

DERIVATION OF CUSTOMER INTELLIGENCE FROM CUSTOMER KNOWLEDGE MANAGEMENT

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ABSTRACT

In today's world, knowledge has turned into a main element of the financial management. In fact, knowledge is the most essential strategic asset and the capacity to pick up and extend it, spread and apply it can remain to get stand to sustainable economic advantages. Presently, scientists recommend that learning empowered CRM (Customer Relationship Management) determines the route to the concept of Customer Intelligence (CI). CI is an element of management where KM (Knowledge Management) tools and processes are connected to maintain the business of CK (Customer Knowledge) with the support of CRM to enhance strategic decision making. This research paper describes the theoretical concept of Customer Knowledge which led to the concept of Customer Intelligence.

I. INTRODUCTION

The source of information technology has brought forth not only involvement in how to collect and store information, but how to handle the data^[1]. In today's universe, knowledge has turned into a main element of the financial system. Developing necessities of the consumer concerning quality and creativity of product and administration put organizations under pressure. At the same minute, demands from worldwide rivalries urge them to reduce the money related estimation of the item and administrations. These difficulties of having better quality, creativity and the rising demands to decrease cost needs organizations to reshape their business operations^{[2][65]}.

Without a doubt, knowledge is the most essential strategic asset and the capability to achieve and extend it, spread and apply it can add to feasible efficient favorable circumstances^[3]. This is because better knowledge can contribute to conventional resources and assist in unique ways and thereby provides more services to the customer^{[4][28]}.

As of late, organization's exertion has been put into a knowledge administration activity that gets to be one of the executive keywords^[5]. In its most straightforward structure KM is about propelling people to disperse data, knowledge and ideas, to make esteem including product and administrations^[6]. Subsequently, the impression of the KM is inside the association and the advantage of KM is purchaser contentment from the enhanced facilities^[28].

In any case, as organizations begin to procure skill in overseeing inside learning and using it in the method for accomplishing administrative objectives, they are putting their vision on new wellsprings of knowledge that are not fundamentally found inside of the limit lines of the arrangements^{[7][28]}.

With accentuation on knowledge as a principle efficient component in the overall economy, associations might be neglecting key element Customer Knowledge^[2]. It is a better knowledge that empowers associations to exploit and create capital, and also, improve their essential capacity to fight. Additionally, it permits an association to grow the maintainable, objective point of interest and to show signs of improvement than an opponent, yet in the event that it's different assets are not singular^[8].

Customer Knowledge is the vibrant combination of knowledge, assessment, state information and proficiency insights which is necessary, shaped and practical during the practice of business and trade between clients and enterprise. This knowledge is made inside a common stream of data which makes significance for mutual parties and it is the inception of the advancement in customer values^[7]. This will lead to the concept of Customer Intelligence.

A. State of Art

This fragment will introduce the imperative background literature, Since CI is a recent idea and minimal logical exploration is available, this area will primarily describe the speculations from which CI inferiors. Thus,

Knowledge, Customer, Knowledge Management, Customer Knowledge Management (CKM) concepts are primarily explained, in order to describe the reader with a clear perceptive and lucid image regarding Customer Intelligence (CI)^{[27][28]}.

B. Knowledge

Knowledge has been the idea of genuine research in verging on all facets of the organizational investigation^[9]. It has been a popular subject as of late, with significant consideration concentrated on zones, for example, the key part of learning workforce, the need to deliver and disperse information and era of information escalated organizations and social orders^[10]. A model is stated^[11] by that relates and recognize a variety of terms and ideas of knowledge so that a comprehensive portrait results.

Data transform into information when they include worth somehow, and then information converts into knowledge when it include obstructive worth, better perceptive (Figure 1)^{[11][28]}.

- *Data* symbolize documentation, store, and preserve entity's attributes.
- *Information* is the outcome of data handling operations, for example processing operations such as arranging, sorting, etc^[28].
- *Wisdom* comes from actions, for example, disclosure, induction, esteem, experience of Knowledge.

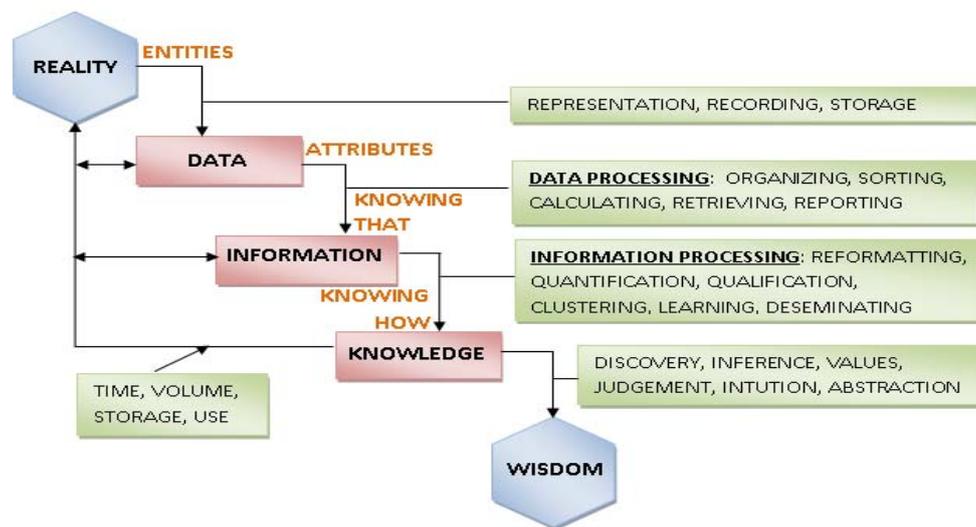


Fig 1: Knowledge Etymologies and Transformation

II. KNOWLEDGE MANAGEMENT

A. Process of Knowledge Management

KM is basically a documented procedure and due to the pervasive nature of knowledge any business procedure can be converted into a "KM Process", such as diffusion, creation and usage of Knowledge^[12].

The Knowledge management process as follows^[14].

- New knowledge generation during research
- Knowledge Assessment from distant
- Knowledge demonstration (document, software and database).
- Knowledge insertion (services, or process).
- Information Transformation of an organization
- Decision making by using knowledge
- Impact management of knowledge.

B. Criteria of Knowledge management

The KM without a doubt perceived arrangement of criteria which will figure out if the system can be genuinely described as knowledge management^[13].

The following are the criteria.

- Answers the key means to identify and resolve effectively challenges experienced inside of the industry procedure?
- Is the strategy clearly familiar and classify the diversity amid knowledge and information?

- If the arrangement plans to gather data that will be utilized to right issues experienced inside a business strategy, are these routes set up, which can be later utilized as benchmarks to choose to what level the data was responsible for taking care of the issues?
- If the methodology is needed to evaluate level of learning, are there benchmarks in a position to decide these levels of information and their importance of accomplishing?
- If the methodologies are planned to impact in better learning administration, does it integrate benchmarks that can be utilized to quantify issues such crisis identification, crisis management, resource intervention or the allotment of resources to communicate knowledge management.

From the business perspective, KM is a method of overseeing company knowledge resources. It is a comprehensive conviction that drives associations to upgrade the use of their insight assets. These assets incorporate both sorts of knowledge [28].

C. CRM’s Requirement of Knowledge Management

So as to execute knowledge-enabled CRM procedure, organizations need to present and maintain several types of knowledge management capacities from start to end the improvement and reconciliation of currently accessible technologies. The system is composed around the organization’s information portal with the aim of accelerating the knowledge section of the structural plan to offer comparable capabilities for knowledge management, for example search engines and automatic content summarization, across the organization’s broad set of documents [15] [28].

At the top level of this framework explained in two parts (Figure 2). First, it is designed to use the present knowledge and to allow formation of novel knowledge throughout a learning procedure denoted by the knowledge learning cycles. And the second rectangular level boxes represent the KM capabilities and technologies.

- **Presentation:** It is planned to let each company’s user be acquainted with where to go to discover the companies’ knowledge through a distinct program based purpose to access all data
- **Personalization:** The main aim of this task is to include the formation of modified navigation and the skill to personalize the content classification. Personalization is often accomplished by means of software’s, generally called spiders, to acquire the data and handle client profiling.



Figure 2: Capabilities needed for CI (KM)

- **Collaboration:** This function is designed to link persons with persons through common groups; to maintain communication; and to motivate cooperation by joining the database and associated applications such as workflow.

- **Process:** This function allows users to contribute in relevant business procedures in the perspective of their own tasks.
- **Publishing and distribution:** This function delivers the way and a proposal for users to effortlessly gather and share out the unique sorts of knowledge resources they have to administer without obliging them to train difficult programming syntax. The software is developed in a manner that clients can control them. The users can specify them in the kind of knowledge user wants to issue, share out and obtain^[28].

III. CUSTOMER RELATIONSHIP MANAGEMENT

Customer relationship management (CRM), also called as association marketing, has newly emerged as an essential marketing notion in the trade world. CRM methodologies enable vendors to construct extensive relationships with clients at the individual level through the use of different programs and key components.

Peppers and Rogers define CRM to be a compound procedure that maintains one-to-one associations with clients to attain growth^[16]. According to Gronroos, CRM extends relationships with old customers buy products; it is with reference to gratifying their outlook in the anticipation of transforming them into evergreen term, reliable clients^[17].

Customer relationship management is a comparatively new field, but its significance is becoming even clearer as time passes^[19].

Reichheld's studies show that little change in client maintenance rates significantly changed profits, proving that long lasting client can be more precious^[23]. Conventional marketing and mass promotions are proving to be unproductive in such a competitive atmosphere. With the number of comparable products on the market increasing the competition among the growing companies, companies must gaze towards attracting customers on some factors other than product class, cost, or convenience^[20]. They must focus on structuring distinctive, close relationships with client based on clients desires and wishes; thus, implementing customer relationship management. It is significant to the growth and future success of companies.

IV. CUSTOMER RELATIONSHIP MANAGEMENT EVOLUTION CYCLE

CRM's relationship has evolved on the basis of mass promotion and brand reliability. The elevation of the business era brought with it mass production and a division of dedicated business functions^{[17][18]}. Companies resolute on the quantity of products that could be produced and since pace and competence were the top priorities, very little importance was given to the modification and overall client contentment. The marketing divisions used mass promotions for their products in order to boost consciousness and fabricate market share^[19].

As contest increased, however, companies started to distinguish their products in the highly competitive business market through branding^[19]. Branding is defined as a characteristic or feature that can distinguish a product or service from that of a competitor^[17]. The main goals of branding were to make brand consciousness and brand reliability among customers through structuring relationships of hope, knowledge, and reliability^[18]. According to Peppers & Rogers, brand consciousness and reliability will eventually change into a categorized alliance with conversation where the client needs control the products or services^[18].

The main short phrase focus of transactional marketing is to draw new clients for a single business. There is a weak contact between the clients and companies, and the primary way to measure the customer satisfaction is through study of market share^[17]. Competition in the name of manufactured good price and amount is the driving power behind transactional marketing, and firms propose value to clients in regard to the firm's own self interest^[18].

Relationship marketing is based on evergreen trust and fulfilment and is centred on customer maintenance and modification^[17]. Communication between companies and customers is vital in the achievement of managing the customer base^[18].

V. CRM SOLUTION STRUCTURE

With this structure (Figure 3)^[31], clients and ability accomplices have a solitary purpose of section into the companies' knowledge assets.

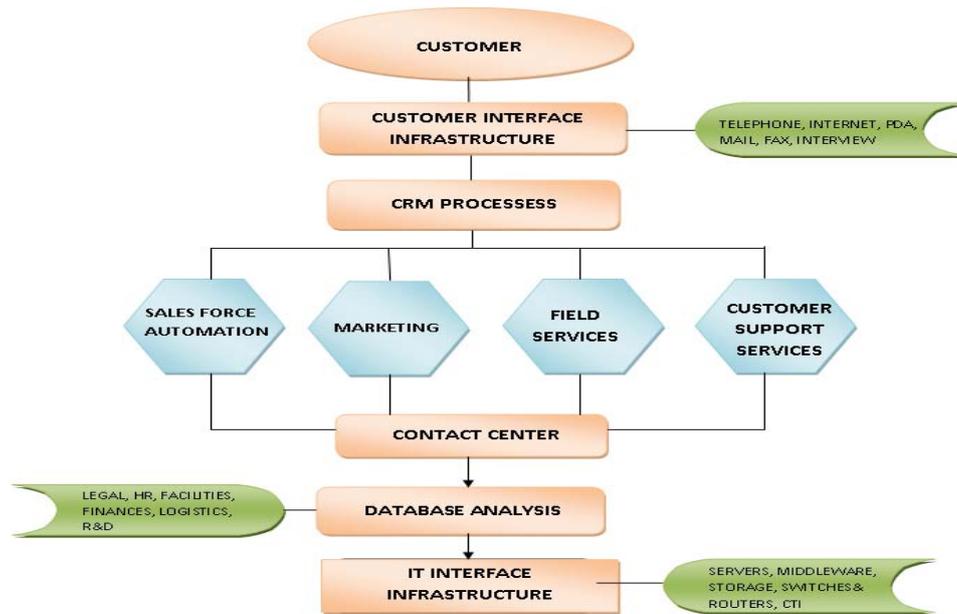


Figure 3: CRM Architecture

The procurement and sharing of information and knowledge is turning out to be significant for organizations^[17]. Data mining, OLAP and Machine learning are accessible to support enterprise procedure, as required. In total, this shape represents a bound together CRM unit everywhere in all CRM solution portions^[17].

VI. CUSTOMER KNOWLEDGE

Customer Knowledge has gradually more familiar as advertising, as a major asset that can be controlled to maintain research and development^[2], to advance novelty, to ease, developing business sector opportunities and to support the association of evergreen customer relationship^[21]. The customer knowledge refers to appreciative your customer, their requirements and aims are to fulfil it to build real customer relationships^{[22] [28]}.

On the second hand, a step beyond proposes that CK can be a mixture of client knowledge, supply chain information, combined course of specific domain^[7]. This knowledge is generated within a bi-flow of information which creates value for buyers and supplier. It goes further than knowledge, identifying and arranging clients, to information that is dwelling inside the external association^[28].

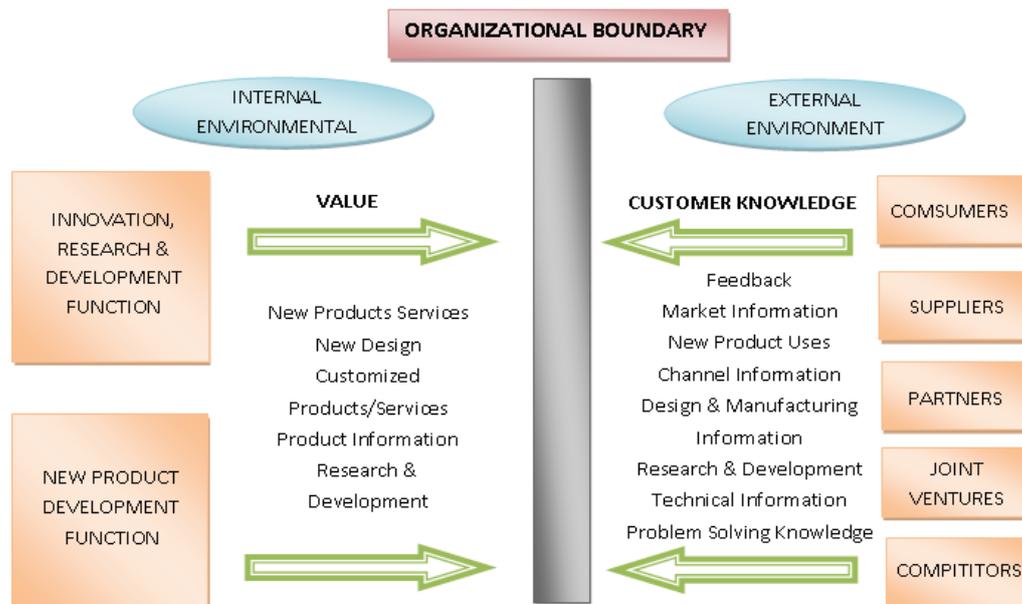


Figure 4: Summary of customer knowledge

A vital part of client learning is that learning is not possessed by the organization, but rather by other people who may not be anxious to circulate such data. Furthermore, the ability to outline and improved new items is

likewise affected by the level of client information streams. A portrayal of client learning streams is depicted in Figure 4^[15].

Customer knowledge management (CKM) includes utilizing three sorts of customer knowledge (Figure 5)^[24]:

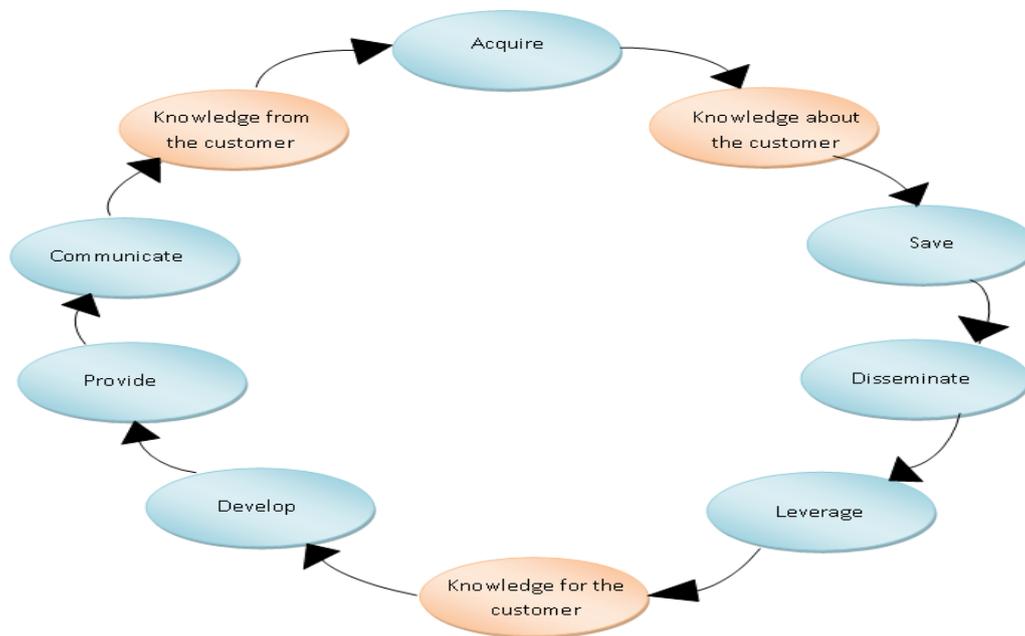


Figure 5: Types of Knowledge

- **About the customer:** Today, technology has guided a great deal of information on customer. This is aggregated from various resources such as financial institutes, credit reporting agencies, loyalty card, local shops, etc. and RFID offers precise and comprehensive data about clients obtaining propensities which have needed to assume at only a couple of years prior and can testimony and save this data effortlessly. But the system must have the capacity to take out significant information from stored information in an effectual and proficient way^{[24] [28]}.
- **For the customer:** Support knowledge enhances the user's knowledge with the merchandise and services. The maturation of e-business creates a client encounter yet all the more exuberant. CRM systems are utilized to tract cooperation's with clients and enhance the legal transfer of merchandise and services^[10].

Despite the fact that technology empowered mechanisms for customer supports knowledge delivery has expanded to a great degree, it can't altogether overlook the human variable. Automated strategies function well to support hinder that is simply organized and simple to distinguish and resolve, furthermore, where there is little requirement for detail explanation of the systems. For complex issues still need to change people and utilize customer knowledge^{[25] [28]}.

- **From the customer:** Ideas for effective product developments more often from end-users and customers-not from inside of association. And after that the association should effectively experiment with such knowledge to discover developed. The stage of convergence must be servicing what clients need-not to create something and then persuade clients that they require^[24]. Honest communication is vital for increasing such knowledge.

VII. CUSTOMER KNOWLEDGE MANAGEMENT

The customer knowledge management focuses on the management and exploitation of knowledge. The procedure of managing the classification and internal usage of client information is collectively known as Customer Knowledge Management (CKM). CKM (Figure 6)^[26] is the tactical procedure by which organizations release their customers from inactive recipients of services and products.

Numerous studies have utilized the customers' knowledge and customers' information, conversely; can perplex the two conditions. One fundamental theory expresses that understanding "how each guest interaction with business processes is to acquire knowledge about the client"^{[7] [28]}.

However, CKM provides an importance to clients as collaborators in the information creation procedure. Customers co-develop information with an arrangement in the way to create wealth for both sections by transferring knowledge^[7].

Style / Characteristics	Prosumerism	Team- Based Co-learning	Mutual Innovation	Communities Of Creation	Joint IP/ Ownership
Focus	Developing tangible assets & benefits	Creating cooperate social capital	Creating new products and processes	Mission – specific. Professional expertise	Tangible customer IP sharing
Objective	Improved products & resulting benefits	Facilitate team learning for dealing with systemic changes	Create maximum return from new ideas	Obtain & explicate professional expertise	Maximum returns on IP (jointly)
Processes	Pre-, concurrent & post – production integration	Teamwork, empowerment, case development, quality programs	Idea fairs, brain storming, customer incubation	Best practices CoP’s expert networks	Apprenticeships Formal training program On job training
Systems	Planning, control & decision supply system	Knowledge sharing systems, digital ‘nervous’ systems, customer visits in teams	Idea generation support system	Expert systems, shared e-workspaces group support systems	Group IP support systems
Performance Measure	Effectiveness & efficiency, customer satisfaction & success	System Productivity, quality, customer satisfaction & success	ROI from new products and processes, customer success	K sharing behavior, timeliness of decision, Rate of hyperlinked results	Value of new IP, incremental ROI on new revenue streams
Case Examples	Quicken; IKEA	Amazon.com, Xerox, Holcim, Mettler Toledo	Silicon Graphic, Ryder	Microsoft, Sony, eBay, Holcim	Skandia
Intensity Of Attraction	Relatively low	Low to High	Relatively low	Relatively high	Relatively high
Type Of Knowledge	More explicit	Explicit & tacit	More tacit	More tacit	More explicit

Figure 6: Five Style of CKM

VIII. CUSTOMER INTELLIGENCE: COMBINED APPROACH

It is undeniable that organizations work in data rich environment. It is neither conceivable nor productive to attempt to watch and process every one of the wellsprings of data that exist in a forward-looking endeavor^[27]. The issue of huge information gathering sets so extensive and complex that it gets to be cumbersome to work with utilizing related database administration instruments makes challenges, including catch, memory board, seek, sharing, investigation and representation. The client knowledge is habitually seen as a subset of securities industry news^[27]. Market knowledge might concentrate on one (or all) of three source situations and procedures might change between them (Figure 7)^[7].

It is self-evident that companies work in information rich surroundings. It is neither conceivable nor productive to attempt to observe and process every source of information that exist in a forward-looking endeavour^{[27][28]}. The customer intelligence is frequently seen as a subset of securities industry news^{[27][28]}. Market intelligence might concentrate on one (or all) of three source situations and procedures might change between them (Figure 7)^{[7][27]}.



Figure 7: Customer Intelligence Environment

These three sources are:

- Supplier environment: The supplier environment is comprised of the objects that supply assets, products, data, and parts to the organization^[27].

- Market environment: The market environment is component of the business framework that surrounds the business. Market intelligence can originate from controllers, contenders, and other affecting elements, for example, the media ^{[27] [28]}.
- Customer environment: It comprises of the objects that are demanding goods or services of the associations, for example, clients, prospects, and channel accomplices ^[27].

In view of these distinctions, developed the accompanying definition:

Customer intelligence is the proficient strategy of gathering, applying and analyzing information (both qualitative and quantitative) about the customer environment (including present, past and planned customers) that in the meantime reflects and refines the organization’s comprehension of its relationship to the customer environment ^{[27][28]}.

Effective customer intelligence drives business efficiency and income growth by speeding up the development of key competencies inside of the organization ^[28]. Organizations that have utilized effective customer intelligence to drive customer Centricity have delighted in perceivable returns and market advantages ^[27].

IX. BUSINESS VALUES: CUSTOMER INTELLIGENCE

Compelling customer intelligence drives business gains and revenue growth by creating or speeding up the development of key skills inside of the association. Organizations that have utilized effective customer intelligence to drive customer-centricity have appreciated noticeable returns and market advantages, such as the following ^[27]:

- ❖ Improve product development.
- ❖ Responding to client demand
- ❖ Enhanced agility in a dynamic market
- ❖ Accelerate process upgrades.
- ❖ Enable demand innovation.

Even though, Knowledge Management (KM) is vital to managerial survival, nevertheless it is a hard undertaking since it takes large outlay of resources. The by product of information technology, for example, emails, records and intranets, are demonstrating extremely helpful in specific fields ^[30]. The procedure of knowledge management can therefore subsequently be to some degree uncertain and fuzzy ^[13].

KM is affianced with the supervision of company corporate knowledge and data belonging to offer these actualities to however many staff individuals as could reasonably be expected and in addition its business method to energize better backing and more comprise decision making ^[29]. It is a developing arrangement of framework structure, application and advancements that help knowledge workforce drastically impact their inventiveness and capacity to convey organization worth ^{[30] [28]}.

X. CRS MODEL

CRS stands for Customer Relationship Strategy. The main objective of the CRS model is to boost business, strategic targets by gaining in-depth comprehension of the companies’ bazaar and acting on this knowledge. Companies must comprehend the segment components to get a successful CRS framework ^[28].

CRS comprises of two segments: CRM systems aimed at maximizing communication with the client and customer intelligence (CI) systems guided at analyzing data to clear knowledge of customer attributes ^[27] (figure 8).



Figure 8: CRS Model

XI. DERIVATION OF CI FROM CKM AND CRM

CI is derived as shown in figure 9. CI process is a mixture of analysis activities of transaction data and reference data.

The reference data are derived from a CKM process by CRM and transaction data is derived from the actions of the client such as feedback, comments and surveys. So the analysis activities performed on the mixture of reference data and transaction data by using data mining and analytics will lead to the CI concepts. And CRM Managers used their inductive skills after analyzing the CI concepts to form CRS.

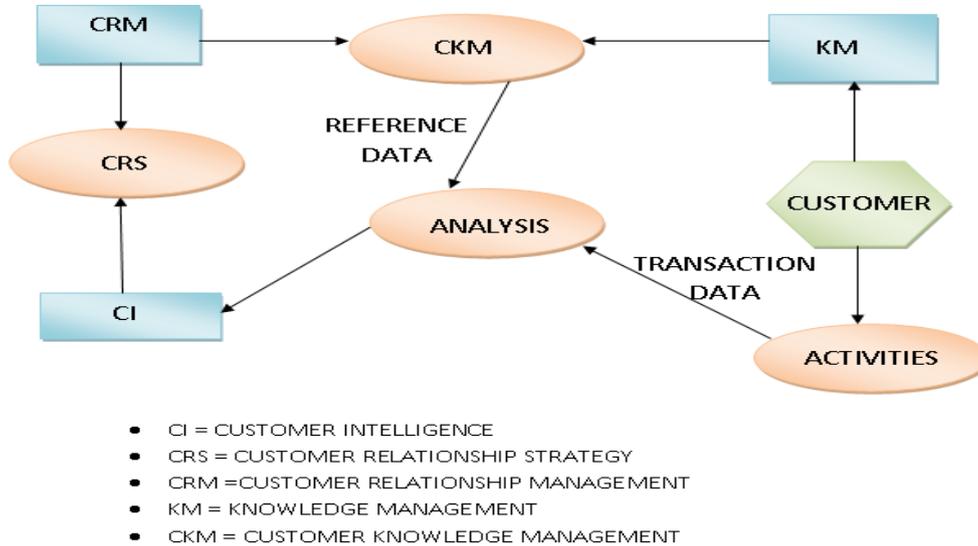


Figure 9: CRS Model

XII. REAL LIFE EXAMPLES

There are two real life examples on the concept of Customer Intelligence. The first example is about a company named Citrix. Citrix determined on consumer opinions to make their Customer Intelligence policy. Their area team is an in-person who teaches about home consumers and their requirements and provides direct views on the company’s course. They use these meetings to create videos about consumer requirements and product information that they share directly with their engineers. They also use consumer advisory boards to built around specific client desires to guide their product expansion through direct voice of the customer.^[32]

One more approach is to produce a digital client experience room. A client experience room is a precise space where you can learn more about your clients’ journey and requirements. Citrix made their client experience room virtual. This allows their workers throughout the world to “visit” their client experience room.

The second example is about Oracle. It made a very noticeable commitment to clients when they defined the “Chief Customer Advocate” job on their panel. In addition, Executive Committee members meet customers on a weekly basis to strengthen their peripheral centre. They contribute to their peripheral knowledge with multiple client panels, which give further ways for executives to meet with clients regularly.

Oracle’s recommendation to other firms includes “Get directly implicated with your biggest clients”. They take the time to build the first-hand experience into their programs to ensure a customer focus.^[32]

XIII. CONCLUSION

The research work has laid down the groundwork for a fresh perspective of the data sources, but it calls for more effort in combining questions, concatenating the achieved outcomes and for streamlining the content of the data sources.

Utilization of external sources like internet publications is out of the scope of the current work within the journal because the attempt of retrieving valuable information is greater and it needs greater accuracy. In a professional approach such sources should be taken into account and prototyping should prove their applicability and their contribution to CI for real business.

The customer intelligence is necessary to work in a customer-centric manner and it does not provide fruitful results until correct questions are asked with the proper approach^[27]. Otherwise, a company may invest a lot of time and money on customer intelligence and still obtain no significant result^[63]. The perfect portrait of customer behaviour can be derived from the mixture of transaction information and human insights, which can entirely depend on rich communication with clients.

Good data quality and the association between information sources are necessary conditions for the CI success. The research questions may provide better answers after solving the present issues. The outcome of the current research shows that horizontal process is not enough to get the best results for predefined research questions as there are association and alignment issues among the data sources.

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