirical evaluation of relationships between Social CRM technology use and performance).

Three practical implications in particular can be stated. First, the measurement of Social CRM technology use allows the management of a company to operate and control different departments which use the corresponding technologies (e.g., the measurement enables insurance companies to regulate their local agencies, thus facilitating a control system). Second, companies can discover low performing technologies and therefore quit the relevant current licences in order to reduce IT costs. Finally, the operational measurement enables new benchmark systems to compare their Social CRM technology use with competitors (e.g., in a consortium of different industry organizations, companies can identify the leader and learn from best practice).

D.7 Conclusion, Limitations and Further Research

The study develops and evaluates formative indicators and corresponding constructs for Social CRM technology use, in order to obtain a formative measurement model. The research approach is quantitative in nature, and follows the research procedure of Moore and Benbasat (1991) and particularly the process from Cenfetelli and Bassellier (2009). Accordingly, a sample of n=122 responses is investigated and analyzed, surveying marketing, communication and IT decision makers. In order to answer the research question (*RQ: What are the formative indicators and corresponding constructs for evaluating a formative measurement model for Social CRM technology use?*) the study makes three major contributions. First, the formative constructs of *Processing,*

Communication, IS Integration, and Management measure different dimensions of Social CRM technology use. Second, the evaluated formative indicators are robust (no indicator is dropped) and fit the corresponding constructs. Finally, the newly created second-order constructs (*Processing*), included the *Monitoring and Capturing, Analysis,* and *Exploitation* constructs, represents the practical perspective on the research results and generates deeper insights into the measurement of Social CRM technology use of an organization.

Three potential limitations constrain the results of this research. Firstly, despite the highly significant values of the final measurement model (i.e., the statistical test values), there may be missing formative indicators, which should be included in the model. Secondly, due to the fact that the study is the first evaluated measurement model for Social CRM technology use, conducting a transferability test is not possible (Cenfetelli and Bassellier 2009). Future research should apply the model within different perspectives of Social CRM technology and test for construct portability and generalizability (Söllner et al. 2012). Finally, the study does not distinguish between the usage of different Social CRM technologies in different departments of a company, which could influence the results.

One promising approach for further research is a longitudinal analysis, which can be tested with statistical methods (e.g., compared test statistics for two dates - ANOVAs), in order to generate deeper insights into the lifetime cycle of technology use. Finally, going beyond the focus of technology use, the impact on Social CRM performance can be tested statistically. An example would be the impact of Social CRM technology use on Social CRM performance (e.g., in the CRM context, see Zablah et al., 2012). Therefore, the rigorously and systematically derived results presented the article form a sound for further research projects.

Paper E – **Evaluating Social CRM Performance: An Organizational Perspective**

Table 37: Bibliographical metadata on Paper E

Attribute	Value
Title	Evaluating Social CRM Performance: An Organizational Perspective
Author(s)	Küpper, Torben[1]; Wieneke, Alexander[1]; Lehmkuhl, Tobias[1]; Jung, Reinhard[1] [1] University of St. Gallen, Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland torben.kuepper@unisg.ch, alexander.wieneke@unisg.ch, tobias.lehmkuhl@unisg.ch, reinhard.jung@unisg.ch
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Abstract

This paper presents a formative measurement model for Social CRM performance in order to achieve and assess company objectives. The current literature for measuring Social CRM performance does not provide a holistic approach and is operationalized with reflective indicators. To address this gap, the article follows the procedure of Moore and Benbasat (1991), including the creation and assessment of new constructs with new developed and evaluated formative indicators. To evaluate the impact of single indicators on their corresponding constructs, the data is analyzed through confirmatory factor analysis using SmartPLS with a surveying sample of 126 marketing, communication and IT decision makers. The results show that the constructs of infrastructure performance, process performance, customer performance and organizational performance measure Social CRM performance. Especially the first-order constructs of indirect customer performance and department-specific processes are important aspects in this context. Generally, the developed formative indicators and new evaluated first- and second-order constructs generate deeper insights through a control system

for Social CRM activities, in order to achieve organizational objectives and track them over time.

E.1 Introduction

Social Customer Relationship Management (Social CRM) deals with the integration of Web 2.0 and Social Media into CRM (Lehmkuhl and Jung 2013). Social CRM is a rising phenomenon, leading to a new scientific paradigm (Askool and Nakata 2011). It is defined by Greenberg (2010) as "[…] a philosophy and a business strategy, support-ed by a technology platform, business rules, processes and social characteristics, de-signed to engage the customer in a collaborative conversation in order to provide mu-tually beneficial value in a trusted and transparent business environment." Gartner has identified Social CRM as one of the top innovation-triggered themes in the next five to seven years (Alvarez 2013).

Given that Social CRM is defined as a business strategy, its implementation requires holistic "transformational efforts among all organizational parts" (Lehmkuhl and Jung 2013). Particularly, the implementation of Social CRM has the potential to provide mutually beneficial value for a company and its customers. Today, companies trans-form their business by applying new strategies, conducting organizational change, and purchasing new Social CRM technologies to achieve competitive business benefits (Trainor et al. 2014). Yet, companies implement Social CRM cautiously, due to the lack of Social CRM performance measurement model (Küpper, Wieneke, Lehmkuhl, et al. 2015).

A literature review focuses on the current state of knowledge for Social CRM perfor-mance measures, and reveals the lack of clearly defined and robust constructs and cor-responding formative indicators (Küpper, Jung, et al. 2014). Previous work covers CRM measurement models (Jain et al. 2003; Kim and Kim 2009; Kim et al. 2003; Sedera and Wang 2009; Wang et al. 2009), conceptualize Social CRM performance (Küpper, Wieneke, Lehmkuhl, et al. 2015; Trainor 2012) or evaluate individual Social CRM performance measures, i.e. measuring with reflective indicators (Trainor et al. 2014). Given the novelty of the topic and the lack of empirical research, no article so far measures the performance of Social CRM holistically, i.e. including different di-mensions (e.g., infrastructure, processes), and develops formative indicators[26]. There-

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[26] The unique characteristic of formative indicators (in contrast to reflective indicators) is investigated, because it provides information on specific resources and "is desired as potential leverage points for managerial change" (Mathieson et al. 2001).

fore, the objective of the article is to develop and evaluate formative indicators and corresponding constructs for a Social CRM performance measurement model. This first academic evaluation in this context yields more detailed insights into the performance measurement of an organization. The corresponding research question (RQ) is as follows:

RQ: What are the formative indicators and corresponding constructs for evaluating a formative measurement model for Social CRM performance?

To achieve the stated objective, the article follows the process of designing a measurement model proposed by Moore and Benbasat (1991). Accordingly, data from a survey sample of 126 marketing, communication and IT decision makers are analyzed through a confirmatory factor analysis, as in Diamantopoulos and Winklhofer (2001), so as to answer the RQ. The result shows that four constructs measure Social CRM performance (*infrastructure performance, process performance, customer performance and organizational performance*). The measurement of Social CRM performance constitutes a scientific as well as a practical challenge. The practical implications are given through the utilization of a control system for Social CRM activities, in order to achieve organizational objectives and track them over time. The rigorous methodology enables researchers to adopt and apply the measurement model for their own research, which constitutes a significant contribution.

The remainder of the paper is structured as follows. Section 2 presents the conceptual background of the performance measurement model. Afterwards, the research design is described. The measurement model with formative indicators is described in section 4 (results) within six sub-sections (4.1 – 4.6). Section 5 discusses the findings from the evaluation, highlights the resulting constructs and presents a detailed summary of the research and practical implications. Finally, the paper concludes, covers the limitations, and outlines further research approaches.

E.2   Conceptual Background

To the best of our knowledge, this article contributes the first performance measurement model for Social CRM. Concerning this aspect, the focus is on adopting topic-related performance measurement models. Given the definition of Social CRM, the obvious related context is CRM. An overview of performance measurement models in the literature is presented in Table 38.

Table 38: Overview of performance measurement models in literature

Authors	Typ		Scope		Relationships		Background	
	Con.	Emp.	Part.	Holist.	N.-cas. Rel.	Cas. Rel.	CRM	SCRM
Kim and Kim (2009)		x		x		x	x	
Kim et al. (2003)		x	x		x		x	
Öztayşi, Sezgin et al. (2011)		x	x		x		x	
Öztayşi, Kaya et al. (2011)		x		x	x		x	
Kimiloglu and Zarali (2009)	x			x	x		x	
Llamas-Alonso et al. (2009)	x			x	x		x	
Zinnbauer and Eberl (2005)	x		x		x		x	
Shafia et al. (2011)		x		x	x		x	
Lin et al. (2006))	x			x	x		x	
Grabner-Kraeuter et al. (2007)	x			x	x		x	
Jain et al. (2003)	x		x		x		x	
Wang et al. (2009)	x			x	x		x_1	
Sedera and Wang (2009)	x			x	x		x	
Sum	8	5	4	9	12	1	13	0
This article		x		x	x			x
Con. = Conceptual; Emp. = Empirical; Part. = Partial approach; Holist. = Holistic approach; N.-cas. Rel. = Non-causal Relationships; Cas. Rel. = Causal Relationship; SCRM = Social CRM; x_1 = CRM and Supply Chain Management related								

Kim and Kim's (2009) performance measurement model is adopted for five reasons, relating to scientific and practical aspects. First, the model was selected after a rigorous and systematic literature review of different performance measurement models, as well as performance measures for Social CRM (Küpper, Jung, et al. 2014). All results were assigned to the constructs of the revised performance measurement model. Second, it is exclusively CRM related (e.g., the developed model by Wang et al. (2009), additionally, focuses on Supply Chain Management) and covers different constructs

(e.g., different dimensions of performance), which is important for developing and evaluating a holistic approach. Third, the model was published in a highly ranked journal and is widely used[27], which provides a high degree of external validity. Fourth, after two focus groups with practitioners[28], in which representatives from the companies classified Social CRM specific objectives into the different constructs of the performance measurement model, the model is very comprehensive, easy to communicate and a useful management tool. Finally, an in-depth discussion revealed metrics for each performance measure which are subsequently applied within the corresponding department so as to assess the Social CRM objectives. The corresponding performance measurement model adopts a company perspective and includes four dimensions, namely (1) infrastructure performance[29] (e.g., IS implementation and integration, as well as employee aspects), (2) process performance (e.g., market and customer segmentation), (3) customer performance (e.g., customer convenience, customer-relationship performance), and (4) organizational performance (e.g., brand awareness, financial benefits).

E.3   Research Design

A formative measurement model is designed in a three stage approach (I. item creation, II. scale development and III. indicator testing), including six sub-stages in total, as proposed by Moore and Benbasat (1991), which is depicted in Figure 14 (cf. Walther et al., 2013). The first sub-stage "Conceptualization Content Specification" focuses on a literature review, in order to identify context-specific constructs (dimensions) and corresponding sub-dimensions. Second, based on the results, items (i.e., indicators) are deduced to operationalize the previous constructs. Third, a Q-sorting procedure assesses the "Access Content Validity" with the calculation of an inter-rater reliability index (or related indexes, e.g., Cronbach's Alpha). Within the next two sub-stages ("Pretest and Refinement" and "Field Test"), the questionnaire is tested in order to obtain some initial feedback, for instance on problematic areas (definitions, word-

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[27] It is the most cited article for the abovementioned CRM performance measurement models, according to Google Scholar in October 2014.

[28] At least two decision makers of four companies from different departments and various positions (e.g., senior social media manager, community manager) are in a focus group. Two researchers in the discipline of Social CRM guide the two-hour focus groups and encouraged to in-depth discussions.

[29] Concerning the fact that Social CRM is supported by information technologies (e.g., Social CRM tools like Radian6, Engagor) (Küpper, Lehmkuhl, et al. 2014), the infrastructure performance dimension is indispensable for a holistic Social CRM performance measurement model.

ing), length of the questionnaire etc. Especially for the unique characteristics of forma-
tive indicators and the corresponding constructs, the final sub-stage "Evaluation of
Formative Measurement Model and Re-Specification" is based on the process of
formative measurements from Cenfetelli and Bassellier (2009). The applied confirma-
tory factor analysis is designed according to Diamantopoulos and Winklhofer (2001),
and focuses on a statistical evaluation of formative indicators and corresponding con-
structs.
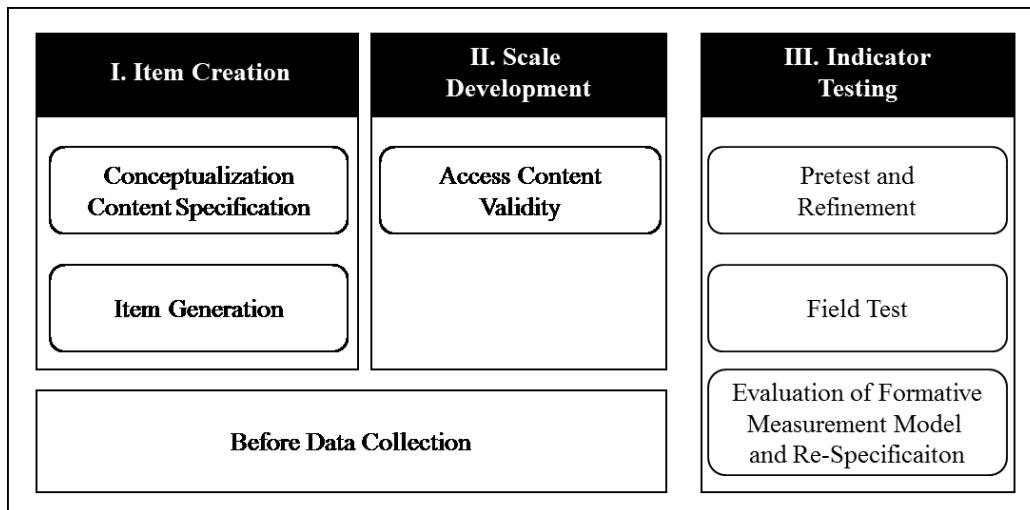
Figure 14: Process of designing a formative measurement model

E.4   Results

E.4.1   Conceptualization and Content Specification

Diamantopoulos and Winklhofer (2001) explicitly mentioned the importance of ap-
propriate content specification for the development and evaluation of formative meas-
urement models. Content conceptualization refers to the formative constructs and is
the first issue in the development process, "Because under formative measurement the
latent variable is determined by its indicators rather than vice versa, content specifica-
tion is inextricably linked with indicator specification" (Diamantopoulos and
Winklhofer 2001). The second issue refers to the assignment of descriptions for the
appropriate constructs, as an important aspect of generating and developing formative
constructs. A misinterpretation of the descriptions would neglect sub-dimensions of
the constructs. This leads to the last issue in the conceptual specification, because ne-
glecting sub-dimensions will bias the statistical evaluation in the ongoing process of
designing a measurement models (MacKenzie et al. 2005).

To deal with these three issues, a rigorous and systematic literature review was conducted according to vom Brocke et al. (2009), to (1) adopt construct (dimensions - see Section 2), (2) define corresponding descriptions in a Social CRM context, and (3) identify relevant sub-dimensions (performance measures), classifying them into the respective constructs. An analysis of the literature identifies 16 Social CRM performance measures from 37 relevant articles (Küpper, Jung, et al. 2014). Additionally, 15 semi-structured interviews validated and completed the previous findings (Küpper, Wieneke, Lehmkuhl, et al. 2015), including nine explorative new Social CRM performance measures. A subsequent classification of the Social CRM performance measures into the corresponding constructs was operationalized with PhD students and practitioners, by calculating an inter-rater reliability ratio, which ensures a high degree of external validity. To sum up, Table 39 presents the four adopted and defined constructs, as well as the completed 25 performance measures in the context of Social CRM (a detailed list with all corresponding references and examples of metrics is presented in the appendix).

Table 39: Dimensions for the Social CRM performance measurement model (Küpper, Wieneke, Lehmkuhl, et al. 2015)

Constructs (dimensions)	Descriptions	Performance Measures (sub-dimensions)	ID
Infrastructure Performance	The category describes the resources and cultural aspects of a business that are necessary to implement Social CRM.	Social Media Monitoring	IN1
		Online Brand Communities	IN2
		Cultural Readiness	IN3
		IT-Infrastructure	IN4
Process Performance	The category describes companywide and department-specific processes (i.e. activities, which uses resources, that are developed to achieving a business goal, in order to create value) of Social CRM.	Customer Insights	PR1
		Customer Orientation	PR2
		Customer Interaction	PR3
		Market and Customer Segmentation	PR4
		Customer Co-Creation	PR5
		Sensitivity	PR6
		Target-Oriented Customer Events	PR7
		Multi-Channel and Ubiquitous Interaction	PR8
		Social Selling	PR9

Constructs (dimensions)	Descriptions	Performance Measures (sub-dimensions)	ID
Customer Performance	The category describes the effects of Social CRM on customers (customer perception) and the aspects which are perceived by customers.	Customer-Based Relationship Performance	CU1
		Customer Loyalty	CU2
		Peer-to-Peer-Communication	CU3
		Customer Convenience	CU4
		Customer Competence	CU5
		Personalized Product and Services	CU6
Organizational Performance	This category describes the effects of Social CRM (i.e. infrastructure, process and customer activities) on company success and business results.	Customer Lifetime Value	OR1
		Financial Benefits	OR2
		Brand Awareness	OR3
		Business Optimization	OR4
		Competitive Advantage	OR5
		New Product Performance	OR6

E.4.2 Item Generation

After conceptualizing the constructs, items (or indicators) are generated. For each identified sub-dimension, one indicator is created. The formative indicators "must cover the entire scope of the latent variable as described under the content specification" (Diamantopoulos and Winklhofer 2001). Due to the fact that this is a new research topic, all indicators are newly created to fit into the Social CRM context. In particular, the construct of infrastructure performance captured four formative indicators, process performance nine, customer performances six, and organizational performance six. For each construct, two additional reflective indicators are generated for the ongoing process. This yields a total of 33 indicators (25 formative and 8 reflective indicators).

E.4.3 Assessing Content Validity

"Content validity assesses whether the researcher has chosen measures that appropriately capture the full domain of the construct" (Petter et al. 2007). This present study therefore follows Petter et al. (2007), who stated that content validity for reflective indicators does not have strong validatory power, but is essential for using formative indicators and corresponding constructs. Therefore, the Q-sorting procedure, which is "one of the best methods to assess content validity" (Petter et al. 2007), focuses only on the 25 considered formative indicators. In sequentially independent rounds, a mas-

ter student, two PhD students in the discipline of IS and one practitioner from the corresponding operative departments classified the indicators according to the constructs. Participants are encouraged to carefully read the definitions of the constructs, and then classify the formative indicators within the appropriate construct. After each round, inter-rater reliability, following Perreault and Leigh's formula (1989), raw agreement and a placement ratio are calculated in order to identify problem areas (e.g., in the definitions, wording). Compared to other inter-rater reliability indexes (e.g., Cohen's kappa), Perreault and Leigh have established that their index "… will usually be a more appropriate measure of reliability" (Perreault & Leigh 1989). The content validation stops when all ratios fall within the generally accepted range of $0.8 - 1.0$. After each round, the problems are eradicated, and the indicators are re-written or even totally re-defined to improve understandability. Discrepancies are always reviewed, discussed and clarified with an independent focus group of researchers and one professor. In the first round, the participants reached an average inter-rater reliability of 0.66, and a raw agreement average of 0.56 and the three of four placement ratios were below 0.8. After re-writing some indicators, the second round was conducted with four new participants in the same manner. The calculated average inter-rater reliability was 0.72, the raw agreement average was calculated at 0.74 and two of four placement ratios were below 0.8. After additional enhancements in wordings, the four new participants achieved an average inter-rater reliability 0.85, the raw agreement average was 0.88 and all placement ratios were clearly above the threshold of 0.8. Table 40 provides an overview of the Q-sorting results.

Table 40: Results of the Q-sorting procedure

Inter-rater Reliability				Raw Agreement				Placement Ratio			
Judges	R. 1	R. 2	R. 3	Judges	R. 1	R. 2	R. 3	Constructs	R. 1	R. 2	R. 3
A+B	0.60	0.69	0.89	A+B	0.52	0.76	0.88	Infrastructure Performance	0.38	0.69	0.81
A+C	0.64	0.60	0.89	A+C	0.54	0.72	0.86				
A+D	0.68	0.76	0.82	A+D	0.58	0.72	0.86	Process Performance	0.33	0.58	0.81
B+C	0.72	0.76	0.89	B+C	0.54	0.76	0.90				
B+D	0.68	0.72	0.82	B+D	0.58	0.76	0.90	Customer Performance	0.67	0.88	0.96
C+D	0.64	0.76	0.79	C+D	0.60	0.72	0.88				
Average	**0.66**	**0.72**	**0.85**	**Average**	**0.56**	**0.74**	**0.88**	Org. Performance	0.92	0.88	0.96

E.4.4   Pre-test, Refinement and Field Test

The pre-test is the initial step in launching the final survey. The questionnaire was distributed online to PhD students and four selected practitioners in the appropriate Social CRM context. After some cuts to the introduction, the practitioners stated that screen-out questions are required. There are questions which ensure that only suitable people complete the questionnaire. Therefore, two initial questions were generated. First, "Does your company use Social Media?" and second, "Do you work in a related department or have a decision function enabling you to answer questions about Social CRM performance?" If participants answered one of these questions with "no", they were excluded from the online survey. Despite the subsequently lower number of participants, the screen-out questions ensured a high degree of validity and increased the quality of the data.

Table 41: Overview of the sample characteristics

Industry	Percent	# of Employees	Percent	Position in Company	Percent
Manufacturing & Utility	30%	< 10	15%	Executives	30%
Others	18%	10 – 49	17%	Team Manager	20%
Information & Communication	16%	50 – 499	28%	Specialized Manager	18%
Finance & Insurance	15 %	500 – 999	10%	Department Manager	15%
Public Administration & Logistics	11%	1000 – 5000	17%	Division Manager	14%
Health Industry	10%	> 5000	13%	Others	3%

Subsequently, a field test, with n=10 completes, was conducted in order to check technical aspects and calculate the time that practitioners need to fill out the questionnaire. No technical complaints or issues with the length of the questionnaire arise, so that the final survey was launched. The indicators were measured using a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). The final questionnaire was only available online and distributed over several Social Media channels (e.g., Xing, LinkedIn, Twitter), focusing on marketing, communication and IT decision makers. After three months, a total of n=126 responds was captured and served as the basis for further analysis. Due to the distribution via Social Media channels, no response rate could be calculated. Table 41 presents an overview of the sample charac-

teristics for the industry sector, position and number of employees within the company.

E.4.5   Evaluation of Formative Measurement Model

In order to develop and evaluate the formative Social CRM performance measurement model, the process from Cenfetelli and Bassellier (2009) is applied, which contains a confirmatory factor analysis, according to Diamantopoulos and Winklhofer (2001), as mentioned above. Using the PLS (partial least square) method to analyze the data, SmartPLS (Ringle et al. 2005) and SPSS 21 are the appropriate tools (Hair et al. 2013). For assessing the quality of a newly introduced formative measurement model, the development process of formatively measured indicators and corresponding constructs follows the five steps recommended by Cenfetelli and Bassellier (2009), namely (1) multicollinearity testing, (2) the effect of the number of indicators and non-significant weights, (3) co-occurrence of negative and positive indicator weights, (4) absolute versus relative indicator contributions and (5) nomological network effects (Cenfetelli and Bassellier 2009). Particularly in order to rigorously follow the five-step process, each of the four constructs is modeled as an exogenous latent variable with formative indicators, and as an endogenous latent variable with reflective indicators. According to Söllner et al. (2012), "the reflective measurement serves as a benchmark for assessing the quality of the formative measurement model."

Concerning the benchmark measures, the quality assessment of the reflective measurement model is the initial approach for the ongoing process. The average variance extracted (AVE), composite reliability value and indicator loading with the respective p-values constitute the quality criteria (Chin 1998). Due to the four separated reflective constructs, no cross-loadings or co-linearity test have to be considered. Table 42 presents an overview of the calculated values. All recommended thresholds from Söllner et al. (2012) are exceeded. The evaluation of the AVEs (0.896, 0.916, 0.923, and 0.922) are higher than 0.5, composite reliability values are above the threshold of 0.6, and all indicator loadings yield results above 0.7 and are highly significant with a p-value lower than 0.01. To conclude, the reflective measurement model is appropriate as a benchmark for evaluating the formative measurement model.

Table 42: Test statistics for the reflective measurement model

Reflective indicators	AVE	Com. R.	Load	p-val.
Infrastructure performance	0.896	0.945		
IN5** In general, sufficient resources are available and cultural aspects within the company are established.			0.943	< 0.01
IN6** All in all, resources are available and cultural aspects disseminated throughout the company.			0.950	< 0.01
Process performance	0.916	0.956		
PR10** In general, the processes and activities in the company are improved through Social CRM.			0.957	< 0.01
PR11** All in all, the improvement of business processes and activities is substantial.			0.957	< 0.01
Customer performance	0.923	0.960		
CU7** Generally, Social CRM activities influence customer perceptions.			0.960	< 0.01
CU8** All in all, customer perceptions are influenced substantially due to Social CRM activities.			0.961	< 0.01
Organizational performance	0.922	0.959		
OR7** Generally, Social CRM activities increase business results.			0.958	< 0.01
OR8** All in all, the profitability of the Social CRM activities enhancing results is high.			0.962	< 0.01
AVE = Average Variance Extracted; Com. R. = Composite Reliability; Load. = Loadings; p-val. = p-value; **p-value < 0.05; *p-value < 0.10				

After the fulfillment of quality criteria for the reflective measurement model, the focus is on evaluating the formative measurement model, concerning the abovementioned five-step process. Table 43 provides an overview of the test statistics. For the first step (multicollinearity testing), the variance inflation factors (VIFs) are calculated using SPSS 21. All VIFs are below the maximum threshold of 5.0, recommended by Hair et al. (2011) and Walther et al. (2013). The results reveal that multicollinearity is not an issue in this study. Steps two to five are based on calculated values and test statistics using SmartPLS with parameter settings of 120 cases and 1000 samples. The second step (the effect of the number of indicators and non-significant weights) deals with the

problem that a large number of indicators cause non-significant weights, which is the case for all performance constructs. Therefore, the weights of all formative indicators and corresponding p-values are reported. The results show that 11 out of 25 indicators weights are non-significant. Cenfetelli and Bassellier (2009) also state that this should not be misinterpreted concerning irrelevance of the indicators. The only interpretation of this issue is that indicators have a lower influence than others. In order to gain a deeper understanding, this study continues with step three (co-occurrence of negative and positive indicators weights). Four formative indicators have negative weights. This occurs when a single indicator correlates more with another indicator than with the corresponding construct. Before a decision is made to drop indicators or re-specify constructs, step four (absolute versus relative indicator contributions) needs to be conducted by reporting the respective loadings. The loadings indicate that an "indicator could have only a small formative impact on the construct (shown by a low weight), but it still could be an important part of the construct (shown by a high loading)" (Söllner et al. 2012). Concerning the information from steps two to four, the issue of non-significant weights and low loadings can be resolved by dropping indicators or re-specifying constructs, i.e. grouping indicators into more constructs (first-order constructs) and conceptualizing the theoretically-based construct as a second-order construct (see Section 4.6). To complete the process, the final step (nomological network effects) can be proceed by conducting a redundancy analysis (Chin 1998; Mathieson et al. 2001). This redundancy analysis compares the formative construct with the reflective constructs, explaining by the corresponding path coefficient, in order to assess the validity of the formative construct. Due to the fact of having four constructs, four redundancy analyses have to be considered, resulting in values of 0.828 for infrastructure performance, 0.896 for process performance, 0.987 for customer performance, and 0.884 for organizational performance. All results are above the recommended threshold of 0.8 (Chin 1998) and are highly significant with a p-value lower than 0.01 (the results of the redundancy analysis are not presented in Table 43). To conclude, all formative constructs have some issues with step two (non-significant weights), step three (negative weights) and step four (low loadings). In order to finalize the formative measurement model for Social CRM performance, a re-specification is needed and is presented in the subsequent paragraph.

Table 43: Test statistics for the formative measurement model

Formative Indicators		VIF	Weights	p-val.	Load
Within the context of Social CRM, the company …					
Infrastructure performance					
IN1	monitors Social Media data through IT-Systems.	1.10	0.03	0.36	0.39
IN2**	provides an online brand community to interact with customers e.g., about service or product-related content.	1.29	0.20	0.027	0.61
IN3**	integrates Social CRM into the company culture.	1.38	0.53	< 0.01	0.85
IN4**	has established a good infrastructure (e.g., IT resources).	1.58	0.48	< 0.01	0.86
Process performance					
PR1	improves the level of knowledge about a customer through new customer insights.	4.01	-0.04	0.36	0.80
PR2	improves organizational processes and activities so that they are more customer oriented.	4.93	0.13	0.19	0.85
PR3	enhances the effectiveness of company-initiated interactions with customers.	4.58	-0.07	0.31	0.84
PR4**	enables a more efficient segmentation (e.g., market and customer segmentation).	3.25	0.23	0.04	0.86
PR5**	improves the involvement of customers as co-creators (e.g., in the innovation process).	2.98	0.19	0.04	0.82
PR6	deliberates on and acts cautiously with the use of customer data (e.g., to respect customer privacy).	1.86	0.07	0.19	0.67
PR7	improves the efficient and effective arrangement of target-oriented customer events.	3.17	0.13	0.14	0.79
PR8**	improves ubiquitous communication between the customers and the company.	2.65	0.27	0.03	0.86
PR9**	supports sales activities by other users.	2.98	0.28	< 0.01	0.90
Customer performances					
CU1**	enhances the perceived relationship quality of customers with the company.	3.12	0.28	0.02	0.90

Formative Indicators		VIF	Weights	p-val.	Load
CU2**	increases customer interest in company products, services and/or company activities.	3.18	0.36	0.01	0.91
CU3**	enhances and simplifies the exchange of information between consumers.	2.27	0.23	0.03	0.80
CU4*	improves customer access to a variety of support options for interacting with the company.	3.05	0.27	0.05	0.89
CU5	increases the potential to influence company activities.	1.84	0.02	0.42	0.68
CU6	improves personalized and customer-oriented products and services.	2.30	-0.02	0.42	0.73
Organizational performance					
OR1	increases customer value over the relationship lifespan.	3.41	0.11	0.17	0.86
OR2**	increases the company's profit and/or decreases costs.	3.11	0.32	0.01	0.90
OR3	increases brand awareness and brand recognition, e.g., by means of customer recommendations.	2.29	-0.03	0.36	0.71
OR4**	increases the efficiency and effectiveness of business activities (e.g. increases the efficiency of supply chain management).	2.36	0.38	< 0.01	0.89
OR5**	secures a competitive advantage.	3.06	0.27	0.01	0.86
OR6	increases the success of newly introduced or developed products and services.	2.21	0.06	0.31	0.81
VIF = Variance Inflation Factor; Load. = Loadings; p-val. = p-value; ** p-value < 0.05; * p-value <= 0.10					

E.4.6   Re-Specification and Final Measurement Model
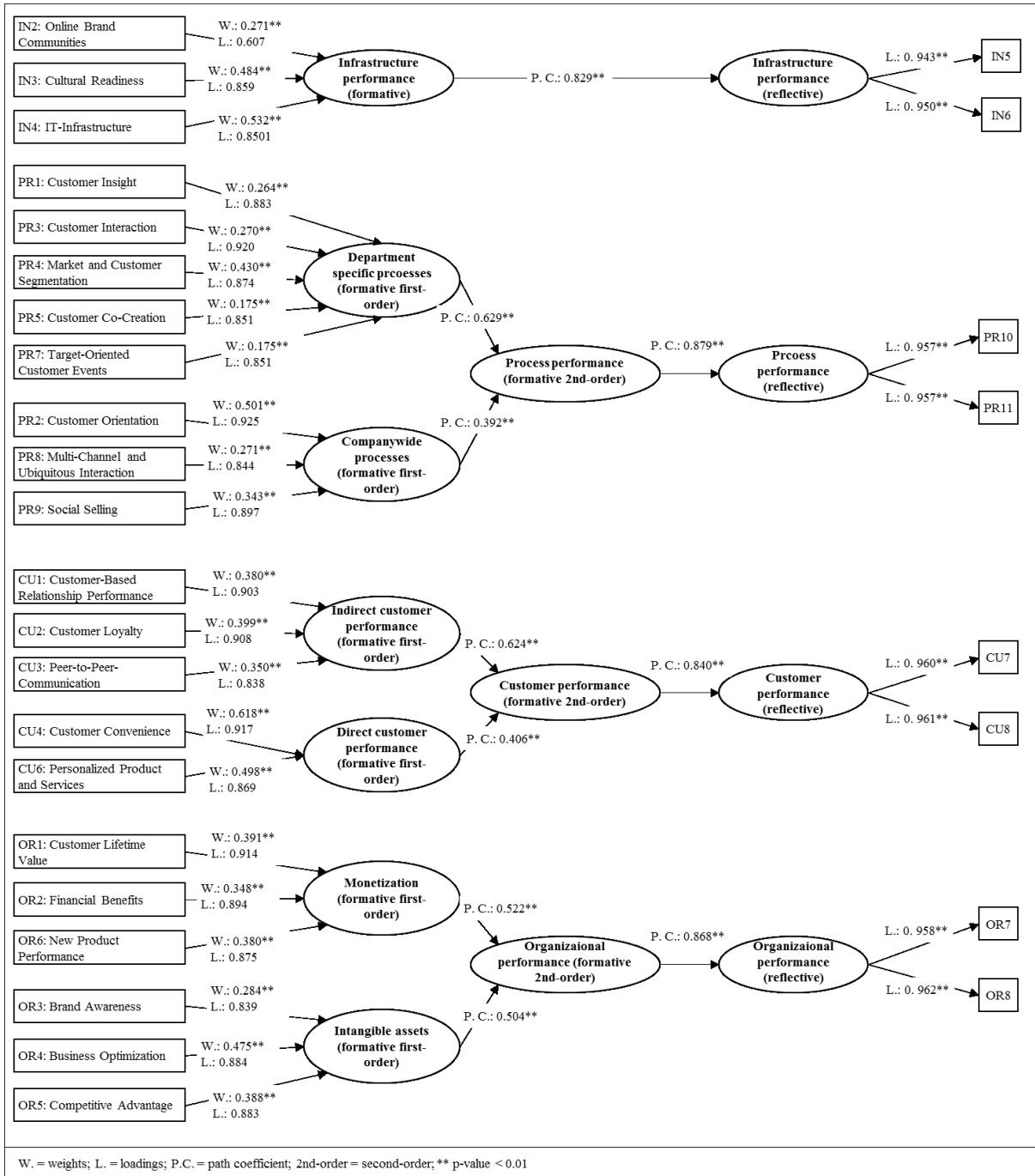
Figure 15: Formative Social CRM performance measurement model

For a final evaluation, all formative indicators and the corresponding constructs are re-specified and the test statistics newly calculated. The study follows an additional two-step approach, (1) dropping uncertain indicators and (2) generating new first-order constructs (Cenfetelli and Bassellier 2009; Hair et al. 2011, 2013). First, indicators are dropped if the loadings are lower than 0.7 and the weights are non-significant. In total, three indicators are dropped instantly before a new measurement model is calculated,

named, IN1, PR6 and CU5. Indicators with negative weights and/or non-significant weights, but loadings greater than 0.7, are retained. Second, for process performance, customer performance and organizational process, new and more meaningful first-order constructs are generated. The remaining indicators for infrastructure performance reveal significant weights and high loadings, so that no new constructs are created. Process performance is split into two categories (first-order constructs), *department-specific processes* and *companywide processes*. *Department-specific processes* capture performance measures, which are related to different departments (e.g., market and customer segmentation is related to the marketing department; customer co-creation is related to the business or product innovation department etc.) (Ernst et al. 2011). *Companywide processes* represent performance measures, which support processes across departments of a company (Peltier et al. 2013). Customer performance is re-modeled with *indirect customer performance* and *direct customer performance*. A company can capture benefits from customers without being actively involved (*indirect customer performance*) (Chuang and Lin 2013; Rapp et al. 2010). In contrast, for direct customer performance, a company needs, for instance, to offer a product to a customer (e.g., personalized product and services) (Dutu and Hălmăjan 2011). Finally, organizational performance is also split into two categorize. The *monetization* first-order constructs represent performance measure that indicates a metric, in order to enhance profitability (e.g., return on investment for financial benefits) (Keramati et al. 2010; Reinartz et al. 2004). The *intangible assets* capture performance measures, which increase company value (e.g., brand awareness) (Mumuni and O'Reilly 2014). SmartPLS is applied using the same parameter settings as in the previous sub-section. The final formative Social CRM performance measurement model is presented in Figure 15.

E.5 Discussion

The study makes several important contributions by presenting an empirically validated performance measurement model for Social CRM. The four adopted formative constructs (infrastructure performance, process performance, customer performance and organizational performance) are well-suited to the Social CRM context. According to Keramati et al. 2010, infrastructure performance is a robust construct, i.e. no additional first-order constructs are generated (only one indicator is dropped), with the completeness of cultural readiness having the highest impact. *Department-specific processes* have a higher impact on process performance than *companywide processes*. Due to the

maturity of implementation within the company, this result is not surprising. As the interviews with practitioners show, companies are starting to implement Social CRM in a testable and manageable setting, i.e. by creating a Social CRM campaign, with a single department (e.g., marketing, service/support department). An implementation across departments, which completes the *companywide aspect*, needs other supporting factors, e.g., c-level management support (Becker et al. 2009). It is evident that in this cross-section analysis, the companies are in both early adopting as well as growth phases in terms of implementing Social CRM within the company. The same reasons highlight the greater impact for *indirect customer performance* (Chuang and Lin 2013) than *direct customer performance*. For *direct customer performance*, a company, for example, has to involve the business innovation department (for personalized products and services) as well as implement a number of customer touch points (for customer convenience). In consequences of the derived company phases of implementing Social CRM, *indirect customer performance* requires less money and resources (e.g., full time equivalents, which analyze and then offer personalized products and services). For organizational performance, *monetization* and *intangible assets* have almost the same impact values. This result confirms previous discussion in the academic literature, which argues that *intangible assets* are as important as tangible assets (here: monetization) (Kaplan and Norton 1996; Kim and Kim 2009; Kim et al. 2003).

The highly significant path coefficients indicate a very robust informative value of the evaluated formative indicators and corresponding constructs, which suggests well-suited performance measurement model for Social CRM. Generating the formative indicators and corresponding constructs yields some initial empirical insights into the predefined conceptual research topic and confirms the originality of this study.

The study has various implications for the scientific community. Firstly, the resulting measurement model facilitates the use of new indicators and corresponding constructs for measuring Social CRM performance. Secondly, the rigorous nature of the study enables researchers to adopt and apply the measurement model for their own research. Finally, the holistic approach, including different dimensions of performance, generates deeper insights into Social CRM performance within a company and guides future research activities (e.g., empirical evaluation of relationships between the constructs).

Several practical implications emerge from the argumentations in previously discussed performance measurement models in the literature (e.g., Kim and Kim, 2009; Sedera et al., 2009; Wang et al., 2009) as well as from the semi-structured interviews with four stock listed companies. Accordingly, four practical implications, in particular, can be

stated. First, the model facilitates a control system for Social CRM activities, e.g., an appraisal of social campaigns, considering various aspects of effective or ineffective campaigns. Second, it enables the justification of current and future Social CRM engagements in a company, e.g., spending money on new investments, like Social CRM tools across departments or sponsoring expert bloggers. Third, the operational measurement enables new benchmark systems to compare their Social CRM efforts with competitors, e.g., in a consortium of different industry organizations, companies can identify the leader and learn from best practice. Finally, companies can detect clearly defined objectives, e.g., 10 percent more customer interaction on social media. Therefore, a Social CRM performance measurement model does help indeed to achieve organizational objectives and track them over time.

E.6 Conclusion, Limitations and Further Research

The study develops and evaluates formative indicators and corresponding constructs for a Social CRM performance measurement model. The research approach is quantitative in nature, and rigorously follows the research procedure of Moore and Benbasat (1991) and particularly the process from Cenfetelli and Bassellier (2009). Accordingly, a sample of n=126 responses is investigated and analyzed, surveying marketing, communication and IT decision makers. In order to answer the research question, the study highlights three major contributions. First, the formative constructs of infrastructure performance, process performance, customer performance and organizational performance measure the holistic approach of Social CRM performance. Second, the evaluated formative indicators fit the corresponding constructs and especially the newly created first-order constructs of *indirect customer performance* and *department specific processes* are the most important aspects in this context. Finally, the first-order constructs generate deeper insights into the performance measurement of an organization, i.e., the investigated companies are both early adopters as well as growth phase implementers of Social CRM.

Three potential limitations constrain the results of this research. Firstly, despite the highly significant values of the re-specified results (i.e., the statistical test values), there may be missing formative indicators which should be included in the model. Secondly, due to the fact that the study is the first evaluated performance measurement model for Social CRM, conducting a transferability test is not possible (Cenfetelli and Bassellier 2009). "Future research should embed the model in different structural models to test for construct portability and generalizability" (Söllner et al. 2012). Fi-

nally, the study does not control the maturity level of the companies, which could influence the results.

One promising approach for further research is an extension of the Social CRM performance measurement model based on the derived results. An empirical cross-case analysis for different maturity levels could be investigated, e.g., a performance measurement model in an early adoption phase, compared with the same model in a growth or final implementation phase. Second, hypotheses on the interrelationship between the four constructs derived from the literature, can be tested with statistical methods. In particular, the coefficients of the corresponding influence constructs could be estimated by conducting a structural equation model with a PLS method (Hair et al. 2013), in order to support or reject the hypotheses. Finally, beyond the focus of performance measurement, the impact of Social CRM implementations on performance can be tested statistically. For example, the impact of Social CRM capabilities on performance (e.g., in the CRM context see Rapp et al., 2010), or the impact of Social CRM technology use on performance (e.g., in the CRM context, see Zablah et al., 2012). Therefore, the rigorous and systematically derived results presented in the article form a sound basis for further research projects.

E.7 Appendix

Table 44: Conceptual Social CRM performance measurement model

Con-structs	Performance Measures	Examples of references	Examples of metrics
Infrastructure Performance	Social Media Monitoring	Woodcock, Broomfield, et al. 2011; Alt and Reinhold 2012	# of Social CRM supporting tools (customer opinions, trend and sentiment analysis etc.)
	Online Brand Communities	Greenberg 2010; Reinhold and Alt 2013	Quality of engagement level within the online brand community (# of super user etc.)
	Cultural Readiness	Findings from interviews*	Skills assessment (Social Media proficiency), # of employees trained in Web 2.0 principles
	IT-Infrastructure	Findings from interviews*	% of IT sufficiency, information-level ratio

Constructs	Performance Measures	Examples of references	Examples of metrics
Process Performance	Customer Insights	Chen et al. 2009; Woodcock, Broomfield, et al. 2011	# of social customer information per customer, social customer knowledge creation
	Customer Orientation	Trainor 2012; Rapp et al. 2010	# of customer-centric processes, # of customer oriented activities (e.g., customers campaigns)
	Customer Interaction	Palmatier et al. 2006; Ernst et al. 2011	# of solved problems per announced problem, time-to-solution ratio, time-to-response ratio
	Market and Cust. Segmentation	Becker et al. 2009; Dutu and Hălmăjan 2011	# of new identified customer 's and market's segments through social media
	Customer Co-Creation	Nguyen and Mutum 2012; Nadeem 2012; Trainor 2012	# of received product or service ideas, # of ideas to gain the efficiency of the co-creation process
	Sensitivity	Findings from interviews*	# of posts with data policy compliance
	Target-Oriented Customer Events	Findings from interviews*	# of events triggered by social media data, positives posts per event/all posts about the event
	Multi-Channel and Ubiquit. Int.	Findings from interviews*	Distribution of interaction across social media, interaction through social media/call interaction
	Social Selling	Findings from interviews*	# of sales activities triggered by campaigns
Customer Performance	Customer-Based Rel. Performance	Zablah et al. 2012; Trainor 2012; Rapp et al. 2010	Score on customers satisfaction (survey), # of posts, comments with a positive sentiment
	Customer Loyalty	Chen et al. 2009; Öztayşi, Kaya, et al. 2011	Net promoter score (NPS), word-of-mouth equity, Score of loyalty (survey)
	Peer-to-Peer-Communication	Trainor et al. 2014; Woodcock, Green, et al. 2011	Quantity/frequency of posts, amount of UGC, impressions-to-interactions ratio

Con-structs	Perfor-mance Measures	Examples of references	Examples of metrics
	Customer Conven-ience	Findings from inter-views*	# of social media platforms to interact with the company, score of conven-ience ratio (survey)
	Customer Competence	Findings from inter-views*	# of activities triggered by customers, # of opinion leader on social media
	Personal. Product and Services	Findings from inter-views*	Personalized product quality, level of individual service quality
Organizational Performance	Customer Lifetime Value	Borle et al. 2008; Weinberg and Pehlivan 2011	Customer social media value, con-nected customer lifetime value
	Financial Benefits	Zablah et al. 2012; Rapp et al. 2010; Öztayşi et al. 2011	Revenue of sold products or services via social media (tracked by first con-tact via social media),
	Brand Awareness	Dutot 2013	Likes on social media, brand percep-tions
	Business Optimiza-tion	Trainor 2012; Öztayşi et al. 2011	# of successful process changes, suc-cessful implemented Social CRM strategy, governance
	Comp. Ad-vent.	Trainor 2012; Rapp et al. 2010	Score of benchmark system (survey)
	New Prod-uct Perfor-mance	Trainor 2012; Ernst et al. 2011	# of innovative products, successful realized product releases or service ideas
* For details see Küpper et al. (2015).			

Paper F – **Impact of Social CRM Technology Use on Social CRM Performance: An Organizational Perspective**

Table 45: Bibliographical metadata on Paper F

Attribute	Value
Title	Impact of Social CRM Technology Use on Social CRM Performance: An Organizational Perspective
Author(s)	Küpper, Torben[1]; Järvinen, Joel[2]; Karjaluoto, Heikki[2]; Wieneke, Alexander[1]; Lehmkuhl, Tobias[1]; Jung, Reinhard[1] [1] University of St. Gallen, Müller-Friedberg-Strasse 8, 9000 St. Gallen, Switzerland [2] Jyväskylä University, Seminaarinkatu 15, 40014 Jyväskylä, Finnland torben.kuepper@unisg.ch, joel.jarvinen@jyu.fi, heikki.karjaluoto@jyu.fi, alexander.wieneke@unisg.ch, tobias.lehmkuhl@unisg.ch, reinhard.jung@unisg.ch
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Abstract

This paper presents a structural model for evaluating the impact of Social CRM technology use on Social CRM performance. Today, companies implement Social CRM tools with a set of features, but still struggle to realize and assess the benefits of the implemented technology. Little research has been conducted on a corresponding approach linking Social CRM technology use to Social CRM performance. To address this gap, the article develops and empirically evaluates a structural model, built on the resource-based view and the capability perspective. Data from a survey sample of 122 marketing, communication and IT decision makers is analyzed through a structural equation model. The results show that Social CRM technology use has a significant

impact on capabilities, which in turn have a direct impact on Social CRM performance. The theoretical contribution involves a new structural model, while the practical implications include the justification of current and future Social CRM engagements.

F.1 Introduction

Social Media represents a new mode of communication and interaction between companies and their customers, which changes the existing approach to customer relationship management (CRM) (Baird and Parasnis 2013; Kumar and Reinartz 2012). Within traditional CRM, companies have access to one-way communication (e.g., e-mail newsletter) and gather information on existing customers (Choudhury and Harrigan 2014). Due to multidirectional communication through Social Media[30], companies now have additional access to the public and private information (e.g., profiles, activities, interests etc.) of consumers (e.g., followers of a company's Social Media account) as well as that of their friends (Alt and Reinhold 2012). The integration of Social Media into CRM is a growing phenomenon, leading to a new scientific paradigm (Askool and Nakata 2011) and is referred to as Social Customer Relationship Management (Social CRM) (Lehmkuhl and Jung 2013). Social CRM is defined by (Greenberg 2010, p. 413) as "[…] a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment". Gartner has identified Social CRM as one of the top innovation-triggered themes of the next five to seven years (Alvarez 2013).

Given that Social CRM is defined as a business strategy, its implementation requires holistic "transformational efforts among all organizational parts" (Lehmkuhl and Jung 2013, p. 190). In particular, the implementation of Social CRM has the potential to provide mutually beneficial value for both the company and its customers. Today, companies transform their business by applying new strategies, conducting organizational change, developing capabilities and implementing Social CRM technologies (Trainor et al. 2014). Vendors like Lithium, Jive, and Salesforce offer various tools (e.g., Hearsay Social, Radian6, ExcatTarget) for Social CRM in order to achieve, analyze and manage "the customers content on the companies' Social Media platforms

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[30] Multi-directional means that the interaction does not take place exclusively between the company and the customer, but also between the clients, their friends and acquaintances.

(e.g., Facebook, Twitter, Blogs, etc.)" (Küpper 2014, p. 573). Monitoring and capturing Social Media information (e.g., posts or comments from a customer about a company) were the initial reasons for companies to implement such tools (Sarner and Sussin 2012). Today, companies integrate extended features into their systems (e.g., sentiment analysis, predictive modeling, matching Social Media and CRM data), in order to increase the effectiveness and efficiency of their Social CRM activities (e.g., organize customer-oriented events, develop co-created products and services). Hence, companies are still struggling to realize and assess the benefits of the Social CRM technologies they have implemented (Alvarez 2013; Sarner et al. 2012).

Previous works have developed Social CRM architectures (Alt and Reinhold 2012; Reinhold and Alt 2013; Woodcock, Broomfield, et al. 2011), identifying individual features of Social CRM technologies without any empirical evidence of the business benefits. The important question remains: the use of which feature results in the most value? Or, to put it another way, which used feature will increase the performance outcomes of the company? Zablah et al. (2012) measures the use of CRM technology in order to evaluate the impact on performance. In terms of the different tools and features of a CRM technology and a Social CRM technology, the article misses the Social Media perspective. In contrast, the previous works of Trainor (2012) and Trainor et al. (2014) investigate the Social CRM topic. Notably, the findings of Trainor et al. (2014) reveal significant impact factors for Social Media technology use on Social CRM capabilities. The authors measure Social Media technology use with reflective indicators (i.e., questions about the use of Facebook, Twitter, YouTube etc.). In light of the fact that companies use tools to communicate on several Social Media channels with different Social Media accounts, the previous approach covers a customer perspective instead of a company perspective. Thus, the evidence regarding a corresponding approach to link Social CRM technology use to Social CRM performance is still missing from the scholarly literature.

However, a clearly defined research gap can be stated: no article investigates and evaluates the impact of Social CRM technology use on Social CRM performance from an organizational perspective with formative indicators. With regard to the level of attention in the current literature, formative indicators (in contrast to reflective indicators) provide detailed insight into the topic under study, which can lead to actionable affordances for companies (Mathieson et al. 2001). Given the novelty of the topic, the objective of the present article is to evaluate the impact of Social CRM technology use

on Social CRM performance. To achieve the stated objective, the article develops and evaluates a structural model based on the resource-based view and the capability perspective, deriving three hypotheses from the literature. Accordingly, data from a survey sample of 122 marketing, communication and IT decision makers from different companies is analyzed through a structural equation model, as proposed by Hair et al. (2013). The results show that Social CRM technology use has a significant impact on capabilities, which in turn have a direct impact on Social CRM performance.

The remainder of the paper is structured as follows. The theoretical background is introduced, including a brief description of the resource-based view and the capability perspective. The hypotheses are derived in the next section and the conceptual model is illustrated, followed by a description of the methodology. Next, the results of the evaluated model are highlighted regarding the supported as well as the unsupported hypotheses. The results are discussed in the next section. The theoretical contributions and practical implications are explained. Finally, the conclusion, limitations and avenues for further research are stated.

F.2   Theoretical Background

The resource-based view (RBV) (Barney 1991) and the capability perspective (Day 1994) serve as the theoretical background for the article. Regarding the resource-based view, Barney (1991) stated that valuable, rare, inimitable, and non-substitutable resources lead to competitive advantage (e.g., performance). "Resources can be specified as tangibles and intangibles that are used by organizations" (Keramati et al. 2010, p. 1172). Tangibles are the physical assets of a company (Rapp et al. 2010; Trainor et al. 2014) and are, especially in the Information System (IS) domain, consistent to technology (Chuang and Lin 2013; Melville et al. 2004). In contrast, intangibles are specified as knowledge (e.g., human resources) and business resources (e.g., management approaches) (Chuang and Lin 2013; Rapp et al. 2010; Trainor et al. 2014). However, the literature reveals that resources are not sufficient to improve the performance of a company (e.g., Akroush et al. 2011; Coltman et al. 2011; Melville and Kraemer 2004). Improved performance stems from capabilities, which are assembled from the company's resources (Trainor 2012). Capabilities are specified as a company's ability to assemble, integrate and deploy resources in order to improve performance (Day 1994; Eisenhardt and Martin 2000; Teece et al. 1997). On the one hand, capabilities are understood as an organizational repeatable pattern (i.e., processes) (Chang et al. 2010) and on the other hand, they are referred to as infrastructural aspects (e.g., IT skills)

(Chang et al. 2010; Trainor et al. 2014). Concerning the competitive advantages (e.g., performance), the article focuses on performance dimensions (e.g., Keramati et al. 2010). A corresponding performance measure is described as a business activity, regarding the effectiveness, or the results to be achieved. Thus, a performance measure "can be expressed either in terms of the actual efficiency and/or effectiveness of an action, or in terms of the end result of that action" (Neely et al. 1995, p. 110). Literature within the CRM (e.g., Rapp et al. 2010) and Information System (IS) domain (e.g., Melville and Kraemer 2004) has drawn on the RBV to investigate how resources influence capabilities, which are proposed to improve performance.

A rigorous analysis of the academic literature yields a total of 105 articles. The focus of the analysis is on empirical models within the context of Social CRM as well as on CRM, Social Media and IS, in order to identify significant effects. After selecting current literature (published after 2009) and analyzing the content, 14 relevant articles are identified. The analysis of the relevant articles includes the type of measurement (i.e., reflective vs. formative indicators), the theoretical background and the topic under study (e.g., Social CRM, CRM). An overview of these previous works is presented in Table 46. In contrast to the previous works, three major differences can be stated. First, this study evaluates all dimensions from an organizational perspective. Second, all indicators are measured formatively. Finally, based on the theoretical background, no article investigates different performance dimensions for Social CRM.

Table 46: Overview of the literature

References	Type of measure		Theory background					Topic of the resource construct			
	Refl.	Form.	RBV	Cap.	Lit.	RMT	SCT	IS	CRM	SM	SC RM
Wang and Feng (2012)	x		x	x					x		
Zablah et al. (2012)	x_1	x_2				x			x		
Ernst et al. (2011)	x_1	x_2			x				x		
Trainor et al. (2014)	x		x	x						x	

References	Type of measure		Theory background					Topic of the resource construct			
	Refl.	Form.	RBV	Cap.	Lit.	RMT	SCT	IS	CRM	SM	SCRM
Chang et al. (2010)	x		x	x					x		
Rapp et al. (2010)	x		x	x					x		
Harrigan et al. (2010)	x			x				x			
Choudhury and Harrigan (2014)	x		x	x					x		
Keramati et al. (2010)	x		x	x					x		
Abdul-Muhmin (2012)	x					x			x		
Chuang and Lin (2013)	x		x	x					x		
Akroush et al. (2011)	x				x				x		
Rodriguez et al. (2012)	x						x			x	
Coltman et al. (2011)	x		x	x					x		
Sum	13	2	7	8	2	2	1	1	10	2	0
This article		**x**	**x**	**x**							**x**

Refl. = reflective; Form. = formative; RBV = resource-based view; Cap. = capability perspective; Lit. = literature grounded; RMT = relationship marketing theory, SCT = social capital theory; SM = social media; x_1 = dependent variable; x_2 = independent variable

Based on prior research activities and theoretical support, this article focuses on Social CRM technology use for the resource dimension for three reasons. First, this is the first empirically evaluated model for Social CRM technology use from an organizational perspective (i.e., evaluating Social CRM technology features). Second, due to the IS domain, the most valuable asset (see definition of resources) for a company is the use

of new technology (i.e., Social CRM technology use) (Abdul-Muhmin 2012; Rodriguez et al. 2012). Finally, a specification of the resources generates deeper insights within an organization, which enables the researcher to derive specific affordances for practice (e.g., Chang et al. 2010; Zablah et al. 2012). In sum, three dimensions are used for further analysis: Social CRM technology use, Social CRM capabilities and Social CRM performance.

F.3   Hypothesis Development and Conceptual Model

F.3.1   Social CRM Technology Use

Information technology and information systems (IS) use are both widely and vividly discussed topics within the discipline of IS research. Venkatesh et al. (2003) highlight two relevant perspectives: intentions to use information technology and actual use of information technology. According to Bhattacherjee et al. (2008), the former investigates the user's initial or first-time decision to use IT, or rather the construct "intention to use" within the technology acceptance model (TAM) (Davis et al. 1989; Venkatesh and Bala 2008; Venkatesh and Davis 2000; Venkatesh et al. 2003). The latter focuses on the post-adoption behaviors, for example continuous behavior (Bhattacherjee et al. 2008), IS continuance usage (Limayem et al. 2007) or system use (Venkatesh et al. 2008). To clarify, the article focuses on the actual use of an information technology. According to Petter et al. (2007), all recommended constructs are measured with reflective indicators. Due to the specific research topic (Social CRM) and the formative measurement in this study, the CRM and the Social Media literature also need to be considered. Within the CRM as well as the Social Media context, information technology use is a central component. CRM technology is understood as the automation of internal (e.g., among employees like Sales-, Marketing people) and external information processing (e.g., communication with consumers through IT such as e-mail, supported by systems for customer analytics) (Trainor et al. 2014). Due to the lack of a definition of Social CRM technology use in the literature, the authors adopt a previous CRM definition from Zablah et al. (2012). Thus, Social CRM technology use is defined as the degree to which Social CRM technology features are being utilized to support organizational work. Regarding the definition, a necessary first step in assessing the degree of a company's Social CRM technology use is to identify the corresponding Social CRM technology features, as recommended by Burton-Jones and

Straub (2006).[31] A previous classification, adapted from the works of, for example, Alt and Reinhold (2012), Reinhold and Alt (2013), Woodcock, Broomfield, et al. (2011), highlights six categories of tool features (i.e., first-order constructs), namely *monitoring and capturing, analysis, exploitation, communication, management-controlling,* and *IS integration*. Further analysis groups these six categories into two superordinary dimensions (i.e., second-order constructs), named *processing* and *management*, which determine the resource dimension *Social CRM technology use* (i.e., third-order construct).

The scholarly literature reveals that technology use has a positive influence on capabilities. This conclusion is supported by Chang et al. (2010), Chuang and Lin (2013), Keramati et al. (2010), Rapp et al. (2010), and Wang and Feng (2012), who all found positive significant relationships within the context of CRM. The positive and significant relationship between Social Media or IS technology use and capabilities is supported by the contributions of Abdul-Muhmin (2012), Harrigan et al. (2010), Rodriguez et al. (2012), and Trainor et al. (2014). Thus, the first hypothesis is as follows:

H1: Social CRM technology use has a positive relationship with Social CRM capability.

Current literature within the Social Media context has stated that the use of Facebook, Twitter, and YouTube have a moderated effect on a company's capabilities (Rodriguez et al. 2012; Trainor et al. 2014). The relationship of technology use with capabilities will be positively influenced by the use of different Social Media accounts. A company with a portfolio of Social Media accounts is able to capture, analyze etc. more relevant data through the use of Social CRM technologies (e.g., the use of Facebook and Twitter has a higher influence on the relationship than just the use of a YouTube channel). Thus, the second hypothesis is stated:

H2: Social Media use has a positive influence of the relationship between Social CRM technology use and Social CRM capability.

F.3.2   Social CRM Capability

Based on the abovementioned specification of capability, the authors follow a previous definition recommended by Trainor et al. (2014). Thus, Social CRM capabilities are

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[31] Burton-Jones and Straub (2006) highlights two relevant elements, which still have to be investigated, in this context: first, the system (here: Social CRM technology) that is being used and, second, the function (here: the feature) that is being performed.

defined as customer-facing activities, including *processes* and *infrastructural* aspects in the context of Social Media data designed to engage customers in collaborative conversations and so enhance customer relationships. This article adopts the measurement framework of Kim and Kim (2009), which covers an *infrastructural* and a *process* dimension as antecedences for performance dimensions. Three reasons for the adoption can be stated. First, the model was selected after a rigorous and systematic literature review. Second, the framework was published in a highly ranked journal and is widely used[32], which provides a high degree of external validity. Finally, the framework was discussed in two focus groups with practitioners and it could be stated that it is very comprehensive and easy to communicate. The differentiation of *process* and *infrastructural capabilities* (i.e., second-order constructs) is also stated by Keramati et al. (2010), Choudhury and Harrigan (2014), and Coltman et al. (2011). *Process capabilities* describe aspects that relate to *company-wide*, as well as *department-specific processes* (serve as first-order constructs) of Social CRM (Keramati et al. 2010). In contrast, *infrastructure capability* describes activities and/or results of infrastructural aspects (Neely et al. 1995), which includes an *IT* dimension, for example IT-readiness, and a *cultural* dimension (serve as first-order constructs) (Chang et al. 2010; Chuang and Lin 2013). Both second-order constructs determine the overall capability dimension *Social CRM capability* (i.e., third-order construct). The literature reveals a positive relationship between Social CRM capabilities and performance. For example, through target-oriented customer events, new customer insights, or better customer interactions a company can interact more effectively and efficiently with customers (Trainor et al. 2014). In particular, the literature supports positive and significant coefficients of capabilities to customer performance within the CRM, Social Media and IS context (Chuang and Lin 2013; Jayachandran et al. 2005; Keramati et al. 2010; Rapp et al. 2010; Trainor et al. 2014). The literature also reveals positive and significant relationships with company performance. Thus, the results within the CRM and IS contexts from Chang et al. (2010), Coltman et al. (2011), Ernst et al. (2011), Harrigan et al. (2010), Keramati et al. (2010), Reinartz et al. (2004), and Wang and Feng (2012) provide strong support for the next hypothesis:

H3: Social CRM capability has a positive relationship with Social CRM performance.

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[32] According to Google Scholar, it is the most cited article for the abovementioned CRM performance measurement models as of October 2014.

F.3.3   Social CRM Performance

The scholarly literature lacks a clear definition of Social CRM performance. Thus, the following definition of performance is adapted, as recommend by Lebas (1995): Social CRM performance is defined as the potential for successful implementation of Social CRM activities in order to achieve business objectives. On the one hand, an objective can be customer related, for example increasing customer loyalty online by 10%. On the other hand, an objective can be company related, for example increasing the success of newly introduced products by 5%. Therefore, the article adopts the two performance dimensions from Kim and Kim (2009), namely *customer performance* and *company performance* (second-order constructs). This differentiation is also stated in the articles of Rapp et al. (2010) and Zablah et al. (2012). The *customer performance* describes the effects of Social CRM on the customers (customer perception) and the aspects of Social CRM, which are perceived by customers (Trainor et al. 2014). Additionally, it includes *direct aspects*, for example the company has to operate actively, as well as *indirect aspects* (serve as first-order constructs), for example the management activities of a company. In contrast, the *company performance* describes the dimension of the company's success and business results (Wang and Feng 2012; Zablah et al. 2012). In particular, the constructs include *monetization aspects*, for example financial benefits and customer lifetime value, as well as *non-monetization aspects* (serve as first-order constructs), for example brand awareness and competitive advantage, in order to establish a long-term and profitable customer relationship. Both second-order constructs determine the overall performance dimension *Social CRM performance* (i.e., third-order construct).

Based on the theoretical background and the three derived hypotheses, the conceptual model is presented in Figure 16. A covariate, namely company size, is added for Social CRM capability and Social CRM performance in order to control for the dependent variables in the conceptual model, as proposed by Reinartz et al. (2004), Trainor et al. (2014) and Zablah et al. (2012).
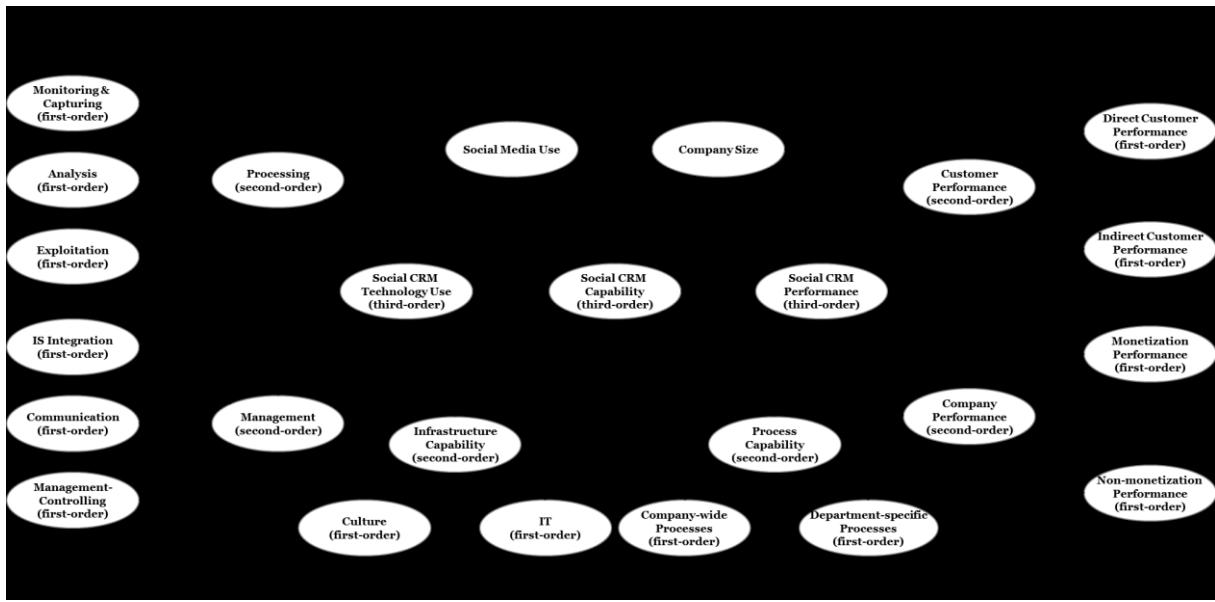
Figure 16: Conceptual Model

F.4 Method

F.4.1 Instrument Development

To test the conceptual model, formative as well as reflective indicators (as quality criteria) are used. The process of developing instruments (i.e., indicators) is depicted in Figure 17 (Walther et al. 2013). It is conducted following a three stage approach (I. item creation, II. scale development and III. indicator testing), including a total of six sub-stages, as proposed by Moore and Benbasat (1991).
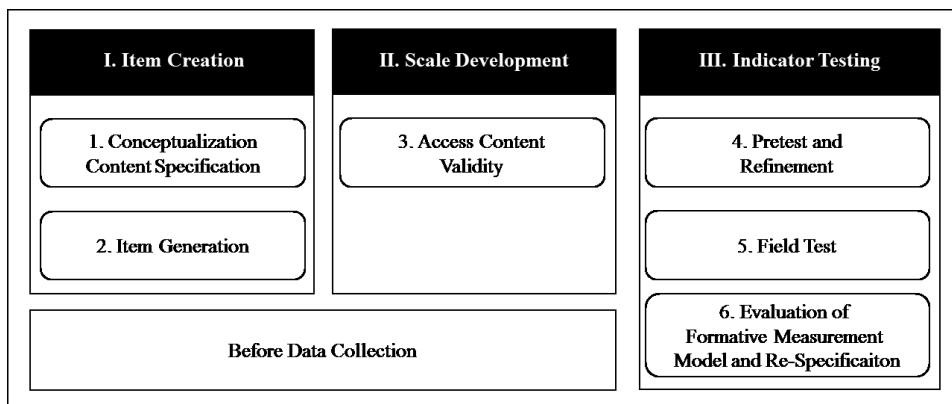
Figure 17: Process of Developing Instruments

The first sub-stage "Conceptualization Content Specification" focuses on a literature review in order to identify context-specific constructs (dimensions), as well as the corresponding sub-dimensions and indicators (e.g., performance measures and Social

CRM technology features). Second ("Item Generation"), based on the results, indicators are deduced to operationalize the previous constructs. This led to an initial set of 41 formative indicators (11 performance, 12 capability and 18 technology use measures) and 8 reflective indicators. Third, a Q-sorting procedure assesses the "Access Content Validity" for the formative indicators with the calculation of an inter-rater reliability index (or related indexes, e.g., Cronbach's Alpha). The present study therefore follows Petter et al. (2007), who stated that content validity for reflective indicators does not have strong validatory power, but is essential when using formative indicators and corresponding constructs. "Content validity assesses whether the researcher has chosen measures that appropriately capture the full domain of the construct" (Petter et al. 2007). In sequentially independent rounds, a master's student, two PhD students in the discipline of IS and one practitioner from the corresponding operative departments classified the indicators according to the constructs. Participants are encouraged to carefully read the definitions of the constructs, and then classify the formative indicators within the appropriate construct. After each round, inter-rater reliability, following Perreault and Leigh's formula (1989), raw agreement and a placement ratio are calculated in order to identify problem areas (e.g., in the definitions, wording etc.). The content validation stops when all ratios fall within the generally accepted range of 0.8 – 1.0. After each round, the problems are eradicated, and the indicators are re-written or even totally re-defined to improve understandability. Discrepancies are always reviewed, discussed and clarified with an independent focus group of researchers and one professor. For the performance and capability formative indicators, all ratios were clearly above the threshold after the third round. Comparably, the ratios for the technology use formative indictors were above the threshold after the second round. Within the next sub-stage ("Pretest and Refinement"), the questionnaire was distributed online to PhD students and four selected practitioners in the appropriate Social CRM context. After some cuts to the introduction, the practitioners stated that screen-out questions are required. These are questions that ensure only suitable people complete the questionnaire. Therefore, two initial questions were generated.[33] The "Field Test" (sub-stage five) was conducted with n=10 completes in order to obtain some initial feedback, check technical aspects and calculate the time that practitioners need to complete the questionnaire. No technical complaints or issues with the length of the questionnaire arose. Particularly for the unique characteristics of formative indicators and the corresponding constructs, the last sub-stage "Evaluation of

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[33] First, "Does your company use Social Media?" and second, "Do you work in a related department or have a decision-making function enabling you to answer questions about Social CRM performance and Social CRM technology?"

Formative Measurement Model and Re-Specification" is based on the process of formative measurements from Cenfetelli and Bassellier (2009). The applied confirmatory factor analysis is designed according to Diamantopoulos and Winklhofer (2001), and focuses on a statistical evaluation of formative indicators and corresponding constructs (see "Measurement Model" section).

F.4.2 Data Sample

The complete survey was launched in August 2014. It was only available online and distributed over Social Media (e.g., Xing, LinkedIn, Twitter), focusing on marketing, communication and IT decision makers. The indicators were measured using a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). After four months, a total of n=126 respondents completed the survey. Due to four incomplete questionnaires (i.e., missing data), data from n=122 participants was captured and serves as the basis for further analysis. Due to the distribution via Social Media channels, no response rate could be calculated. Table 47 presents an overview of the sample characteristics by industry sector, position within the company and number of employees.

Table 47: Overview of the sample characteristics

Industry	Percent	# of Employees	Percent	Position in Company	Percent
Manufacturing & Utility	31.1%	< 10	16.4%	Executives	31.1%
Others	18.0%	10 – 49	17.2%	Team Manager	18.9%
Information & Communication	14.8%	50 – 499	28.7%	Specialized Manager	17.2%
Finance & Insurance	13.9%	500 – 999	9.8%	Department Manager	15.5%
Public Administration & Logistics	11.5%	1000 – 5000	16.4%	Division Manager	14.8%
Health Industry	10.7%	> 5000	11.5%	Others	2.5%

F.4.3 Data Analysis

The prerequisite step to analyzing the structural model is the evaluation of the measurement model, which is calculated using the statistical software SmartPLS and SPSS (e.g., calculation of the variance inflation factor). In particular, the coefficients of the corresponding relationships are estimated by conducting a structural equation model

with a partial least square (PLS) method (Hair et al. 2013). The moderating effect (Social Media use) is analyzed using hierarchical regression analysis with SPSS, which is the most common approach (Gounaris et al. 2010). In order to gain a deeper insight and interpret its form, the moderating effect was plotted with a mean centered variable of Social CRM technology use, according to Aiken and West (1991).

The variance-based approach to analyzing the structural model is chosen for three reasons. First, the PLS method is well-suited to analyzing small to medium sample sizes, providing a bootstrapping function for the test statistics (e.g., t-values) (Hulland 1999). Second, the PLS method estimates coefficients and test statistics without requiring a distributional assumption, which is important for Likert scale data (Chin 2010; Fornell and Larcker 1981). Finally, all indicators are measured formatively and with higher order constructs (i.e., first-, second-, and third-order constructs), which is well-supported by a structural equation model with a PLS method (Cenfetelli and Bassellier 2009; Wetzels et al. 2009).

F.5   Results

The estimators from the partial least square method are reported, as recommended by Hair et al. (2013), in a two-step approach (Chin 2010). First, the measurement model is calculated. The reflective measurement model is reported as provided by Söllner et al. (2012) for the four second-order constructs of *process capability, infrastructure capability, customer performance* and *company performance*. To clarify, the second-order constructs for Social CRM technology use and all third-order constructs are formatively measured as higher-order constructs. The development process of the formatively measured indicators and the corresponding constructs follows the five steps recommended by Cenfetelli and Bassellier (2009), applying a confirmatory factor analysis (Diamantopoulos and Winklhofer 2001). Second, the coefficients of the structural model are calculated (Hair et al. 2013) and two quality criteria are presented (i.e., f^2, R^2) (Gefen et al. 2011; Hair et al. 2011; Wetzels et al. 2009). The estimations are calculated with a parameter setting using 120 cases and 3000 samples.

F.5.1   Measurement Model

The reflective measurement model is assessed by estimating (1) convergent validity (i.e., AVE and factor loadings), (2) internal consistency (i.e., composite reliability) and (3) discriminant validity (Hair et al. 2013). Appendix A provides an overview of the test statistics. The indicators show (1) a satisfactory convergent validity as all reflec-

tive loadings are clearly above the threshold of 0.5 (Hulland 1999). Additionally, the average variance extracted (AVE) for all reflective constructs is clearly above 0.5 (Fornell and Larcker 1981). (2) Composite reliability also presents adequate results for all constructs being above the threshold of 0.7 (Nunnally and Bernstein 1994). The (3) discriminant validity shows a robust result (Hair et al. 2011), due to the fact that all square roots of each AVE are higher than the corresponding latent variable correlation (Table 48). To conclude, the reflective measurement model is an appropriate benchmark for evaluating the corresponding formative first-order constructs.[34]

Table 48: Discriminant Validity

Second-order constructs		(I)	(II)	(III)	(IV)
Process Capability	(I)	**0.944**			
Infrastructure Capability	(II)	0.421	**0.960**		
Customer Performance	(III)	0.482	0.673	**0.959**	
Company Performance	(IV)	0.524	0.752	0.777	**0.956**

After the fulfillment of the quality criteria for the reflective measurement model, the focus is on evaluating the formative measurement model and involves a five-step process: 1. multicollinearity testing; 2. the effect of the number of indicators and non-significant weights; 3. co-occurrence of negative and positive indicators weights; 4. absolute versus relative indicator contributions; and 5. nomological network effects (Cenfetelli and Bassellier 2009). Appendix B provides an overview of the test statistics (for the 41 formative indicators). For the first step (multicollinearity testing), the variance inflation factors (VIFs) are calculated using SPSS. All VIFs are below the maximum threshold of 5.0, as recommended by Hair et al. (2011) and Walther et al. (2013). The results reveal that multicollinearity is not an issue in this article. Steps two to five are based on the calculated values and test statistics using SmartPLS. The second step (the effect of the number of indicators and non-significant weights) deals with the problem whereby a large number of indicators cause non-significant weights. The results show that the indicators PR4, PR7, OR5 and CA1 are not significant (i.e., illustrated by a p-value > 0.1), which has to be considered in the following steps. Cenfetelli and Bassellier (2009) also state that this should not be misinterpreted as concerning

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[34] Due to the designed measurement model for Social CRM technology used in previous research, a benchmark measurement (i.e., with reflective indicators) for the corresponding second-order constructs is not available for this data set.

any irrelevance of the indicators. The only required interpretation of this issue is that some indicators have a lower influence than others. In order to gain a deeper understanding, this article continues with step three (co-occurrence of negative and positive indicator weights). No indicator has negative weights; therefore, this is not an issue in the article. Step four (absolute versus relative indicator contributions) needs to be conducted by reporting the respective loadings. The loadings indicate that an "indicator could have only a small formative impact on the construct (shown by a low weight), but it still could be an important part of the construct (shown by a high loading)" (Söllner et al. 2012, p. 10). Concerning the issues with PR4, PR7, OR5, and CA1, which show non-significant but very high loadings (i.e., higher than 0.7), no further improvements (i.e. by dropping indicators or re-specify constructs) have to be performed (Cenfetelli and Bassellier 2009; Hair et al. 2011, 2013). The final step (nomological network effects) can proceed by conducting a redundancy analysis. This compares the formative construct with the reflective constructs, which explains the variance in the reflective measured benchmark (reflective construct) and assess the validity of the formative construct. Due to the reflective measurement model (see Table 48), the four second-order constructs for the capability and performance dimension are investigated. Based on the formatively measured second-order constructs for the resource dimension, the six corresponding first-order constructs (*monitoring and capturing, analysis, exploitation, IS integration, communication* and *management-controlling*) are analyzed. Thus, ten redundancy analyses have to be considered, resulting in values of 0.893 for monitoring and capturing, 0.896 for analysis, 0.892 for exploitation, 0.904 for IS integration, 0.882 for communication, 0.859 for management-controlling, 0.808 for infrastructure capability, 0.879 for process capability, 0.840 for customer performance, and 0.868 for company performance. All results are above the recommended threshold of 0.8 (Chin 1998) and are highly significant with a p-value lower than 0.01. The overall last step is the calculation of the interrelationships between the first-order and second-order constructs, as well as the second-order and third-order constructs, in order to complete the measurement model. Table 49 presents the corresponding results. Thirteen out of fourteen (first-order to second-order constructs) as well as five out of six (second-order to third-order constructs) interrelationships reveal significant path coefficients (i.e., p-value <= 0.05). Due to the low significance of two interrelationships, previous investigations highlight the construct and therefore no further improvements have to be performed (blinded for review). To con-

clude, the measurement model is well-suited and validated within the Social CRM context.[35]

Table 49: Interrelationships of the Measurement Model

First-order construct->	P.C. (p-value)	Second-order constructs ->	P.C. (p-value)	Third-order construct
Monitoring and Capturing**	0.334 (0.022)	Processing*	0.296 (0.067)	Social CRM Technology Use
Analysis*	0.234 (0.067)			
Exploitation**	0.479 (< 0.01)			
IS Integration**	0.482 (< 0.01)	Management**	0.717 (< 0.01)	
Communication**	0.194 (0.041)			
Management-Controlling**	0.436 (< 0.01)			
IT**	0.289 (< 0.01)	Infrastructure Capability**	0.289 (< 0.01)	Social CRM Capability
Culture**	0.627 (< 0.01)			
Company-wide Processes**	0.527 (< 0.01)	Process Capability**	0.627 (< 0.01)	
Department-specific Processes**	0.387 (< 0.01)			
Indirect Customer Performance**	0.617 (< 0.01)	Customer Performance**	0.290 (< 0.01)	Social CRM Performance
Direct Customer Performance**	0.246 (0.050)			
Monetization Performance**	0.413 (< 0.01)	Company Performance**	0.396 (< 0.01)	
Non-monetization Performance**	0.492 (< 0.01)			
P.C. = Path Coefficient; ** p-value <= 0.05; * p-value <= 0.10				

F.5.2 Structural Model

Having established the appropriateness of the measures, the structural model is tested with the outlined parameter setting (mentioned above). The two path coefficients (H1, H3) show significant structural relationships (p-value lower than 0.05). In contrast, the

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[35] Social Media use (moderating effect) is measured with four questions concerning whether the company use the corresponding Social Media account (Yes/No), which determine the categories named, social networks (e.g., Facebook), Blogs (e.g., Twitter), content communities (e.g., YouTube) and collaborative communities (e.g., customer communities), as proposed by Kaplan and Haenlein (2010).

derived hypotheses (H2) of the moderating effect reveal a non-significant structural impact (Figure 18). The plotted results in SPSS highlight the non-significant differentiation of the estimated betas (of Social Media use) for the relationship between Social CRM technology use and Social CRM capability. In other words, the relationship between Social CRM technology use and Social CRM capability is statistically independent from the use of Social Media. The covariate, company size, reveals a highly significant effect on Social CRM performance and a non-significant effect on Social CRM capability.

The f^2 criteria highlight the possible omission of structural relationships (Gefen et al. 2011). All calculated values are below the threshold of 0.02 (Wetzels et al. 2009). Therefore, it can be stated that no important structural relationships are omitted. Due to the formatively measured third-order constructs, the calculation of the Goodness of Fit (GoF) criteria is impossible (Wetzels et al. 2009). The calculated R^2 is above the threshold of 0.5 (Hair et al. 2011), which indicates a moderate structural model. Thus the structural model can explain more than 0.60 of the variation in their corresponding dependent constructs.
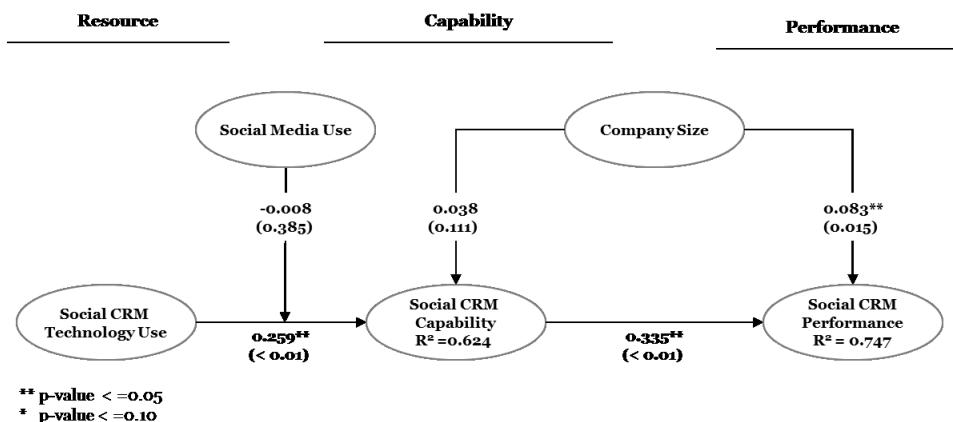
Figure 18: Results of Path Analysis

F.6 Discussion

The present article makes several important contributions to the field by presenting a validated model, which is evaluated by the impact of Social CRM technology use on Social CRM performance mediated by Social CRM capabilities. It can be stated that the evaluated formative constructs are well-suited to the Social CRM context (i.e., no indicator or construct is dropped).

Within the *Social CRM technology use* construct and the second-order construct *processing*, the first-order construct *exploitation* reveals the highest significant interrela-

tionship (path coefficient: 0.479) and *analysis* the lowest significant interrelationship (path coefficient: 0.234). Despite the relevant dimensions of *monitoring and capturing* as well as *analysis,* companies focus on the added value of a technology and the exploitation of data. The articles of Chang et al. (2010), Jayachandran et al., (2005) and Zablah et al. (2012) confirm the results, focusing for example on "sales support", "sales activity planning" (EX3) and the indicator "forecasting" (EX1). An additional reason is given by current technology development. Tools like Hearsay Social and Engagor can monitor Social Media data in real time (m*onitoring and capturing* construct), concerning the issues of a suitable sentiment analysis. Therefore, companies use these tools, but control the results manually, which is one possible reason for the lower and weakly significant interrelationships to the second-order construct *processing*. For the second-order construct *management*, the *management-controlling* and *IS Integration* constructs reveal equally distributed and significant interrelationships. The *communication* highlights a small, but still significant interrelationship. The results for the significant first-order constructs are supported by previous articles, for example the literature supports the data integration via an IS interface (IN2) as proposed by Chang et al. (2010). Current literature within the CRM and Social Media contexts offers stronger support for the *communication* construct. According to Zablah et al. (2012), communication and "employee coordination across organizational functions" have a strong interrelationship with the formative construct named "Use of CRM Interaction Support Tool". Within the Social Media context, Trainor et al. (2014) stated that the communication attribute of employees with other departments has the highest impact on the corresponding construct (reflective). Thus, the article reveals a lower, but still significant interrelationship with the *communication* construct. The second-order constructs *processing* and *management* show significant interrelationships with the third-order construct *Social CRM technology use*. Concerning the fact that this is the first investigation of the topic under study (i.e., measured by formative indicators), no contributions by previous articles can be discussed. For the third-order construct *Social CRM capability,* each interrelationship between the determined constructs (i.e., first- and second-order constructs) is highly significant. The significant interrelationship of the first-order construct *IT* to *infrastructure capability* confirms, for example Trainor et al. (2014), regarding reflective indictors. The *cultural* aspect reveals a high weight for the *infrastructure capability* construct, which is also supported by Trainor et al. (2014). The findings (i.e., the weights of the first-order constructs) for *process capability* are diametrically opposed according to previous par-

tial investigations (blinded for review). This could be due to two possible reasons. First, the second-order construct is measured with new reflective indicators. Second, this article is based on a theoretical background of the resource-based view and the capability perspective, which could influence the different findings of a partial investigation (i.e., an individual investigation of the process aspect). Despite this fact it can be stated that *process capability* and *infrastructure capability* have a significant inter-relationship with *Social CRM capability*, which is supported by, for example, the studies of Keramati et al. (2010) and Rapp et al. (2010). Within the third-order construct *Social CRM performance* and the second-order construct *customer performance* the *indirect customer performance* (Chuang and Lin 2013) has a higher coefficient than *direct customer performance*. For *direct customer performance*, a company, for example, has to involve the business innovation department (for personalized products and services) as well as to implement a number of customer touch points (for customer convenience). As a consequence of the derived company phases of implementing Social CRM, *indirect customer performance* requires less money and resources (e.g., full time equivalents, which analyze and then offer personalized products and services). For the second-order construct *company performance*, the *monetization* and *non-monetization* aspects have almost the same impact values. This result confirms previous discussion in the academic literature, which argues that *non-monetization* aspects are as important as *monetization* aspects (Kaplan and Norton 1996; Kim and Kim 2009; Kim et al. 2003). Both second-order constructs have a significant relationship to *Social CRM performance*.

As outlined in the hypothesis development section, the first hypothesis (H1) can be supported, stating that the processing and management aspects of Social CRM technology use enable a company to implement effective and efficient Social CRM capabilities (Chang et al. 2010; Chuang and Lin 2013; Keramati et al. 2010; Rapp et al. 2010; Wang and Feng 2012). Hypothesis three (H3) can also be supported (Chang et al. 2010; Chuang and Lin 2013; Coltman et al. 2011; Ernst et al. 2011; Harrigan et al. 2010; Jayachandran et al. 2005; Keramati et al. 2010; Rapp et al. 2010; Reinartz et al. 2004; Trainor et al. 2014; Wang and Feng 2012). On the one hand, implemented Social CRM capabilities (e.g., the knowledge of new customer insights) increase the overall customer performance (e.g., with a better customer interaction). On the other hand, Social CRM capabilities (e.g., the involvement of customers as co-creators) have a highly significant impact on organizational performance (e.g., increases the success of newly introduced or developed products and services). The moderating effect (H2)

is non-significant. Therefore, a company can improve their capabilities by gaining a higher degree of Social CRM technology use independent of their Social Media use. The data also reveals that the use of a single Social Media account (e.g., Facebook) has the same effect as the use of a portfolio of Social Media accounts (e.g., Facebook, Twitter and customer communities). A further analysis of the data shows two possible reasons for this result. First, 95% of the companies use at least one social network account, reducing the total amount of companies without a social network account, which can influence the result of the moderating effect. Second, an analysis of grouped Social Media use (i.e., companies with only one Social Media account, companies with two Social Media accounts etc.) reveals that within a group over 90% use social networks. This unequal distribution could have the same effect on the moderator variable. In contrast to previous articles involving RBV, capability perspective and relationship marketing theory (Abdul-Muhmin 2012; Chuang and Lin 2013; Harrigan et al. 2010; Trainor et al. 2014), this is the first article to present a positive significant company size effect on performance. It can be stated that within the new Social CRM context, large companies can profit more than smaller companies in terms of transforming their capabilities into benefits. A non-significant relationship of company size with Social CRM capabilities is found, which is also supported by the findings of Harrigan et al. (2010) and Trainor et al. (2014). To conclude, the three investigated dimensions of the theoretical background (i.e., resource, capability and performance) are well-suited for the Social CRM context.

F.7 Theoretical Contributions and Practical Implications

The study findings provide a number of theoretical contributions. First, an ample body of literature discusses the inability to demonstrate the contribution of a Social CRM technology feature to the business success of a company. To evaluate the contribution of Social CRM technology features, an investigation of tool features is indispensable, as recommended by Zablah et al. (2012). The study applied the rigorous approach of Zablah et al. (2012) within a Social CRM context, which reveals an extension of the topic-related area of technology use. As its second major theoretical contribution, this study adopts the measurement framework from Kim and Kim (2009) within a Social CRM context. Compared to previous works, which investigate individual dimensions of capability or performance, for example, infrastructure capability (Harrigan et al.

2010), process capability (Chang et al. 2010), customer relationship performance (Choudhury and Harrigan 2014; Trainor et al. 2014), and organizational performance (Ernst et al. 2011; Keramati et al. 2010), the study investigates multiple dimensions (i.e., first- and second-order constructs). Finally, this study extends the investigations of Trainor et al. (2014), based on the resource-based view and the capability perspective (Day 1994; Eisenhardt and Martin 2000; Teece et al. 1997), in three different ways: (1) the resource dimension is evaluated from an organizational perspective (e.g., Social CRM technology use); (2) all dimensions are measured with formative indicators (even with higher level constructs); (3) an additional performance dimension (company performance) is evaluated, in contrast to the previous investigation of a customer performance dimension.

Four practical implications can be stated. First, the investigation and evaluation of the impact enables a prioritization of Social CRM technologies features. The prioritization supports companies to evaluate new Social CRM technologies (e.g., investing in a new tool with a valuable feature). Furthermore, the prioritization enables a better allocation of resources (e.g., the IT budget can be distributed efficiently, costs can be saved due to not required staff trainings). Second, the overall structural model facilitates a control system for Social CRM activities, for example an appraisal of social campaigns, considering various aspects of effective or ineffective campaigns. Third, it enables the justification of current and future Social CRM engagements in a company, for example spending money on new investments within Social CRM processes. Increasing the total number of customer touch-points will have a strong influence on the Social CRM performance. Finally, even smaller companies can start their Social CRM activities using a single Social Media account, which should be a social network, and so use Social CRM technologies to establish and/or improve their Social CRM capabilities, instead of implementing a portfolio of different Social Media accounts. To conclude, the investigation of the resources and capabilities within Social CRM helps companies to increase the efficiency and effectiveness of their marketing, communication, as well as their technology efforts, generating deeper insights into relevant relationships in order to improve their performance.

F.8　Conclusion, Limitations and Avenues for Further Research

The study evaluates the impact of Social CRM technology use on Social CRM performance mediated by Social CRM capability. The research approach is quantitative in

nature, investigating and analyzing a sample of n=122 responses to a survey from marketing, communication and IT decision makers. Two major contributions can be stated. First, the evaluated formative indicators are robust (i.e., no indicator is dropped) and fit the corresponding constructs. Second, the results show that Social CRM technology use has a significant impact on capabilities, which in turn have a direct impact on Social CRM performance.

Three potential limitations constrain the results of this research. First, despite the highly significant values of the final measurement model (i.e., the statistical test values), there may be missing formative indicators, which should be included in the model. Second, due to the fact that the study is the first evaluated formative measurement model for Social CRM, conducting a transferability test is not possible (Cenfetelli and Bassellier, 2009). Finally, the data reveals less variation in the Social Media use variable, which could influence the results of the moderating effect.

One promising avenue for further research is the investigation of other covariates like the industry sector, as proposed by Ernst et al. (2010) and Reinartz et al. (2004). Second, a longitudinal analysis (i.e., data over time) can be tested with statistical methods (e.g., compared test statistics for two dates - ANOVAs), in order to generate deeper insights into the investigated model based on the theoretical background. Third, the determined second-order construct customer performance can be measured by surveying customers. The newly evaluated data can be integrated into the structural model and analyzed with a two-level nested regression model (Zablah et al. 2012). To conclude, the rigorously and systematically derived results presented in the article form a sound basis for further research projects.

F.9 Appendix

Table 50: Test Statistics for the Reflective Indicators

Reflective indicators		AVE	Com. R.	Load	p-val.
Infrastructure Capability		0.891	0.943		
IN1_ R**	In general, sufficient resources are available and cultural aspects within the company are established.			0.949	< 0.01
IN2_ R**	All in all, resources are available and cultural aspects disseminated throughout the company.			0.940	< 0.01
Process Capability		0.914	0.955		
PR1_ R**	In general, the processes and activities in the company are improved through Social CRM.			0.957	< 0.01
PR2_ R*	All in all, the improvement of business processes and activities is substantial.			0.955	< 0.01
Customer Performance		0.921	0.959		
CU1_ R**	Generally, Social CRM activities improve a positive customer perception.			0.959	< 0.01
CU2_ R**	All in all, customer perceptions are enhanced substantially due to Social CRM activities.			0.961	< 0.01
Company Performance		0.920	0.959		
OR1_ R**	Generally, Social CRM activities increase business results.			0.957	< 0.01
OR2_ R**	All in all, the profitability of the Social CRM activities enhancing results is high.			0.962	< 0.01
AVE = Average Variance Extracted; Com. R. = Composite Reliability; Load. = Loadings; p-val. = p-value; **p-value < 0.05; *p-value < 0.10					

Table 51: Test Statistics for the Formative Indicators

Formative Indicators		VIF	Weights	p-val.	Load
Social CRM technology use: Processing The company utilizes a tool to …					
Monitoring and Capturing					
CA1	search different type of content (e.g., posts, tweets, etc.) on social media platforms in real time.	1.846	0.079	0.134	0.716
CA2**	collect and store unstructured social media information about the company, product, etc. on their social media platform(s).	2.385	0.417	< 0.01	0.919
CA3**	collect and store unstructured information about a single artifact (e.g., consumer, a single event, etc.) on their social media platform(s).	1.540	0.588	< 0.01	0.951
Analysis					
AN1**	analyze and assess different types of content in real time.	2.577	0.229	0.013	0.891
AN2**	analyze unstructured social media data across various criteria (e.g., consumer segmentation, etc.) in order to identify general trends, profitable consumers, etc.	2.299	0.563	< 0.01	0.959
AN3**	analyze unstructured data for a single consumer (e.g., a high potential influencer) across the one (or more) social media platforms in order to understand their social behavior, motivations, etc.	2.300	0.290	< 0.01	0.885
Exploitation					
EX1**	forecast consumer behavior, and trends etc. and enhance the predictive model.	3.519	0.370	< 0.01	0.910
EX2**	create a network map of consumers and the relationships between them.	3.207	0.207	0.014	0.885
EX3**	support product purchase, increase sales, cross- and upselling (e.g., social advertising campaigns).	2.477	0.190	0.031	0.872

Formative Indicators		VIF	Weights	p-val.	Load
EX4**	prepare summary statements, evaluate user activity and their loyalty, and/or prepare management reports.	4.341	0.333	0.011	0.946
Social CRM technology use: Management					
IS Integration					
IN1**	integrate the social media data with an existing CRM system.	1.000	0.607	< 0.01	0.965
IN2**	integrate other information systems, sales processes and existing technologies, and other tools along the project lifecycle (exclude a CRM system).	1.000	0.442	< 0.01	0.938
Communication					
CO1**	interact personally, one-to-one communication, with a single consume.	1.937	0.307	0.014	0.812
CO2**	communicate with an entire community and/or multiple consumers.	1.369	0.271	0.035	0.800
CO3**	communicate with other employees throughout the organization.	1.402	0.595	< 0.01	0.898
Management-Controlling					
MC1**	manage their social media accounts, communities and forums, such as moderation, internal process management, etc.	2.377	0.364	< 0.01	0.910
MC2**	allocate employee access rights.	2.104	0.202	0.030	0.853
MC3**	apply different engagement features (e.g., gamification).	2.230	0.526	0.010	0.944
Social CRM Capability: Infrastructure Capability					
Within the context of Social CRM, the company …					
Culture					
IN1**	integrates Social CRM into the company culture.	1.000	0.383	< 0.01	0.701
IN2**	considers cultural aspects.	1.000	0.802	< 0.01	0.955
IT					
IN3**	provides an online brand community to interact with customers e.g., about service or product-related content.	1.000	0.422	< 0.01	0.794
IN4**	has established a good infrastructure (e.g., IT resources).	1.000	0.713	< 0.01	0.933

Formative Indicators		VIF	Weights	p-val.	Load
Social CRM Capability: Process Capability					
Company-wide Processes					
PR1**	improves organizational processes and activities so that they are more customer-oriented.	2.059	0.338	< 0.01	0.874
PR2**	supports sales activities by other users.	2.051	0.434	< 0.01	0.922
PR3**	improves ubiquitous communication between the customers and the company.	1.747	0.348	< 0.01	0.875
Department-specific Processes					
PR4	improves the level of knowledge about a customer through new customer insights.	2.296	0.112	0.128	0.833
PR5**	enables a more efficient and effective segmentation (e.g., market and customer segmentation).	2.277	0.342	0.036	0.908
PR6**	improves the involvement of customers as co-creators (e.g., in the innovation process).	2.937	0.299	< 0.01	0.887
PR7	enhances the effectiveness of company-initiated interactions with customers.	4.609	0.138	0.137	0.984
PR8**	improves the efficient and effective arrangement of target-oriented customer events.	3.122	0.246	0.031	0.846
Social CRM Performance: Customer Performance					
Within the context of Social CRM, the company …					
Indirect Customer Performance					
CU1**	enhances and simplifies the exchange of information between consumers.	1.641	0.285	< 0.01	0.798
CU2**	enhances the perceived relationship quality of customers with the company.	2.37	0.396	< 0.01	0.906
CU3**	increases customer interest in company products, services and/or company activities.	1.646	0.45	< 0.01	0.916

Formative Indicators		VIF	Weights	p-val.	Load
Direct Customer Performance					
CU4**	improves personalized and customer-oriented products and services.	1.000	0.345	< 0.01	0.790
CU5**	improves customer access to a variety of support options for interacting with the company.	1.000	0.758	< 0.01	0.960
Social CRM Performance: Company Performance					
Monetization Performance					
OR1**	increases the success of newly introduced or developed products and services.	1.867	0.3	< 0.01	0.842
OR2**	increases customer value over the relationship lifespan.	2.354	0.317	< 0.01	0.895
OR3**	increases the company's profit and/or decreases costs.	1.757	0.496	< 0.01	0.935
Non-monetization Performance					
OR4**	increases the efficiency and effectiveness of business activities (e.g., increases the efficiency of supply chain management).	1.999	0.589	< 0.01	0.913
OR5	increases brand awareness and brand recognition (e.g., by means of customer recommendations).	1.627	0.032	0.289	0.727
OR6*	secures a competitive advantage.	1.537	0.498	< 0.01	0.881

Appendix

Interview 1

General information	
Date	July 7th 2014
Time	10:00h - 10:30h
Type of Meeting	Phone interview
Interviewer	Torben Küpper

Interviewee information	
Name	Anonymized
Company	Anonymized
Industry	Telecommunication
Position/Function	Business owner public support Social Media/community manager

Part A - Social CRM performance

Messt ihr die Leistung (Performance) Eurer Social Media Aktivitäten?
Wurde nicht direkt abgefragt.
Messt ihr die Leistung (Performance) Eurer CRM Aktivitäten?
Es werden CRM Aktivitäten gemessen. CRM fokussiert sich sehr stark auf den Einsatz von bestimmten Technologien. Die allgemeine Leistungsmessung ist Kampagnen abhängig. Aktuell werden Cross-Channel-Initiativen aufgesetzt. Ein Beispiel ist das „pick up in-store"-Konzept, d.h. online bestellen und im Geschäft abholen. Hier wird die Conversion von online zu offline gemessen.
Messt ihr auch Eure Social CRM Aktivitäten/Ergebnisse?
Social CRM Aktivitäten/Ergebnisse werden in verschiedenen Bereichen gemessen (z. B. Marketing, Customer Care etc.).
Was wird derzeit im Bereich Social CRM gemessen? Welche Metriken messt ihr?
Im Bereich Customer Care wird u.a. folgendes gemessen: • Call Deflection • Service-Levels (z. B. Erstantwort innerhalb von 2 Stunden etc.)

- Kundenzufriedenheit mit einer Umfrage => hat eine sehr grosse Relevanz
- Net Promoter Score (NPS)

Im Marketing werden Metriken in Abhängigkeit der Kampagnen gemessen. Schlussendlich geht es hier um:

- Reichweite
- Interessentengewinnung (Lead-Ggenerierung)

Warum wird es gemessen?

Im Bereich Customer Care gibt es klare Zielvorgaben (z. B. Kundeninteraktion online steigern, Kosten im Support sparen), die erfüllt werden und daher messbar sein müssen. Ein Grund warum die Community so erfolgreich ist kann darauf zurückgeführt werden, dass die *anonym* ein „Messmodell in Place" hat.

Im Bereich Marketing ermöglicht die Messung eine Steuerung der Aktivitäten (z. B. welche Kampagnen verliefen gut und hatten eine grosse Reichweite und welche waren nicht so erfolgreich).

Welchen Mehrwert hat das Unternehmen von der Messung?

Die Messung ist ein Steuerungsorgan, für das sich weitere Ziele ableiten lassen und dadurch der Mehrwert für das Unternehmen realisiert werden kann (z. B. Cross- und Up-Selling, Steigerung der Kundenzufriedenheit etc.).

Part B - Social CRM technology use

Was für Social CRM Technologien nutzt das Unternehmen?

Im Bereich Social CRM werden viele Technologien eingesetzt. Die drei „Wichtigsten" Lösungsanbieter sind:

- Lithium
- SAS
- Engagor (Pilotphase)

Muss die Nutzung der Social CRM Technologien gemessen werden? Warum?

Die Messung der Nutzung ist ebenfalls sehr relevant, da Technologien bzw. die entsprechenden Lizenzen immer (sehr) teuer sind (Kostenaspekt).

Was sind die Eigenschaften der Social CRM Technologien, die das Unternehmen derzeit nutzt?

Die Eigenschaften der eingesetzten Technologien sind:

- Engagement (Lithium)
- Datenanalyse, Datamining (SAS)
- Monitoring, Engagement (Engager)

Warum nutzt das Unternehmen diese Eigenschaften der Social CRM Technologien? Was soll damit erreicht werden?

Der Einsatz von SAS ermöglicht aktuell eine Echtzeit (real-time) Betrachtung der Social Media Plattformen. Es kann überwacht werden wie die allgemeine Stimmung ist, was die Themen sind über die die User sprechen, was der Erfolg einzelner Kampagnen ist etc. Das Ziel für die Zukunft ist es, aus diesen Daten eine Vorhersage treffen zu können und einen direkten Steuerungsprozess zu integrieren.

Der Einsatz von Engagement-Technologien im Support (z. B. Messung des Service-Levels) ermöglicht eine Ressourcenallokation (z. B. wie viele Anfragen gibt es aktuell, wie viele Agenten sind zur Zeit geplant etc.)

Was ist der Mehrwert davon?

Wurde nicht direkt abgefragt.

Part C - Impact of Social CRM technology use on performance

Wird der Zusammenhang zwischen der Nutzung der Social CRM Technologien und der Leistung (ganzheitlich) gemessen? Müsste dieser Zusammenhang gemessen werden?

Auf Kampagnenebene und für die Echtzeitanalyse wäre die Bestimmung dieses Zusammenhangs bestimmt interessant und auch sehr relevant.

Was ist der Mehrwert davon?

Für eine Evaluation von neuen Social CRM Technologien hätte das Konzept einen grossen Mehrwert.

Interview 2

General information	
Date	July 7th 2014
Time	11:00h - 11:30h
Type of Meeting	Phone interview
Interviewer	Torben Küpper

Interviewee information	
Name	Anonymized
Company	Anonymized
Industry	Insurance
Position/Function	Senior Social Media Marketing

Part A - Social CRM performance

Messt ihr die Leistung (Performance) Eurer Social Media Aktivitäten?
Es werden Social Media Aktivitäten gemessen.
Messt ihr die Leistung (Performance) Eurer CRM Aktivitäten?
Es werden CRM Aktivitäten gemessen. Diese sind stark Kampagnen getrieben. Gemessen werden u.a. die Reichweite und die Kundenzufriedenheit durch eine Umfrage (qualitatives Feedback).
Messt ihr auch Eure Social CRM Aktivitäten/Ergebnisse?
Es werden Social CRM Aktivitäten/Ergebnisse gemessen.
Was wird derzeit im Bereich Social CRM gemessen? Welche Metriken messt ihr?
Im Bereich Social CRM wird u.a. gemessen: • Kanalspezifische Reichweite (z. B. Anzahl an Likes, Followern etc.)   • Direkte Vertragsabschlüsse (durch den Vertrieb)   • Engagement   • Erschliessung neuer Kundensegmente (Pilotphase)
Warum wird es gemessen?
Es werden pro Jahr neue Ziele definiert, die erreicht/erfüllt werden müssen. Die Messung ermöglicht auch die Steuerung aktueller und zukünftiger Social CRM Aktivitäten. Der Wert kann quantifiziert werden.

> **Welchen Mehrwert hat das Unternehmen von der Messung?**

> Im Aussendienst (Vertrieb) gibt es einen Business Case (finanziellen Mehrwert). Als nicht-finanziellen Mehrwert, der schwer zu quantifizieren ist, will die *anonym* eine Imageverbesserung erzielen und die Servicezufriedenheit steigern.

Part B - Social CRM technology use

> **Was für Social CRM Technologien nutzt das Unternehmen?**

> Im Bereich Social CRM werden die folgenden Lösungsanbieter genutzt:
> * Radian6
> * Hearsay Social

> **Muss die Nutzung der Social CRM Technologien gemessen werden? Warum?**

> Die Messung der Nutzung wäre sehr spannend und interessant. Fakt ist aber, dass die *anonym* es derzeit noch nicht macht.

> **Was sind die Eigenschaften der Social CRM Technologien, die das Unternehmen derzeit nutzt?**

> Die Eigenschaften der genutzten Technologien sind:
> * Monitoring, Engagement, Reporting, Workflow-Funktion, d.h. Interaktion von mehreren Mitarbeitern (Radian6)
> * Datenanalyse (Radian6, Hearsay Social)
> * Kommunikationsmanagement (z. B. Verteilung von Inhalten), Monitoring, Messung von Kundenkontakten (Hearsay Social)

> **Warum nutzt das Unternehmen diese Eigenschaften der Social CRM Technologien? Was soll damit erreicht werden?**

> Der Aussendienst hat drei Ziele, für die Social CRM Technologien eingesetzt werden:
> * Imagesteigerung (z. B. der Agenturen)
> * Effizienzsteigerung (z. B. Verbesserung der Abstimmungen zwischen *anonym* und den Agenturen)
> * Abschlüsse realisieren

> **Was ist der Mehrwert davon?**

> Der allgemeine Mehrwert für das Unternehmen ist es, die Markenbekanntheit zu steigern, den Service zu verbessern, Abschlüsse zu realisieren (Monetarisierung) und die Kundenbindung zu erhöhen.

Part C - Impact of Social CRM technology use on performance

Wird der Zusammenhang zwischen der Nutzung der Social CRM Technologien und der Leistung (ganzheitlich) gemessen? Müsste dieser Zusammenhang gemessen werden?
Die ersten Ansätze, die den Zusammenhang (z. B. die Datenanalyse generiert neue Customer Insights, wodurch neue Marktsegmente erschlossen werden, die dann das Marketing für neue Kampagnen nutzt) untersuchen, wurden operationalisiert, sind aber derzeit noch zu wenig strukturiert. Erste Schnittstellenimplementierungen für eine unternehmensweite, abteilungsübergreifende Integration sind derzeit geplant.
Was ist der Mehrwert davon?
Wurde nicht direkt abgefragt.

Interview 3

General information	
Date	July 10th 2014
Time	10:15h - 11:00h
Type of Meeting	Personal interview
Interviewer	Torben Küpper

Interviewee information	
Name	Anonymized
Company	Anonymized
Industry	Insurance
Position/Function	Community Manager

Part A - Social CRM performance

Messt ihr die Leistung (Performance) Eurer Social Media Aktivitäten?
Es werden Social Media Aktivitäten gemessen. Das Thema hat für die *anonym*eine grosse Relevanz.
Messt ihr die Leistung (Performance) Eurer CRM Aktivitäten?
Es werden CRM Aktivitäten gemessen.
Messt ihr auch Eure Social CRM Aktivitäten/Ergebnisse?
Derzeit wird noch keine *dauerhafte* Messung im Bereich Social CRM vorgenommen. Das Ziel ist es, den Nachweis zu erbringen, dass die Kündigungsquote der Social Media Nutzer (der *anonym*) im Vergleich zu den „offline" Kunden, die z. B. keine Mitglieder der Online-Brand-Community sind, geringer ist.
Was wird derzeit im Bereich Social CRM gemessen? Welche Metriken messt ihr?
Im Bereich Social CRM wird in einem Pilotprojekt der Net Promoter Score mit Hilfe der Social Media Nutzern der *anonym* (z. B. Mitglieder der Online-Brand-Community) bestimmt. Zur Zeit werden die technischen Grundlagen geschaffen, dass Metriken im Bereich Social CRM (z. B. Customer Journeys) gemessen werden können.

Warum wollt ihr aktuelle Metriken, als auch möglich messbare Metriken in der Zukunft gemessen?
Die Messung der Metriken ermöglicht: • eine Rechtfertigung des Engagements der *anonym* im Bereich Social CRM • den Ausbau weiterer Social CRM Aktivitäten (z. B. Tätigung von Investitionen)
Welchen Mehrwert hat das Unternehmen von der Messung?
Das Ziel der *anonym* ist es, Reichweite zu generieren und mehr aktive Nutzer für z. B. die Erstellung von Inhalten zu gewinnen.

Part B - Social CRM technology use

Was für Social CRM Technologien nutzt das Unternehmen?
Im Bereich Social CRM werden die folgenden Lösungsanbieter genutzt: • Lithium • Hootsuite • Argus
Muss die Nutzung der Social CRM Technologien gemessen werden? Warum?
Die Messung der Nutzung ist relevant, aber wird derzeit nicht gemacht.
Was sind die Eigenschaften der Social CRM Technologien, die das Unternehmen derzeit nutzt?
Die Eigenschaften der Softwarelösungen sind: • Intern und extern Kommunikation (Hootsuite) • Monitoring (Argus) • Management/Verwaltungs-Funktion, z. B. „Single Sign-on" (Lithium)
Warum nutzt das Unternehmen diese Eigenschaften der Social CRM Technologien? Was soll damit erreicht werden?
Das Monitoring ermöglicht das Tracking von *anonym* relevanten Inhalten. Durch die Management-Funktion können weitere Online-Kanäle mit bestehenden verknüpft werden. Die Kommunikation-Funktion ermöglicht eine effektive und effiziente Kundenbeziehung aufzubauen (z. B. mehrere Mitarbeiter können ohne Redundanz einen Twitter Kanal bedienen).

Was ist der Mehrwert davon?

Der Mehrwert für die *anonym* ist die gute Quellenabdeckung (durch das Monitoring). Die *anonym* kann feststellen was auf den verschiedenen Social Media Plattformen stattfindet.

Part C - Impact of Social CRM technology use on performance

Wird der Zusammenhang zwischen der Nutzung der Social CRM Technologien und der Leistung (ganzheitlich) gemessen? Müsste dieser Zusammenhang gemessen werden?

Derzeit existiert kein Konzept, das einen solchen Zusammenhang herstellen kann. Für die zukünftige Social CRM Initiativen der *anonym* ist es von Relevanz.

Was ist der Mehrwert davon?

Wurde nicht direkt abgefragt.

Interview 4

General information	
Date	July 2nd 2014
Time	9:00h - 9:30h
Type of Meeting	Phone interview
Interviewer	Torben Küpper

Interviewee information	
Name	Anonymized
Company	Anonymized
Industry	Insurance
Position/Function	Marketing strategy

Part A - Social CRM performance

Messt ihr die Leistung (Performance) Eurer Social Media Aktivitäten?
Wurde nicht direkt abgefragt.
Messt ihr die Leistung (Performance) Eurer CRM Aktivitäten?
Wurde nicht direkt abgefragt.
Messt ihr auch Eure Social CRM Aktivitäten/Ergebnisse?
Derzeit gibt es noch keine direkte Leistungsmessung im Bereich Social CRM, da die *anonym* erst seit kurzem auf Social Media Plattformen aktiv ist. Aber grundsätzlich hat das Thema Leistungsmessung eine sehr grosse Relevanz.
Was wird derzeit im Bereich Social CRM gemessen? Welche Metriken messt ihr?
Es werden Social Media Metriken gemessen: • Reichweite, (z. B. Anzahl an Likes, Followern etc.) • Conversion-Rate, d.h. wie viele User sind über Social Media Plattformen auf die Website der *anonym* gelangt
Warum wird es gemessen?
Langfristig muss aufgezeigt werden, dass die Investitionen in aktuelle sowie in zukünftige Social CRM Aktivitäten gerechtfertigt sind (Business Case). Erst die Messung von Social CRM Aktivitäten/Ergebnissen ermöglicht eine Rechtfertigung, dass Social CRM einen Mehrwert für das Unternehmen generiert oder nicht.

Welchen Mehrwert hat das Unternehmen von der Messung?
Die Betrachtung von nicht-finanziellen Metriken (z. B. die Erschliessung neuer Kundensegmente/Zielgruppen, Verbesserung des Services etc.) wäre für die *anonym* auch relevant (als Mittel zum Zweck), wenn am Ende z. B. die neuen User zu Kunden werden, d.h. einen Kaufabschluss realisieren (finanzielle Metriken).

Part B - Social CRM technology use

Was für Social CRM Technologien nutzt das Unternehmen?
Im Bereich Social CRM Monitoring wird eine selbst entwickelte Technologie verwendet. Zusätzlich in Beobachtung sind: • Hearsay Social • Salesforce
Muss die Nutzung der Social CRM Technologien gemessen werden? Warum?
Die Messung der Nutzung ist für die *anonym* relevant, um z. B. den Vertrieb kontrollieren und steuern zu können.
Was sind die Eigenschaften der Social CRM Technologien, die das Unternehmen derzeit nutzt?
Die selbst entwickelte Technologie kann die „digitale Welt" überwachen (monitoren).
Warum nutzt das Unternehmen diese Eigenschaften der Social CRM Technologien? Was soll damit erreicht werden?
Die Monitoring-Funktion erkennt Inhalte, die mit dem Unternehmen in Verbindung stehen. In Planung sind auch Technologien, die Life Time Events erkennt und eine Nachricht an die entsprechende Agentur, mit dem Hinweis auf eine mögliche Veränderung der bestehende Versicherungspolice, sendet.
Was ist der Mehrwert davon?
Der Mehrwert wird durch die Integration des Vertriebs, durch neue Abschlüsse, einer Steigerung der Loyalität oder die Erweiterungen bestehender Versicherungspolicen, realisiert werden.

Part C - Impact of Social CRM technology use on performance

Wird der Zusammenhang zwischen der Nutzung der Social CRM Technologien und der Leistung (ganzheitlich) gemessen? Müsste dieser Zusammenhang gemessen werden?
Ein Konzept gibt es derzeit noch nicht, aber es ist für das Unternehmen sehr relevant.
Was ist der Mehrwert davon?
Die Quantifizierung des Zusammenhangs ermöglicht eine Priorisierung von bestehenden und/oder neuen Technologien. Die Priorisierung ist nichts anders als ein Business Case, da mögliche Kosten reduziert (z. B. Lizenzkündigungen) und bestehende Ressourcen (z. B. Trainings der Mitarbeiter für die Einführung einer neuen Technologie) besser verteilt und genutzt werden können.

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Curriculum Vitae

Personal information

Name	Torben Küpper
Date of birth	April 23, 1986
Place of birth	Nastätten, Germany
Nationality	German

Education

2015	University of Jyväskylä, Jyväskylä, Finland Visiting doctoral student
2012-2015	University of St. Gallen, St. Gallen, Switzerland PhD programme in management (business innovation)
2006-2012	Johannes Gutenberg University Mainz, Mainz, Germany Diploma programme in business administration
2003-2005	Nikolaus-August-Otto-Schule, Diez, Germany A level

Work experience

2012-2015	University of St. Gallen, Institute of Information Management, Chair of Prof. Dr. Reinhard Jung, Switzerland Research associate
2011-2012	Commerzbank AG, Frankfurt, Germany Capital market risk
2011	Investitions- und Strukturbank Rheinland-Pfalz, Mainz, Germany Venture capital
2007-2011	Johannes Gutenberg University Mainz, Chair of statistic and chair of finance, Germany Student assistant