



# Exploring the role of customer relationship management (CRM) systems in customer knowledge creation



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## ABSTRACT

This study explores how customer relationship management (CRM) systems support customer knowledge creation processes [48], including socialization, externalization, combination and internalization. CRM systems are categorized as collaborative, operational and analytical. An analysis of CRM applications in three organizations reveals that analytical systems strongly support the combination process. Collaborative systems provide the greatest support for externalization. Operational systems facilitate socialization with customers, while collaborative systems are used for socialization within an organization. Collaborative and analytical systems both support the internalization process by providing learning opportunities. Three-way interactions among CRM systems, types of customer knowledge, and knowledge creation processes are explored.

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## 1. Introduction

Customer knowledge is a critical asset, and gathering, managing, and sharing customer knowledge can be a valuable competitive activity for organizations [21,72]. However, within the broad domain of knowledge management, customer knowledge has received relatively little attention. Customer knowledge can be broadly categorized as knowledge for customers (i.e., knowledge provided to customers to satisfy their needs), knowledge about customers, and knowledge from customers, which is the knowledge that customers possess that organizations can obtain by interacting with them.

An organization's ability to create knowledge depends on its capability to convert and combine knowledge from various sources. Organizational knowledge creation theory explains how knowledge is created and expanded through a four-stage process: (1) socialization (sharing tacit<sup>2</sup> knowledge among individuals through social interactions); (2) externalization (formulating tacit knowledge into explicit knowledge that can be shared

within an organization); (3) combination (integrating different sources of explicit knowledge to create new knowledge); and (4) internalization (understanding explicit knowledge and integrating it into business practices). Successful customer knowledge creation depends on organizational structures, processes and personal skills [16,19], but it also requires appropriate information systems that can speed up and support knowledge creation processes [2,33,50,53]. Customer relationship management (CRM) systems are a group of information systems that enable organizations to contact customers and collect, store and analyze customer data to provide a comprehensive view of their customers. CRM systems mainly fall into three categories: operational systems (used for automation and increased efficiency of CRM processes), analytical systems (used for the analysis of customer data and knowledge), and collaborative systems (used to manage and integrate communication channels and customer interaction touch points) [7,23,28,29,74].

CRM systems help organizations acquire and continuously generate customer knowledge. The level of support that these systems provide for knowledge creation processes, as well as the type of customer knowledge (knowledge for/from/about customers) that they are well suited to create, vary based on the systems' features and functionality. Previous scholars have examined 2-way interactions<sup>3</sup> among knowledge management (KM) initiatives, customer relationship management (CRM)

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<sup>2</sup> Tacit knowledge is highly personal and difficult to capture, codify, adopt, and share among people, while explicit knowledge is easy to capture, formalize, and distribute within an organization.

<sup>3</sup> We use the term "interaction" not in a precise, mathematical sense but loosely to refer to connections and relations.

systems and customer knowledge. An important contribution of this research, however, is the exploration of specific, 3-way interactions. As an area of study matures (e.g., research on the support provided by information systems for knowledge creation processes), it is appropriate to conduct fine-grained, precise examinations.

To complete a comprehensive literature review, top journals in the field of MIS<sup>4</sup> and knowledge management<sup>5</sup> were identified and examined using the following keyword phrases: customer knowledge, knowledge management, CRM, customer relationship management system, and knowledge creation. Because the topic of interest is interdisciplinary, marketing and management journals were also reviewed using the above keywords. The papers that discussed these topics, explored interactions among the topics of interest, and were published in the time span of 2000–2012, were carefully investigated and classified (see Appendix A).

Many studies have focused on comparing CRM and KM concepts and practices with the aim of integrating the two concepts (e.g., [38,51,63,70]) and introducing the new concept of customer knowledge management (CKM) (e.g., [11,21,22,60]). However, most of these studies discussed the topics conceptually without emphasizing the CRM technological requirements.

Conversely, other studies have explored the contributions of CRM systems or information systems in general to knowledge creation. In a conceptual article, Carvalho and Ferreira [10] presented a typology of KM systems, discussing their applicability for integrating tacit and explicit knowledge through socialization, externalization, combination and internalization processes [48]. Another study by Shang et al. [63] focused specifically on Web 2.0 application sites – classified into four service models – and their support for the four knowledge creation processes [48].

Other papers have discussed the interaction of CRM systems and customer knowledge, focusing on how to gain customer knowledge through CRM systems; however, those studies did not elaborate on the knowledge creation processes involved (see [29,35,59,74]). For example, Xu and Walton [74] examined one category of CRM systems, namely, analytical CRM. Based on an analytical CRM model, they described how such systems were used to acquire customer knowledge internally-about existing customers- and externally-about prospective customers. Karakostas et al. [32] discussed the application of CRM tools at the strategic and process levels, and how those tools support communication and business-to-customer interactions.

Finally, a few studies have discussed the interaction between knowledge management and customer knowledge [4,11,21]. For example, Belbay et al. [4] showed how knowledge from customers was captured through knowledge creation processes [48] in the context of new product development.

As outlined, there are many studies on 2-way interactions among CRM systems (or CRM processes), knowledge creation and customer knowledge. However, the 3-way interactions between CRM systems, the types of customer knowledge and knowledge creation processes have rarely been considered, or the discussion has been restricted to only one type of CRM system (primarily analytical systems) or one type of customer knowledge (e.g., [64]).

This study draws on and extends knowledge creation theory by proposing and investigating the nature of precise, 3-way interactions between CRM systems, customer knowledge and knowledge

creation processes. Specifically, we address the following research question:

- How useful are operational/analytical/collaborative CRM systems in providing support for socialization/externalization/combination/internalization processes that create knowledge for/from/about customers?

More simply, the research question can be expressed as follows: How useful are different types of CRM systems in providing support for different knowledge processes that create different types of customer knowledge? We answer this question theoretically and then empirically.

Looking at 3-way interactions provides deeper insight into the capabilities of various CRM systems. For instance, using 3-way interactions helps us explore whether a particular type of system is more or less capable of producing a certain type of customer knowledge and determine which knowledge creation process is facilitated by a particular type of application. A simple illustration can demonstrate the importance of 3-way interactions. Sales associates who have direct contact with customers are not usually asked to externalize the knowledge they gain from customers. In many organizations, the sales associates' main responsibility is to provide knowledge for customers (e.g., help customers with technical issues) or knowledge about customers (e.g., identify the specific product features that customers spend the most time examining). However, through communication with customers, these employees gain extensive knowledge from customers (e.g., what they think about a similar product offered by competitors and suggestions for improving product/service quality). An organization may be satisfied with its current information systems that focus on creating knowledge for/about customers, but if executives realize that their systems do not capture the knowledge obtained from customers, they can invest in additional systems or modify their use of existing systems to improve their ability to capture and use knowledge from customers and their overall knowledge creation capabilities.

Given the exploratory nature of our study, a multiple case study approach was used. In three organizations, knowledge creation processes, customer knowledge types and CRM systems used to support customer knowledge creation were studied through a series of semi-structured interviews. The results were coded and analyzed to determine the level of support that each group of CRM systems provided for each knowledge creation process and type of customer knowledge created. In addition to this research contribution, this study offers managers a “dashboard” that provides important insights into specific “customer data gaps” where there is a lack of customer knowledge. The study also identifies some of the practical challenges that organizations face in using CRM systems for the purpose of customer knowledge creation.

The remainder of paper is organized as follows: first, the theoretical background and research model are discussed. Next, the research method and case study findings are outlined. Finally, research implications, limitations and future research opportunities are presented.

## 2. Theoretical background

Knowledge represents a critical asset for organizations in today's economy. Successful organizations need dynamic capabilities to create, acquire, integrate and use knowledge [1,40,57,61,73]. However, knowledge is a broad concept that is difficult to define and identify [26]. Within the domain of the IS literature, a common definition of knowledge distinguishes knowledge from data and information. Data refer to observations or raw facts. Information is classified and analyzed data that

<sup>4</sup> The top MIS journals were selected based on the Association for Information Systems (AIS) MIS Journal Ranking available at <http://ais.affiniscap.com/display-common.cfm?an=1&subarticlenbr=432>. Specifically, we examined MISQ, ISR, JMIS, CACM, EJIS, DSS and I&M.

<sup>5</sup> The top KM journals were identified from the Serenko and Bontis [62] study: “Global ranking of knowledge management and intellectual capital academic journals”.

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