CRM system implementation and firm performance: the role of consultant facilitation and user involvement

Samppa Suoniemi
Department of Marketing and IB, Turku School of Economics, University of Turku, Turku, Finland
Alex Zablah
Haslam College of Business, University of Tennessee, Knoxville, Tennessee, USA
Harri Terho and Rami Olkkonen
Department of Marketing and IB, Turku School of Economics, University of Turku, Turku, Finland
Detmar Straub
Fox School of Business and Management, Temple University, Philadelphia, Pennsylvania, USA, and
Hannu Makkonen
School of Marketing and Communication, University of Vaasa, Vaasa, Finland

Abstract

Purpose – The current research aims to answer the following question: To what extent and under what conditions does hiring consultants to implement a customer relationship management (CRM) system produce performance gains for companies? To answer this question, this research delves into the critical interdependent roles of CRM consultant resources (CR) and user involvement (UI) in overcoming CRM's technological and organizational implementation challenges.

Design/methodology/approach – A quantitative field study methodology was used to empirically test the research hypotheses. Cross-sectional data (N = 126) were collected from large client companies using CRM technology. Partial least squares-structural equation modeling was used to estimate the significance levels of the structural model.

Findings – The findings indicate that the extent to which CRM consultants improve CRM system quality (SQ) and, ultimately, firm performance, largely depends on UI, which acts as the key facilitating mechanism to cope with application complexity (APP) and requirements uncertainty (REQ).

Originality/value – This research probes into the largely unexplored interactions between CRM CR, UI, APP and REQ. Using these parameters, this model successfully predicts CRM SQ and firm performance.

Keywords customer relationship management (CRM) system, consultant resources, user involvement, CRM system quality, firm performance

Paper type Research paper

Introduction

Customer relationship management (CRM) is a specialized technology that enables firms to capture, store, access, share and analyze large quantities of customer data. The potential benefits of using CRM systems include higher customer loyalty, improved marketing effectiveness, better customer service and support and lower costs through improved efficiency (Cao and Tian, 2020; Migdadi, 2021; Mithas *et al.*, 2005). Despite CRM technology's continued growth and development, CRM initiatives often fail to meet expectations (Chang *et al.*, 2010; Reimann *et al.*, 2010; see also Chen *et al.*, 2020; CSO Insight, 2018; Ekman *et al.*, 2015). As external CRM consultants typically play a large role in designing and leading implementations, they bear at least some responsibility for the prevalence of failed CRM initiatives (Chen and Popovich, 2003; Fjermestad and Romano, 2003). However, CRM systems must provide a transparent view of all customer data from the front- and back-office data sources to coordinate cross-functional customer processes where interdependencies exist between users and business functions (Jones *et al.*, 2002; Speier and Venkatesh, 2002). CRM systems are therefore inherently cross-functional and user-intensive, suggesting that consultants must simultaneously work: to integrate CRM with other enterprise systems and technologies (such as social media applications, marketing

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automation technologies, as well as artificial intelligence and big data and, more generally, knowledge management systems) to access all customer data (technological implementation) and to modify CRM system design to address the requirements of different users and user groups (organizational implementation) (Becker *et al.*, 2009; Chen and Popovich, 2003; Ghazaleh and Abdelrahim, 2020; Matthyssens and Johnston, 2006; Migdadi, 2021; Moore *et al.*, 2015; Wilson *et al.*, 2002).

Given the diversity of functions and individuals that CRM systems must serve, the current research attempts to answer the following question: To what extent and under what conditions does hiring CRM consultants to implement a CRM system yield firm performance gains? To answer this question, this paper examines the critical interdependent roles of CRM consultant resources (CR) and user involvement (UI) in overcoming CRM's technological and organizational implementation challenges. Grounded in these theoretical and empirical bases, we model the intricate interplay between CRM CR and UI, as they interact to enhance CRM system quality (SQ) across projects that vary in terms of the risk they pose to consultants, client firms and their customers. This risk varies, we propose because of either the complexity of the application being installed or uncertainty regarding user requirements. The findings indicate that the extent to which CRM consultants improve CRM SQ and, ultimately, firm performance, largely depends on UI, which acts as the key facilitating mechanism to cope with application complexity (APP) and requirements uncertainty (REQ).

Our research makes a major contribution by probing into the largely unexplored interactions between IT innovation factors, CR, and UI, and IT risk factors, APP and REQ (Fichman, 2004; Gemino *et al.*, 2008; Karimi *et al.*, 2007a; Wallace *et al.*, 2004). The relationships between these long-established IT implementation factors were tested in the CRM context. In so doing, we contribute to extant CRM research and practice by improving our understanding of the largely unexplored role of CRM consultants as drivers of technology success.

Theoretical framework and hypotheses

In framing our investigation, we build on CRM system implementation research in marketing (Chen and Popovich, 2003; Fjermestad and Romano, 2003) and on factor-based IT innovation research (Cooper and Zmud, 1990; Fichman, 2004; Klein and Sorra, 1996) and IT risk studies (Barki *et al.*, 1993; McFarlan, 1981; Nidumolu, 1995; Zmud, 1980). The research framework that guides our inquiry appears below in Figure 1.

The following sections define the constructs and discuss the theories to articulate the hypotheses.

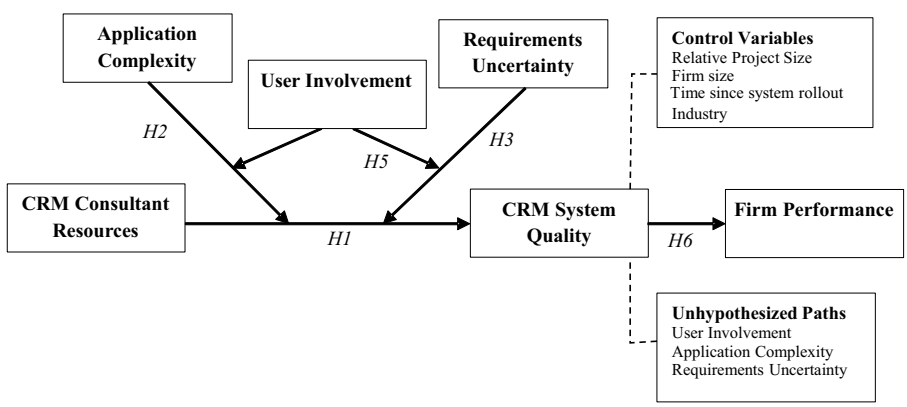
Customer relationship management consultant resources and their direct impact on customer relationship management system quality

Because of the specialized technology embedded in modern CRM software packages, CRM consultants are required to carry out large-scale CRM projects that almost always involve a great deal of system customization and integration work. As alluded to earlier, CRM CR refer to the experience and competence of external CRM consultants to deliver a technological CRM solution that meets client requirements (Fjermestad and Romano, 2003; Zablah *et al.*, 2004a). Drawing on the IT innovation and IT risk literatures, the direct output of CRM consultant efforts is CRM SQ, that is, the effectiveness of a CRM application to support an organization's customer-focused processes (Barki *et al.*, 2001; Wallace *et al.*, 2004).

To implement and achieve superior CRM SQ, CRM consultants carry out the technological integration of the CRM application into the firm's overall IT architecture. The technological integration of CRM with other enterprise information systems (IS) often proves difficult because of application silos, thus highlighting the key role of consultants in boundary spanning (Chen and Popovich, 2003; Wilson *et al.*, 2002). In addition, CRM CR are responsible for meeting CRM's criteria for real-time functionality and system downtime.

Equally importantly, CRM consultants are responsible for understanding the client firm's needs and, accordingly, for carrying out modifications to the system. The firm-wide scope of CRM's intended end users entails that a diverse set of user requirements must be met, underscoring the critical role of CRM consultants in developing effective CRM solutions to business problems. CR must thus carry out the crucial task of needs and requirements analyses as a relatively sure guide to system design; they also need to identify system attributes that are likely to engender resistance among business users (Fjermestad and Romano, 2003). In addition, these requirements may change frequently in the case of CRM users, thus highlighting the role that consultants play in enhancing CRM SQ (Ramachandran and Gopal, 2010).

Figure 1 Research model



A high-quality CRM system is dependable, does not suffer significant downtime because of extensive maintenance issues and can provide users with on-demand access to necessary customer information right when it is needed. Sufficient and expert CRM CR decrease the risk of unexpected technical and organizational problems that negatively affect CRM project outcomes (McFarlan, 1981; Nidumolu, 1995; Ramachandran and Gopal, 2010; Zmud, 1980). Altogether, we hypothesize that:

H1. CRM consultant resources (CR) will have a positive effect on CRM system quality (SQ).

Two-way moderating effects of application complexity and requirements uncertainty

APP refers to the technological risks associated with the complexity of the CRM application with regard to the integration of the CRM technology into the organizational environment (Gemino *et al.*, 2008; Zmud, 1980). As the implementation progresses, APP can conceivably grow because of emergent knowledge about the difficulties of integration. REQ, in turn, refers to the risk of not properly specifying the requirements of the end users who will be using the CRM system (Barki *et al.*, 1993; Nidumolu, 1995). Building on prior IS risk studies that have examined the direct negative impacts of risk factors, such as APP and REQ, on CRM SQ (Barki *et al.*, 1993, 2001; Gemino *et al.*, 2008; Wallace *et al.*, 2004), we expect that APP and REQ will negatively interact with the relationship between CRM CR and the CRM SQ. We expect that APP will have a negative moderating effect on the relationship between CRM consulting resources and CRM SQ. CR are a scarce resource, and when applications grow in complexity, the ability of consultants to integrate systems and create high-quality systems decreases. In short, the more complex the system is, the lower the chance is that consultants will be able to successfully integrate and implement that system. Lacking sufficient consulting resources, such as experienced consultants, to carry out challenging integration work, the CRM application is not likely to meet the client firm's expectations in terms of SQ (Chen and Popovich, 2003; Wilson *et al.*, 2002). In contrast, in CRM projects with low APP, the value-added of consultants is likely to be higher. Therefore:

H2. Application complexity (APP) negatively moderates the relationship between CRM consultant resources (CR) and CRM system quality (SQ), such that this relationship becomes weaker as application complexity increases.

We similarly anticipate that REQ will have a negative moderating effect on the relationship between CRM consultants and CRM SQ. When the CRM project involves high REQ, the customization work on the CRM software becomes more demanding than in user environments with more manageable needs and expectations, that is, when it is less demanding for the consultants. CRM consultants thus play a more critical role in delivering high-quality CRM systems when the requirements are properly specified than when they are not (Chen and Popovich, 2003; Fjermestad and Romano, 2003; Speier and Venkatesh, 2002). Hence:

H3. Requirements uncertainty (REQ) negatively moderates the relationship between CRM consultant resources (CR) and CRM system quality (SQ), such that this relationship becomes weaker as requirements uncertainty (REQ) increases.

In sum, we expect that the positive relationship between CRM consultants and SQ will weaken as application complexity and REQ go up because the risk of failure is higher under such circumstances (Barki *et al.*, 1993; McFarlan, 1981).

Three-way moderating effects of user involvement

UI has long been recognized as a key antecedent of IT implementation success (Barki and Hartwick, 1989; Boynton *et al.*, 1994; Franz and Robey, 1986). UI is defined here as both user engagement with and actual participation in the CRM implementation project (Barki and Hartwick, 1989; Boynton *et al.*, 1994). UI entails various activities related to system design that end users participate in as well as the psychological commitment of the users to the CRM project. Because CRM systems are cross-functional and user-intensive, UI could well be the critical factor in driving CRM technology performance (Chen and Popovich, 2003; Fjermestad and Romano, 2003). We argue next that UI acts as a facilitating condition for CRM consultants to overcome the risks associated with high APP. Specifically, we hypothesize that UI will further reinforce the negative moderating effect of APP on the relationship between CRM consultants and CRM SQ. In CRM projects with high APP, too much UI overloads the ability of CRM consultants to carry out technological integration work. For example, CRM consultants can certainly make superior modifications to the CRM software by receiving user input and feedback on system usability and functionality to find problems that can be fixed early in the design process (Fjermestad and Romano, 2003; Karimi *et al.*, 2007b; Zablah *et al.*, 2004a). However, as UI increases, the complexity of the implementation effort will also be elevated and the ability of consultants to process excessive user input will be hamstrung. With the limited involvement of different user departments, data ownership issues may also be readily solved, allowing CRM consultants to gain easier access to the databases and enterprise applications that are necessary for CRM's technological integration (Chen and Popovich, 2003; Wilson *et al.*, 2002). However, as the number of users involved jumps up, communication with end users does not reinforce consultants' understanding of the client firm's business, thereby affecting the work related to identifying the number of required links between databases and applications and automating business processes (Wallace *et al.*, 2004).

In sum, we posit that the positive effect of CRM CR on CRM SQ will depend on the degree of APP the consultants must overcome in any given CRM project. We further anticipate that the ability of CRM consultants to successfully address these risks will be worsened by the presence of UI. Hence:

H4. There is a three-way interaction effect of CRM consultant resources (CR), application complexity (APP) and user involvement (UI) on CRM system quality (SQ), such that the weakening effect of APP (i.e. negative moderation) on the CR–SQ relationship becomes stronger when UI is high and weaker when UI

is low (i.e. the overall interaction will have a negative sign).

Furthermore, we hypothesize that user involvement works against the negative moderating effect of REQ on the relationship between CRM consultants and CRM SQ. Because the REQ of CRM end users varies considerably based on department, job position and usage domain, this diversity accentuates the need to know them and the tasks that they perform, much more so than in the case of other enterprise systems (Fjermestad and Romano, 2003). In CRM projects with high REQ, CRM consultants without UI are less likely to carry out effective requirements analyses and subsequent successful system configuration. UI is even more important in the case of CRM because the communication between technical experts and front-office users is often problematic (Wilson *et al.*, 2002). For this reason, frontline employees often prefer deeper, face-to-face involvement in the system design process that may also lead to better end-user approval of CRM when their requests are configured into the system (Fjermestad and Romano, 2003; Wilson *et al.*, 2002). Thus, we anticipate that CRM consultants will be less effective in driving CRM SQ when REQ is high. However, this negative effect is expected to be lessened when end users are involved because they help to offset how external consultants can deal with these risks. Thus:

H5. There is a three-way interaction effect of CRM consultant resources (CR), requirements uncertainty (REQ), and user involvement (UI) on CRM system quality (SQ), such that the weakening effect of REQ (i.e. negative moderation) on the CR–SQ relationship becomes weaker when UI is high and stronger when UI is low (i.e. the overall interaction will have a positive sign).

Customer relationship management system quality and its impact on firm performance

IT innovation research posits that the performance implications of completed IT applications should be examined in terms of their adoption by end users or their impact on individual or organizational performance (Cooper and Zmud, 1990; Fichman, 2004; Klein *et al.*, 2001). Prior research suggests that the financial returns gained from CRM tools will depend on the extent to which the CRM system can efficaciously support the diverse needs of dissimilar end users as they execute a myriad of marketing, sales and service processes (Fjermestad and Romano, 2003; Hunter and Perreault, 2007; Zablah *et al.*, 2004b). To illustrate, Jayachandran *et al.* (2005) argue that CRM systems can improve customer-focused processes by enabling firms' ability to:

- engage in two-way exchanges with customers;
- capture large amounts of relevant customer information;
- integrate customer data from different sources and across business functions; and
- provide end users with on-demand access to customer information needed for strategic and tactical (during "live" interactions at the customer interface) decision-making.

Each of these CRM system-enabled customer processes plays a crucial role in developing and retaining profitable customer relationships, and thus, they are important predictors of firm performance (Jayachandran *et al.*, 2005; Mithas *et al.*, 2005; Reinartz *et al.*, 2004); that is, relative financial performance in terms of asset utilization with an accounting-based return-on-assets (ROA) measure (Tanriverdi and Venkatraman, 2005; Venkatraman and Ramanujam, 1986).

Consequently, we expect that CRM SQ will contribute to firm performance by facilitating firm relationship-building activities. This expectation is formally expressed in *H6*:

H6. CRM system quality (SQ) will have a positive effect on firm performance (FP).

Unhypothesized direct paths and control variables

Prior IT risk research has found that the moderating constructs in our model – UI, APP and REQ – can also have direct effects on SQ (Barki *et al.*, 1993, 2001; Gemino *et al.*, 2008; Nidumolu, 1995). To retain parsimony, we examine these constructs but do not hypothesize them as part of our conceptual model (Figure 1).

CRM projects also differ in terms of relative project size than prior IT implementations carried out by the firm. The scale of CRM projects may thus have a direct negative impact on CRM SQ, a factor that is controlled for in this study (Gemino *et al.*, 2008; Wallace *et al.*, 2004). Larger firms/strategic business units (SBUs) often have access to more slack financial resources to invest in CRM systems, which may result in different implementation outcomes. Firm size has been studied in related work (Mithas *et al.*, 2005; Barki *et al.*, 1993), and we therefore control for firm/SBU size. Time since system rollout is also controlled for because financial returns from IT systems may be appropriated over time through learning and optimization (Aral and Weill, 2007; Hendricks *et al.*, 2007; Hitt *et al.*, 2002; Karimi *et al.*, 2007a). Finally, the industry may have an impact on CRM outcomes and is therefore included in the study (Becker *et al.*, 2009; Mithas *et al.*, 2005; Reinartz *et al.*, 2004) (Figure 1 (control variables box)).

Methodology

Matched design field study

We used a quantitative field study methodology to empirically test our hypotheses. For the exogenous variables and one endogenous variable, we administered a questionnaire; for the firm performance dependent variable (DV), archival data were used. The unit of analysis was either the SBU or the firm (if no distinct business units existed). We collected cross-sectional data from client firms based in Finland who are users of CRM technology, excluding small businesses (less than 250 employees). Small businesses were excluded to study large-scale CRM projects with sufficient complexity, which necessitates the customization and integration of the purchased software by outside consultants.

Our research instrument was based on measures from the existing literature (Appendix 1), and it was instrumented on a seven-point Likert scale. The questionnaire was backward and forward translated by bilingual native speakers to establish translation accuracy. The Finnish questionnaire was also pre-tested with nine experts (C-level IT executives) from different industries (manufacturing, IT and media, professional services

and construction) to ensure content validity. No modifications were necessary. Because our study investigates how IT implementation constructs influence firm performance, our research design used a second form of data collection that enabled us to match IT management responses against archival financial data.

Measures and data collection

The data were sampled from IT executives using an online survey instrument. This served as the final sample of SBUs for which archival financial data were collected. Specifically, the questionnaire was sent to executives in 526 firms. Respondent competency was controlled via two separate questions in the questionnaire (Kumar *et al.*, 1993). After two follow-up rounds, complete questionnaires were received from 189 SBUs. After screening the survey data to eliminate responses with low respondent competency or a high number of missing values, the final sample from the first phase of data collection resulted in 168 usable responses. From there, we were able to collect ROA data for 126 firms from the Orbis database. We calculated the average ROA for a three-year period that included the year of the primary data collection as the base and the following two years to account for lagged effects and to minimize the impact of any short-term unobserved events (Morgan *et al.*, 2009). ROA is a standardized metric that is not itself subject to firm size effects. This procedure left 126 paired data points with a satisfactory response rate (24%) similar to other comparable studies.

The data set was checked for non-response biases by screening for possible differences in terms of industry and between early and late responders (Armstrong and Overton, 1977), respectively. We analyzed the SBU sample's representativeness of CRM systems used in Finland by manually screening the usable responses to eliminate more than one SBU representing any single parent firm. After this screening process, we identified 152 out of 168 usable cases to assess sample representativeness. We compared the number of responses with population estimates for seven industries with available information. The findings (χ^2 = 3.70, p = 0.68) revealed that the industry distribution was not significantly different between our sample and the Finnish population. Early respondents were classified as those who replied prior to any reminders, and late respondents were classified as those who responded after a reminder stimulus. An independent sample t-test was carried out to compare differences in the DV means between early and late informants (Armstrong and Overton, 1977). In two-tailed tests with sufficiently high power (>0.8), the early and late groups did not differ significantly (SQ, t = −0.74, p = 0.54) from each other. In sum, the analyses provide support that the sample adequately represented enterprises using CRM software in Finland by industry. In addition, no differences were found among early and late responders.

Results

The validation of the measurement model included reliability and validity analyses for reflective measures. After measurement model validation, we estimated the structural model (Anderson and Gerbing, 1988). Partial least squares (PLS) structural equation modeling was used (Smart-PLS 3.0; Ringle *et al.*, 2015) to estimate the significance levels of the structural model with 5,000 resample bootstraps (Hair *et al.*, 2013).

Measurement model

We assessed the measurement model using 126 responses collected from IT management. Reflectively measured constructs were assessed in terms of item-level reliability, construct reliability and convergent and discriminant validity (Appendix 1 and 2). The results reveal that all item loadings, composite reliability and average variance extracted exceed the reliability and discriminant validity criteria (Fornell and Larcker, 1981; Hair *et al.*, 2013). The measurement model was tested further by evaluating inter-item and item-to-construct correlation matrices following a modified multitrait-multimethod analysis (Campbell and Fiske, 1959; Loch *et al.*, 2003), which revealed satisfactory results in terms of convergent and discriminant validity. In sum, all measures passed the measurement model validation criteria.

Structural model

Results overview

The results of hypothesis testing and the structural path estimates (standardized effects), latent variable correlations and descriptive statistics are illustrated in Table 1 and Figure 2. Table 1 and Figure 2 show that *H1* received empirical support (0.34, $p < 0.01$), indicating that CRM consultants positively influence CRM SQ. The simple moderation hypotheses, *H2* and *H3*, received mixed support. APP has a positive moderating effect (0.28, $p < 0.01$); that is, an opposite sign from that hypothesized on the relationship between CRM consultants and CRM SQ. Thus, *H2* is significant but not supported. REQ, however, has a significant negative interaction (−0.21, $p < 0.05$) with CRM CR to predict CRM system quality. Therefore, *H3* is supported.

The three-way interaction between CRM consultants, APP and UI has a significant negative effect (−0.18, $p < 0.05$) on CRM SQ. Therefore, *H4* is supported. The interaction between CRM consultants and REQ, in turn, is weakened by UI (0.15, $p < 0.05$), providing support for *H5*. Overall, the model explains 41% of the variance in CRM SQ. Finally, the results confirm *H6* that SQ also influences firm performance directly (0.17, $p < 0.05$), explaining 3.2% of its variance when firm size, time since system rollout and industry are controlled for.

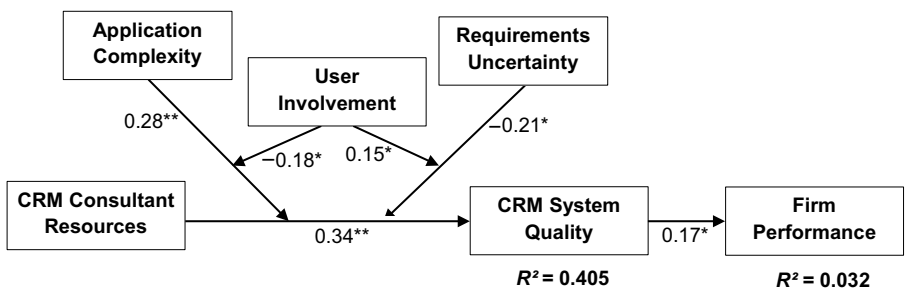
Results concerning unhypothesized paths and control variables

Finally, we also tested the direct effects of all moderator variables on SQ but did not report the specific paths in the results figure for clear reporting. Notwithstanding the found direct effect of UI on CRM SQ (0.27, $p < 0.01$), the unhypothesized paths and control variables had no significant effects on CRM SQ and firm performance. This indicates that UI represents a "quasi-moderator," whereas other moderators are "pure moderators," using the typology of specification variables by Sharma *et al.* (1981).

Table 1 Research hypotheses and results

H	Path	Hypothesis	Supported?
H1	CR → SQ	CRM consultant resources (CR) will have a positive effect on CRM system quality (SQ)	Yes
H2	CR*APP → SQ	Application complexity (APP) will have a negative interaction with CRM consultant resources (CR) in predicting CRM system quality (SQ) (i.e. the interaction will have a negative sign)	Significant but not supported
H3	CR*REQ → SQ	Requirements uncertainty (REQ) will have a negative interaction with CRM consultant resources (CR) in predicting CRM system quality (SQ) (i.e. the interaction will have a negative sign)	Yes
H4	CR*APP*UI → SQ	As user involvement (UI) increases, the negative interaction between CRM consultant resources (CR) and application complexity (APP) in predicting CRM system quality (SQ) will strengthen (i.e., the overall interaction will have a negative sign)	Yes
H5	CR*REQ*UI → SQ	As user involvement (UI) increases, the negative interaction between CRM consultant resources (CR) and requirements uncertainty (REQ) in predicting CRM system quality (SQ) will weaken (i.e., the overall interaction will have a positive sign)	Yes
H6	SQ → FP	CRM system quality (SQ) will have a positive effect on firm performance (FP)	Yes

Figure 2 Overview of the results



Notes: **$p < 0.01$; *$p < 0.05$

Probing of the two-way and three-way interactions

We tested the moderation hypotheses, *H2–H5*, using the bootstrapping method (Edwards and Lambert, 2007; Preacher and Hayes, 2008). We carried out bootstrapping tests with Preacher and Hayes' SPSS macros for each possible mediation path (2008; see www.afhayes.com/spss-sas-and-mplus-macros-and-code.html) using 5,000 bootstrap resamples. Their macros also enabled us to control for covariates.

As a first step, we carried out a test to examine the two-way interactions CR*APP and CR*REQ simultaneously (Hayes, 2013). The bootstrapping results indicate that APP has an unexpected positive moderating effect (0.28, $p < 0.01$), and REQ has a negative moderating effect (−0.21, $p < 0.05$) on the relationship between CRM consultants and CRM SQ. Thus, *H2* was rejected, and *H3* was supported. In addition, the bootstrapping results reveal that the interaction between the two moderators (i.e. APP and REQ) is not significant (−0.03, ns), ruling out the possibility that the APP's moderation of CRM consultant resource's effect on CRM SQ is dependent on REQ, and vice versa (Hayes, 2013).

As the second step, we tested the hypothesized three-way interactions CR*APP*UI and CR*REQ*UI with the same bootstrapping method. To test them simultaneously, we calculated the three-way interaction terms manually by multiplying the simple interaction term values for CR*APP and CR*REQ (from the previous test) with UI values. The results indicate that CR*APP*UI has a negative interaction with CRM consultants on CRM SQ (-0.18, $p < 0.05$). Thus, *H4* is supported. The three-way interaction CR*REQ*UI, in turn, is positively associated with CRM SQ (0.15, $p < 0.05$), providing support for *H5*. In addition, CR*APP and CR*REQ do not interact significantly with each other, confirming that the significant three-way interactions on CRM SQ are not contaminated by noise. In sum, when the moderating effects of UI on APP and REQ are controlled for, the simple interactions CR*APP (0.28, $p < 0.01$) and CR*REQ (-0.21, $p < 0.05$) remain significant but are reversed in sign (CR*APP*UI = -0.18, $p < 0.05$ and CR*REQ*UI = 0.15, $p < 0.05$), respectively.

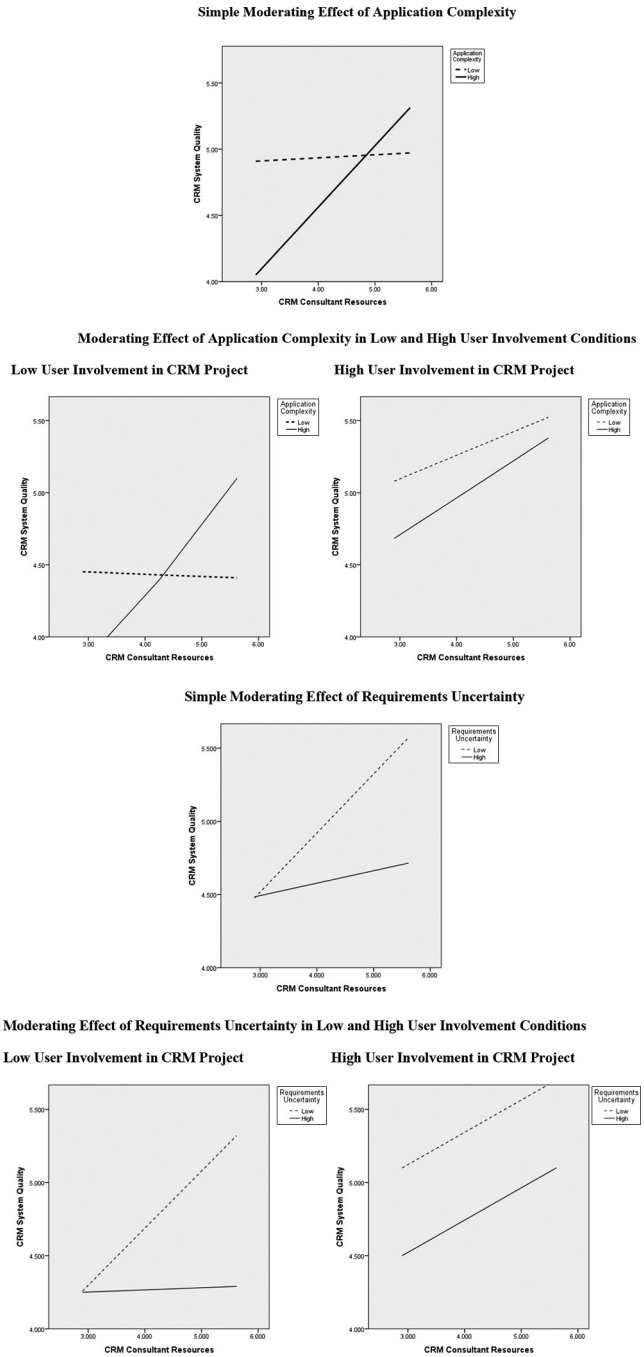
As the final step to facilitate the interpretation of our moderation analyses, a method developed by Preacher *et al.* (2004; see www.quantpsy.org/interact/mlr3.htm) was adopted to create graphical representations of the three-way interactions of interest. The simple moderating effects of APP and REQ on the relationship between CRM consultants and CRM SQ, and the three-way moderating effects under low (one standard deviation below mean value) vs high UI (one standard deviation above mean value) conditions in CRM projects, were examined.

In relation to *H2* and *H4*, the analysis suggests that the simple interaction CR*APP and the three-way interaction CR*APP*UI in low UI conditions yield relatively similar effects on CRM SQ (Figure 3). In CRM projects with low APP and low UI, CRM consultants are a non-factor in delivering CRM SQ. Conversely, when APP is high and UI is low, CRM CR become the key driver of CRM SQ. In high UI conditions, the effectiveness of CRM consultants becomes less contingent on APP. In addition, the relationship between CRM consultants and CRM SQ is always more important (i.e. higher CRM SQ) when UI is high.

With regard to *H3* and *H5*, Figure 3 illustrates that the simple interaction CR*REQ and the three-way interaction CR*REQ*UI in low UI conditions have very similar effects on CRM SQ. When REQ is low and UI is low, CRM consultants are a strong predictor of CRM SQ. When REQ increases and UI remains low, the effect of CRM consultants on CRM SQ decreases.

In contrast, when CRM projects have high UI, the positive effect of CRM consultants on CRM SQ is restored, regardless of the level of REQ. Furthermore, the relationship between CRM consultants and CRM SQ is always more important (i.e. higher CRM SQ) when UI is high.

Figure 3 Interaction effects of application complexity and user involvement/requirements uncertainty and user involvement on the relationship between CRM consultant resources and CRM system quality



Discussion

For a long time, the relational paradigm has been a dominant perspective in business-to-business marketing in explaining inter-organizational exchange (Payne and Frow, 2005; Reinartz *et al.*, 2004). CRM systems provide a means to manage customer–supplier relationships to articulate and store customer needs and integrate them with intra-organizational functions to realize respective value propositions (Chang *et al.*, 2010; Ekman *et al.*, 2015; Jayachandran *et al.*, 2005). Building on CRM system implementation research and on factor-based IT innovation research and using the ideas of contingency theory (Donaldson, 2001) and the resource-based view (Wernerfelt, 1984), this study makes a novel contribution to CRM research by offering valuable empirical insights into hiring external CRM CR to implement CRM systems for firm

performance gains. Our findings reveal that CRM consultants influence firm performance through their effect on SQ and, more importantly, that the relationship between CRM CR and SQ is contingent on the interplay between end-UI and IT risk factors.

Implications for theory

The findings suggest that CRM CR play a critical role in achieving financial returns from CRM systems. The reliability, response time, functionality and fit of the CRM system with the client firm's end users and business processes (i.e. SQ) is a direct result of the work carried out by CRM consultants. When high CRM SQ is delivered to the client firm, the findings show a 3% improvement in firm performance, which in the grand scheme of things is a sizable impact (Hendricks *et al.*, 2007; Hitt *et al.*, 2002). This result offers new insights into the debate about whether CRM technology investment enhances firm outcomes; that is, if the benefits of CRM tools outweigh the costs and risks (Jayachandran *et al.*, 2005; Mithas *et al.*, 2005; Reinartz *et al.*, 2004).

Although numerous prior studies have examined the direct and mediating impacts of IT factors and risks on system implementation outcomes (Barki *et al.*, 1993, 2001; Gemino *et al.*, 2008; Karimi *et al.*, 2007a; Wallace *et al.*, 2004), they have ignored the interactions that can occur between such elements. The results of our research reveal that the effectiveness of CRM consultants is highly contingent on the technological and organizational complexity of the CRM system and on the extent of UI in the implementation effort.

More specifically, our study findings indicate that APP has an unexpected positive moderating effect on the relationship between CRM consultants and CRM SQ. Our *a priori* prediction (*H2*) was that the more complex the application, the more difficult it would become for CRM consultants to deliver high CRM SQ. The results, however, suggest that CRM consultants have a bigger impact on SQ as APP increases. One possible explanation for this finding is that CRM-specific technological expertise is the core competence of certified CRM consultants, enabling them to handle technology-related problems particularly well.

As formally hypothesized in *H4*, we anticipated that when UI increases, the interaction between CRM consultants and APP would decimate CRM SQ. Consistent with this expectation, the analyses revealed that UI has a negative impact on the interaction between CRM consultants and APP and entirely reverses the positive two-way interaction of CR*APP in predicting CRM SQ. That is, in CRM projects with high UI, CRM consultants are less effective in overcoming the technological complexity issues that undermine SQ. These results confirm that too much UI interferes with CRM consultants' technological integration work. More specifically, CRM consultants are naturally inclined to deal with technical CRM issues, and the over-involvement of user groups to inform the customization and integration of CRM software can become counterproductive. It is worth noting, however, that the detrimental effect of UI on CRM consultants' ability to resolve APP is not always detrimental because CRM projects with high UI generally lead to higher CRM SQ (Figure 3; when UI is high, CRM SQ is systematically higher than in conditions of low UI).

In relation to *H3* and *H5*, complex interactions between CRM consultants, REQ and UI were also uncovered. When the effect of UI is not accounted for, REQ has a negative moderating effect on the relationship between CRM CR and CRM SQ. This finding suggests that, when examined as a stand-alone IT innovation factor, external consultants are only effective in CRM projects characterized by low REQ, raising concerns about consultants' ability to deal with user requirements risks. Stated differently, it appears that CRM consultants are ill-equipped to deal with high REQ when there is little or no UI. This finding may explain prior criticisms voiced by academics and practitioners about CRM consultants' lack of knowledge regarding client firms' end users and business processes (Fjermestad and Romano, 2003; Symonds, 2004).

Nonetheless, the three-way interaction between CRM consultants, REQ and UI in predicting CRM SQ is positive. Thus, when UI is high, the severe negative effect that REQ has on CRM consultants' effectiveness is largely remedied. The findings therefore underscore UI as the critical mechanism that enables CRM consultants to deliver superior CRM SQ despite high REQ.

In sum, the study findings show that CRM CR depend on UI to overcome CRM's common pitfalls caused by REQ, in particular. Perhaps for this reason, past CRM failures have often been caused by an over-emphasis on CRM as a technological solution (Coltman, 2007; Payne and Frow, 2005; Zablah *et al.*, 2004a). However, although UI is a necessary condition for achieving CRM project success, it may also act as a double-edged sword in technological and organizational implementation. Although the benefits of UI are most evident in supporting CRM consultants' work in the critical requirements analysis task, users may simultaneously add complexity to consultants' CRM software customization and integration efforts. Hence, the key challenge for CRM consultants is how CRM end-user input and feedback can be solicited without this information becoming unwieldy to manage, overly complicating the CRM system implementation process.

Implications for practice

CRM technology represents a strategic investment for firms. This study has important managerial implications for firms investing in CRM technology because such investments continue to suffer from high failure rates due, at least in part, to CRM consultants' inability to deliver the promised benefits. Our model shows how and when CRM CR drive CRM technology success with the support of UI. Consequently, we are able to provide normative guidance to practitioners.

Gaining financial returns from CRM technology investments always necessitates deep cross-functional integration with other enterprise systems and an organizational fit with end users' diverse requirements. Practitioners should thus be aware that CRM initiatives are particularly vulnerable to such technological and organizational risks. Hence, we advise managers to pay special attention to the selection process of outside CRM consultants. They should not only possess technological expertise but also demonstrate a willingness to understand the firm's people and customer processes.

To facilitate the work of outside consultants, we stress that firms should spare no effort to gain the commitment of end users across different functions affected by the CRM project. In fact, our findings underscore that without UI, it is almost impossible for CRM consultants to implement high-quality CRM systems under conditions of REQ. When user REQ is the main implementation risk, we stress that a high level of UI is needed to help consultants realize their objectives.

However, the need for UI should be assessed carefully. For instance, our findings suggest that in the case of more complex systems, increased UI in the absence of CRM CR leads to lower SQ than in situations where UI is limited and CRM CR are plentiful. Hence, we recommend that management evaluate the CRM implementation project in terms of APP and REQ to manage the extent of UI needed to support CRM consultants during the project. To illustrate, client firms that need a technologically complex CRM installation but have a well-defined set of user requirement criteria may be better off with limited end-user participation. In such projects, the main focus of managers should be to make sure different user groups do not distract CRM consultants from system integration work.

Study limitations

This study has some limitations. First, although the data were collected from two independent sources, they are cross-sectional. Thus, causal relationships between constructs cannot be fully established. Future studies in longitudinal research settings would provide additional evidence to confirm the findings of this research. Second, subjective and retrospective past-event reporting by IT management informants may have influenced the study results. To address these concerns, rigorous respondent screening controls were adopted to control for such biases. However, we cannot completely rule out the possibility that the results may be affected by past recollection. Third, this study investigates CRM technology implementation from the client firm perspective. Additional data from the supplier side, including CRM software vendors and consultant firms, may have provided additional insights with regard to what happens in large-scale CRM projects led by external consultants.

Implications for future research

This study suggests new research directions for improving our understanding of the complex socio-technical mechanisms that influence CRM project success (Maklan *et al.*, 2015; Wallace *et al.*, 2004). In particular, our findings point to at least five additional research questions that may serve to guide future inquiry in the CRM domain:

1 What criteria should be used in the selection process of CRM consultants for implementation projects that may vary in terms of APP, REQ or both?
2 How should the cooperation between CRM consultants and users be organized to help counteract various project risks without adding complexity to the implementation process?
3 To what extent does CRM contract type – i.e. time- and material-based vs fixed-term billing agreements – play a role in CRM consultant effectiveness?
4 To what extent does CRM consultants' prior experience with the client firm lead to better technological and organizational implementation?
5 To what extent does technology stacking – i.e. purchasing databases, middleware and applications from the same vendor – enhance CRM consultant performance?

First, future research should further examine how the characteristics of external consultants may impact valued CRM outcomes. Should consultants be chosen based on individual traits, CRM technology expertise, business (process) knowledge or social skills? Technologically, complex CRM projects call for different consultant criteria than CRM risks related to target user diversity. For example, future studies might focus on the unexplored area of CRM consultants' social skills needed to carry out complex requirements analysis and system modification.

Second, future work could explore the dynamics of information exchange between CRM consultants and end-UI. For instance, this study underscores the need to better understand how CRM consultants could benefit from user input and feedback in requirements analysis in a way that would not simultaneously undermine their technological integration efforts.

Third, client firm managers negotiating a fixed-price contract are likely to have less power over choosing consultants than in time- and material-based CRM agreements. So, do CRM consultants perform better in time- and material-based contracts than in fixed-term contracts? Which contract type is more appropriate when CRM project risks are low or high? Future research could investigate whether the disadvantage over consultant selection in fixed-price agreements is more pronounced when user requirements are elaborate, for instance. Furthermore, the willingness of CRM consultants to engage in time-consuming exchanges with end users might be influenced by their compensation scheme, thus highlighting the need for additional studies. As such, choosing the right contract type may become an important decision, depending on the characteristics of a given CRM project.

Fourth, prior research has found that using the same software vendor or consulting service provider may improve IT project performance because of relational and technical familiarity (Ethiraj *et al.*, 2005; Ramachandran and Gopal, 2010). Do CRM consultants' prior experiences with the client firm – in past implementations of CRM or other enterprise systems – lead to better technological or organizational implementation, or both? On the one hand, knowledge regarding the client firm's IT architecture, business processes and end users could facilitate the work of CRM consultants. On the other hand, prior tensions or conflicts could also inhibit effective cooperation between consultants and user groups.

Finally, future research should address the extent to which purchasing the entire technology stack – including CRM, other enterprise systems, databases and middleware – influences the ability of CRM CR to deliver superior systems. The IT vendor industry puts a great deal of effort into increasing customer switching costs, and an increasing proportion of its revenue is generated by consulting services. It would be important to study if improved CRM consultant performance results from

the IT industry's promise of easy-to-integrate and modifiable applications.

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Appendix 1

Table A1 Measures and item reliability

Construct	Type	Items	Loading	Source/reference
CRM consultant resources (CR)	Reflective	Experienced consultants guided us throughout the course of the project. External consultants were experienced in our business processes. External consultants brought considerable expertise and experience to our project	0.90** 0.87** 0.93**	Consultant resources (Karimi *et al.*, 2007a)
User involvement (UI)	Reflective	The user community was involved throughout the (CRM) implementation project. Business users participated in determining systems needs and capabilities. Business users participated in identifying input/output needs	0.85** 0.92** 0.89**	User involvement (Karimi *et al.*, 2007a)
Application complexity (APP)	Reflective	The CRM application was required to integrate with other applications. The CRM technology was required to interface with other types of technology	0.89** 0.94**	Technical complexity (Gemino *et al.*, 2008)
Requirements uncertainty (REQ)	Reflective	A lot of effort had to be spent in reconciling the requirements of various users. Users differed a great deal among themselves in the requirements to be met	0.70** 0.96**	Requirements uncertainty (Gemino *et al.*, 2008)
CRM system quality (SQ)	Reflective	The application developed is reliable. The application is easy to maintain. The users perceive that the system meets intended functional requirements. The system meets user expectations with respect to response time. The overall quality of the developed application is high	0.83** 0.79** 0.80** 0.74** 0.90**	Product performance (Wallace *et al.*, 2004)
Firm performance (FP)	Average three-year ROA	Average three-year return-on-assets (ROA)	NA	
Control variables				
Relative project size (SIZ)	Single-item measure	How does the size of this project compare with others undertaken by the client organization over the past three years?	NA	Project size (Gemino *et al.*, 2008)
Firm size (REV)	Single-item measure	What is the annual revenue of your business unit (SBU) in the previous year?	NA	
Time since system rollout	Single-item measure	Number of months system used since rollout?	NA	Time since system rollout (Karimi *et al.*, 2007a)
Industry	Categorical measure	What is your business unit's (SBU) industry sector?	NA	

Appendix 2

Table A2 Convergent and discriminant validity of reflective measures

Measure	Items	Mean	SE	SD	CR	AVE					
CR	3	4.26	0.106	1.35	0.93	0.81	*0.90*				
UI	3	4.79	0.111	1.35	0.92	0.79	0.32	*0.89*			
APP	2	4.96	0.126	1.58	0.91	0.83	0.06	0.15	*0.91*		
REQ	2	4.11	0.114	1.33	0.84	0.73	−0.05	0.23	0.27	*0.85*	
SQ	5	4.84	0.098	1.05	0.91	0.66	0.46	0.34	−0.16	−0.19	*0.81*

Notes: AVE in italic; CR = CRM consultant resources, UI = user involvement, APP = application complexity, REQ = requirements uncertainty, SQ = CRM system quality

Corresponding author

Harri Terho can be contacted at: harri.terho@utu.fi