

## Role of knowledge Management in Customer-Related Business Activities

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### Abstract

There is a lack of an overall framework for integrating traditional customer management features and functions with both the management of customer knowledge, especially in the circumstance of marketing decisions, in the existing customer business environment. While conventional CM has concentrated on transactional exchanges to handle customer contacts, KM systems support an organization's knowledge via the process of generating, organizing, distributing, and applying information to improve organizational performance and generate value. Creating knowledge-enabled CM procedures that allow firms to assess important business metrics such as customer happiness, customer profitability, or brand loyalty in order to support their business choices is only achievable by combining CM systems with KM systems. In this way, marketers will be able to tailor their responses to individual consumers' requirements rather of relying on broad generalizations about who their customers are. Using knowledge management technology, we provide an integrated framework for customer management in this study. CM development may be made easier thanks to the framework.

**Keywords:** Knowledge management , Customer business , CM Systems

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### 1. Introduction

In today's corporate world, CM (Customer Management) is a must-have technology [14]. Like reengineering, CM has also not met expectations (Abdullaeva et al., 2019). Despite this, corporations continue to disregard it at their peril. Simply put, CM is a high-tech method of acquiring mountains of data on customers and then using that data to make them happy—or at the very least a resource of further income (Libai et al., 2020). Because of this, it is focused on gaining a knowledge of and influencing the behavior of customers (Bell & Mgbemena, 2018; Chaithanapat & Rakthin, 2021; Yee Liao & Pei Tan, 2014). When it comes to CM, Harrah's Entertainment, a gaming firm with 25 casinos, is a CM pioneer. They do a comprehensive and sophisticated examination of 24 million clients in their database (Verhoef et al., 2007). Every time a player visits the casino, the staff at Harrah's are aware of their habits, and then they follow up with them through phone call or email. Rather of just reacting, Harrah's is able to take an active role in the process. Although CM is the term used by the company's IT staff, the loyalty program is the one used by the company's management (Yang et al., 2020). However, despite CM's rapid rise in popularity, user satisfaction with it remains low. Many firms have begun to recognize that in order to get the most out of CM, they need both mountains of data on millions of consumers and an adequate technological infrastructure, as well as marketing know-how. CM is not always about automation or speeding up current operational procedures; instead, it is all about establishing and optimizing strategies for effectively managing customer

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interactions. The purpose is to understand and meet customer needs via the use of information and expertise relating to consumers.

Many additional components, such as the capacity to manage collateral and workflow rules, as well as integrated channel management, are required in order to create a genuine CM system. This includes the best-of-breed features of many different CM vendors. As a result, all company operations, touchpoints, and target audiences must share a single, unified perspective of consumer requirements and preferences. It also necessitates the presence of links between non-customer interaction systems, such as operations and consumer interaction systems (Barry & Hogan, 2020; Barry et al., 2022). Organizational success and development in the long term are based on the effective extension, usage, and administration of an organization's corporate knowledge across all of its business activities as they evolve towards a full e-business environment. It's no surprise that CM is evolving away from transaction-oriented, operational systems of the past to a more knowledge-based, analytical system of the future that enables a firm to establish an ongoing connection with a client throughout that user's lifetime. As a result, the capacity to monitor and analyze a wide variety of customer events and actions throughout time is required, integrating knowledge and information from CM System systems and other business systems such as Knowledge Management systems.

In light of the present customer-centric environment, a simple and comprehensive architecture for managing customer knowledge is needed to ensure that KM systems play a significant role. In the context of marketing choices, a simple and complete framework for integrating typical CM functions with knowledge management and application is surprising. When it comes to knowledge management (KM), the process of making, structuring, spreading and acquiring information to improve the organization's overall productivity and develop worth differs from the transactional exchanges of traditional CM. By combining CM systems with knowledge management systems, firms may examine critical business metrics including such customer happiness, customer profitability, and customer loyalty in order to support their business choices. In this way, marketers will be able to tailor their responses to individual consumers' requirements rather of relying on broad generalizations about who their customers are.

In this study, an integrative system for CM using knowledge management technologies to solve this problem will be provided. As part of the framework, customers will have a single view of their account across the entire company and throughout their entire customer lifecycle. In addition, the architecture will support and promote knowledge-based, analysis-driven interactions with customers across all touch points and channels. Prototypes using contemporary technologies like XML and artificially intelligent agents have been constructed and tested to demonstrate the practical viability of this framework.

This paper is organized in the following format: Section 2 reviews a background of the study. Section 3 focuses on customer management necessitates knowledge management abilities. Section 4 will be dedicated for discussing the topic discussed in this paper. Section 5 represents conclusion which includes important concluded remarks for research directions.

## 2. Background of the study

To understand better and service our customers, CM is all about managing our customers' information. Putting the client at the heart of a business is an overarching idea. In addition to customer service, CM is concerned with organizing client relationships across all corporate activities, interactions, and consumers. Companies gain a significant competitive edge by providing consistent customer service at all points of contact. Customer feedback is difficult to gather when the company's information or expertise is dispersed. Consequently, customer

service degrades and businesses resort to the mass marketing maxim that "one size fits all". Personalization in marketing calls for a deep understanding of the wants and requirements of each consumer (Page & Lepkowska-White, 2002). Customers' behavior, tastes, wants, and purchasing habits are studied in great depth by a company using information technology, and this data is then used to adjust pricing, terms, promotions, and other aspects of the company's interactions with each individual consumer. For a large number of online companies, the key to their success and difference is providing ease, customization, and exceptional service to their clients. Customers' issues, desires, and requirements are the focus of CM, which aims to communicate and offer products, services, information, and solutions in an efficient manner (Saura et al., 2020).

## 2.1. KM

It is the management of a company's data and knowledge assets and its business processes in order to convey this information to as many employees as feasible and to promote consistently better decision-making inside the KM firm. Companies may benefit from the analytical capabilities of CM systems by connecting operational CM data with information from throughout the company. A company can, for example, sell products and services tailored to a specific customer's requirements based on previous purchases, increase sales by dynamically personalisation subject matter based on Web visitors' profiles, or provide high-value customers with legal heirs who know their purchasing history and preferences.

As the Internet and the World Wide Web continue to revolutionize the way businesses operate, the pressure to implement comprehensive knowledge management strategies has intensified. It is simpler for individuals to exchange information during issue resolution with a well-designed KM infrastructure, resulting in decreased operational costs, higher staff efficiency, cost avoidance, and other soft benefits such as strengthening the knowledge base and sharing expertise (Globisch et al., 2019). The four primary activities that make up the KM framework are: (a) knowledge identification & creation, (b) knowledge codification & storing, (c) knowledge dissemination, and (d) knowledge usage & feed-back. The process of identifying and generating new information is part of the knowledge identification and generation process. Customers, processes, and domain knowledge are the primary emphasis of this approach, which entails tracking the actions of clients and other industry participants in order to acquire or generate this information. The process of encoding and archiving knowledge include making it machine-readable and archiving it for later use. New knowledge may be archived by uploading it to a database that can be utilized by all stakeholders, in particular. This is done by mapping the information to the proper formal-isms, transforming it to internal representation, and storing this in the knowledge base. Present in all aspects and storage may be accomplished using current technologies like as XML formalism. These methods make it easier for stakeholders to find and use relevant information stored in repositories for decision-making. Disseminating information and responding to requests for specific pieces of information that may be used to solve a particular issue is part of the knowledge distribution process. Depending on the culture and architecture of the company, 'push' or 'pull' technologies might be used to disseminate information.

The process of deploying knowledge and delivering feedback is part of the knowledge use and feedback process. Participants may use this procedure to find and obtain important information for resolving a specific issue. As a consequence of applying this knowledge to an issue, new knowledge may be abstracted and saved in the repository for future reference. It is possible for stakeholders to provide feedback on the quality of the knowledge housed in the repository and on the difficulty of searching for relevant information. Strategic goals and environmental changes may also help them discover new kinds of information which need to

be collected. By including appropriate enabling technologies, this study hopes to create an environment that supports the generation, use, and administration of organization-wide expertise. Ai algorithms and XML are two such techniques that we will touch on briefly below.

## 2.2. KM and XML

Extensible Markup Language (XML), a core technology for document management and application interaction, is evolving. It is via the use of XML's principles for defining data structures that documents' most important components may be given meaningful names. There are several advantages to using XML. A descriptive markup language, rather than a procedure markup language, is the first thing to note. This means that the meaning of a Xml file may be easily represented. For one thing, it is vendor agnostic, allowing you to move it from one platform or system to another without losing data integrity. In a nutshell, it's readable by humans. There are several similarities between the SGML (Standard Generalized Markup Language) and XML (Extensible Markup Language) (Chand & Felber, 2008). We can format documents using XML and RDF (Resource Description Framework), and we can use annotation semantics to enhance search. To divide the processing burden among a federation of agents, XML enables information to be sent as an XML document, which can then be processed automatically after receiving it. A document type definition may officially specify the elements, properties, and entities that make up an XML document (Pursky et al., 2019).

In this paper, we describe an integrated framework, which intends to support and encourage consistent, knowledge-based, analysis-driven contact with each client. The vast majority of today's CM solutions are geared at improving the efficiency of contact centers. There are a number of software companies working in this area and releasing early versions of their offerings. For instance, Macromedia's ARIA and like Minds product offerings; Vignette and Engage; IBM's net commerce; Math-logic; Micro-Site soft's Server Commerce; NetGenesis; and E. piphany are examples of the latter kind. In our proposal, an analytical CM system is only developing. With the use of knowledge management strategies and cross-functional customer contact points such as contact centre, e-mail, and online selling, it's meant to give business insight.

It has recently been shown that a company's capacity to improve customer loyalty is directly related to its ability to use data from customer-facing systems in back-office analyses. Because of the lack of this capability, many crucial business issues remain unanswered. An account representative may not know whether or not an important business customer had also responded to only certain key promos, or a customer service analyst may try to measure complaint background against total sales for a given product, for example, when planning a follow-up interaction with a customer, it is possible that the customer service representative will not be able to discern the value score of the customer in order to measure the effect of service which should be provided.

## 3. CM necessitates knowledge management abilities

Companies must install and integrate presently available technology to deliver and support a variety of knowledge management capabilities in order to conduct knowledge-enabled CM operations. This study focuses mostly on intranet and extranet capabilities. With a portal design, users may access information from a variety of sources, including papers, apps and data warehouses, all via a single interface. As a result of their experience with Internet portals like Yahoo, users will expect the interface element of the architecture to provide similar capabilities for organizational learning, such as search results and automated succinct summation, across an enterprise-wide collection, which is why the capabilities framework was created to allow faster

the penetration of KM within organizations. It may be summarized as a two-part structure at the highest level. As a first step, it's meant to make use of current knowledge and to allow for the generation of new information, which is referred to as "knowledge learning cycles." These rectangular labeled boxes signify the KM capabilities as well as certain presently existing approaches or technologies that can supply them. For each capability, we've included a short explanation below, as well. Presentation is the process of making the outcomes of a user's interactions with the system more personally relevant to that user. A singular browser-based point of access to all knowledge that a user may want is intended to make it clear to every organization's user where to go in order to obtain the organisation's information. As a result of personalization, users may choose what information is important to them and how it is delivered.

In order to provide users with material or information that is specifically suited to their needs or interests, the customization feature is used. These features include customized profiles for specific users or groups or divisions or divisions; personalized navigation; tailored notification; and a customizable content classification system. Spiders, or software agents, are often used to gather information and do user profiling in order to personalize the experience.

Users may take part in important business processes according to their own roles thanks to the process function. Knowledge management solutions, including such information or evidence-based decision support systems, may be accessed via this function, allowing users to be more responsive to consumers and business partners. Knowledge assets may be published and distributed without having to learn difficult programming syntax via the use of a publishing/distribution function that offers tools and platforms for users. This role is often performed by software agents. Users may easily set up and manage these agents because to their user-friendly design. The users may choose the sort of knowledge they wish to publish, share, and receive from them. Setting the frequency and manner (e-mail or website link) are crucial factors which must be established by the users themselves. As a means of reducing the amount of information available to users, the search function has been implemented. By default, searches are done across all sources, but users may choose which repositories, including such Web pages, emails, and conversations, they wish to search. In addition, this function should be able to crawl often to maintain the index up to date. As a result of the integration function, all employees may use the organization's pooled knowledge and expertise in the framework of their respective jobs.

### 3.1. The architecture of KM-based CM systems.

It's common for CM initiatives not to succeed since they put business units under a lot of stress and the resultant apps aren't always better for customers. As a result, they fail to bring together various data sources and provide relevant information to those who need it at the correct moment. Therefore, CM software must be able to acquire and distribute important information in a timely, as well as give capabilities for evaluating and disseminating the information effectively and allowing managers to respond swiftly. These sorts of difficulties are dealt with by knowledge management systems, in particular the identification and creation of knowledge components from multiple sources, the codification, storage and dissemination of information and the use of this knowledge in problem resolution. A CM system must have the ability to manage long-term relationships with important clients, and a CM system that relies on Knowledge Management (KM) has the capabilities to do so. CM based on knowledge management (KM) is what we're aiming for, with components that make it simple to collect and integrate customer-related data, as well as info about business processes and industry standards. For a customer-centric CM system, we suggest a design that incorporates both conventional information management capabilities and the CM activities required for

successful CM projects. (a) multiple data resources, (b) knowledge, (c) information repositories, (d) knowledge usage are the four key components of the suggested architecture.

As part of the early stages of the KM life cycle, this module is responsible for discovering relevant information that may be used to manage customers or goods, and making meaningful choices about customer service or product service options for customers. For instance, maintaining record of customer records and attributes would be crucial in figuring out who and how to best service the client given many possibilities to be kept in check. Different agents are used to gather and synthesize information about various elements of customer relationship management for the knowledge acquisition component. These agents include: (1) Transactions Data Agent, (2) Client Details Agent, (3) Procedure Data Assistant, and (4) Sector Data Agent. In order to keep track of the goods a client has purchased over time, the Transaction Data Agent gathers and analyzes this data. It is possible to access this data by interacting with the organization's transaction databases. Information about customers' preferences and attributes is collected and maintained by the Customer Info Agent. It is principally in charge of constructing a complete image of each consumer and calculating their monetary worth. The Procedure Data Agent is tasked with collecting data about the numerous processes, rules, and procedures created by the business and the extent to which they may be used in various circumstances. Standard procedures are often outlined in papers that aren't easily available to the general public. A database of these procedures and rules is created by this agent and may be accessed by anybody. Using external data sources, the Business Information Agent gathers information on the industry's newest advancements and provides this information to decision-makers.

#### 4. Discussion

This section focuses on some of the study's most important findings. There are several benefits to incorporating knowledge management strategies into customer service management tasks. The suggested unified KM-based CM environment may benefit individuals, multiple business divisions, and the corporation as a whole. Agents may search the knowledge repositories for specific information about customers, see client profiles and histories, and rate the knowledge they find. The agents are able to provide better service to consumers since they have immediate access to essential information. As a result, multiple business units may have access to customer sales information, as well as standard rules and processes, that are otherwise unavailable to them via other channels. For example, our system could be used to provide a common infrastructure for CM activities and implement a comprehensive set of CM policies at the organizational level.

The KM-CM integration architecture we developed is operationally feasible, as shown by the solid evidence prototype we constructed. To make issue solving and informed decisions easier for the user, computer systems such as autonomous algorithms and XML technology were chosen and implemented. These technologies also make it possible to easily integrate knowledge management and CM operations. Using intelligent agents, for example, may provide real-time monitoring and information retrieval about specific transactions or customers. It is possible to codify and disseminate information to interested parties using XML technology, either by pushing or pulling. The compatibility of knowledge pieces across various applications is also improved. In the past, KM technologies have relied on proprietary cognitive structure and proprietary representations that prevent information from being exchanged across other software applications. Our approach, on the other hand, relies on XML representation to greatly reduce this issue. Varying stakeholders may access data at various degrees of aggregation by performing certain transformations on data stored in an XML database. The XML database may be queried by customer service professionals for specific client histories and profiles, while marketing staff can examine consumer information based on specified "value propositions."

## 5. Conclusion

Analytical customer relationship management solutions provide a single, unified image of the customer and enable a smooth interchange of information between customers and businesses. For a single picture of customers, however, closely connected applications are required, both inside and beyond the area of customer relationship management apps and back-end technologies such as KM. When organizational knowledge is put to use, it generates value. The transfer of information from the place where it was generated or collected to the place where it is required and should be utilized is a significant difficulty in the knowledge application. To solve the problem, we developed a simple and comprehensive framework to connect standard CM features with the administration and use of information in the circumstance of marketing choices, which we used in this study. The practical viability of the system was assessed through the development of a solid evidence prototype, which was developed utilizing smart agent and XML technology to demonstrate its functionality. We believe that the framework may serve as a foundation for the enhancement and expansion of the CM system's functionality.

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