

**CUSTOMER RELATIONSHIP MANAGEMENT AND  
CUSTOMER EXPERIENCE MANAGEMENT USING BUSINESS  
ONLINE COMMUNITIES**

*Synopsis of the Thesis submitted in fulfillment for the requirement for the Degree of*

**DOCTOR OF PHILOSOPHY**

**IN**

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By

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## **DECLARATION BY THE SCHOLAR**

I hereby declare that the work reported in the Ph.D. thesis entitled **“CUSTOMER RELATIONSHIP MANAGEMENT AND CUSTOMER EXPERIENCE MANAGEMENT USING BUSINESS ONLINE COMMUNITIES”** submitted at **Jaypee Institute of Information Technology, Noida, India**, is an authentic record of my work carried out under the supervision of **Dr. Y. Medury and Dr. Vandana Ahuja**. I have not submitted this work elsewhere for any other degree or diploma.

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## **SUPERVISOR'S CERTIFICATE**

This is to certify that the work reported in the Ph.D. thesis entitled **“CUSTOMER RELATIONSHIP MANAGEMENT AND CUSTOMER EXPERIENCE MANAGEMENT USING BUSINESS ONLINE COMMUNITIES”** submitted by Shirin Alavi at **Jaypee Institute of Information Technology, Noida, India**, is a bonafide record of her original work carried out under our supervision. This work has not been submitted elsewhere for any other degree or diploma.

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# 1. INTRODUCTION

## 1.1. Background

There are four trends reshaping the world of business – technological advances and the speed with which new technologies are created and copied, the loss of geographic advantage resulting from globalization, the shake-up of traditionally stable industries as a result of deregulation and the rising power of the consumer and their ability to get what they want, when they want it, from whomever they want. With this in mind, the relationship experience becomes one of the greatest competitive aspects for a business's survival. This has made companies realize the significance of the four levers of *Customer Value Management – Retention, Efficiency (understanding cost to serve), Acquisition and Penetration (cross-sell and up-sell)*. The buzzword of globalization holds no meaning without the concept of what is being termed as '*Digitization*'. Further, with the internet having built an open network where information can flow freely, innovation, entrepreneurship and democracy are fast thriving over the world. The collaborative web along with the E-enterprise, has brought into vogue, the use of emergent ***internal and external online communities*** within companies, or between companies and their partners or customers. This, along with organizational willingness to take risks has created new opportunities for companies in the domain of innovation, internet based collaboration and co-creation. Innovation processes are continuous and appropriate human capital is fast becoming a scarce resource. Distinctive capabilities coupled with institutional excellence now spell sources of competitive advantage. Organizations are transforming from hierarchical, bureaucratic, functional, pyramid structures to interconnected subsystems, characterized by flexibility, employee empowerment, and flat or networked structures. People, knowledge and capabilities are the key organizational assets. Geographic proximity is no longer essential for people working together, courtesy the advances made in the field of Information and Communication Technology. As companies understand the implications of targeting strategic customers and effectively using *customer profitability analysis*, choosing the right customer set selectively and relating with them in more meaningful ways by incorporating more interactive approaches helps significantly. *The value of targeting the right kind of customers has become so important that the entire success and failure of an organization depends on customer acquisition and retention. It is for this reason that technology has become very important in marketing in the form of CRM.* To provide a wholesome

understanding about customers, effective data generation and data analysis is very important. Backed with appropriate datamining, organizations can reap such benefits.

## **1.2. Need of the Study**

A detailed literature review helped understand the lacunae in the existing literature. Significant research had been undertaken by researchers worldwide with respect to classifying online community typologies, understanding individuals online, the role of online community in shaping and impacting individual behaviour, the power of social networks and so on. While research has been pursued in the domains of CRM, *CRM using Online Communities on the internet* seemingly appeared to be an untapped area. Also, *use of Online Communities as a useful tool for Customer Experience Management* was an untouched arena. Approaching the same web tool from an Internet Marketing and CRM perspective appears to have been inadequately handled. As part of my previous work in my previous organization, “Standard Chartered Bank” I have worked with *Content data, Contextual data and Analytical data*. There are three fundamentally different types of CRM information resources-Content data, Contextual data and Analytical data. Each requires different tools and methods for appropriate management and use within an organizational CRM strategy. It is the effective integration of information across these resources that drives an organizational CRM strategy and related business intelligence processes. *The web appeared to be a useful domain in the light of new age developments and Online Communities appeared to be fascinating. Hence Online Communities appeared to be a good tool to explore for my research work.* An online community acts as a repository for content and contextual data and the combination of this data enables effective analysis of customer relationships and trends over time. While content data comprises the information captured about individual events and customer encounters, it is primarily fact based information. The contextual data aims at providing a detailed context for the consumer related information to facilitate decision making. Further, analytical data aims at reflecting the relationship of fact data to contextual data for a specific point of time. The effective integration of information content and context drives analytic applications which evaluate the relationship of encounters under various contextual circumstances to identify predictable trends in customer behaviours. The resulting information analysis can then be incorporated into a business intelligence process. The online communities can be used for better

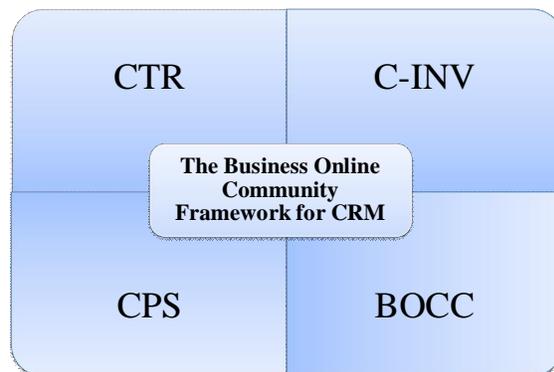
campaign management and customer content analysis. CRM applications have focused on extending traditional contact management applications through the collection and maintenance of more robust contextual customer information. An online community can be used in this reference by preserving the context of the consumer interaction. *I proceeded to derive both research questions and hypotheses to test within future studies after considering already published research in the domain.*

### **1.3. Aim of the Research**

*The online communities can be used for various CRM functionalities like Campaign Management, Consumer Segmentation, Response Management and Response Modelling, Contact Management and Account Management.* Business Online communities can hence serve as an online platform for Campaign Management, providing an opportunity to segment consumers on the basis of their interactions with the organization, rather than those based on simple demographics. Appropriate targeting strategies can be developed for different consumer segments. Consumers interacting with organizations can be segmented on the basis of their Individual Network Values, their Degree of Participation, their Emotional Attachment or even with respect to their profit or relationship potential. Online communities can be used for aiding sales professionals in building a deeper understanding of target accounts with complete history of all the accounts with some contextual information comprising details of interactions with partner organizations. The models developed for respective campaigns can be used for future segmentation and targeting efforts. If a suitable model is developed, for consumer profiling or portfolio analysis, then the model can be run for other segments to find better prospects. They can be made the targets of subsequent campaigns. **This research thesis aims at developing 4 specific models for response modelling/prediction/consumer profiling. These were-**

- 1. Consumer Trustworthiness Regression model using Netnography (CTR)**
- 2. Co- creation model using INV based on Metcalf Law (C-INV)**
- 3. Consumer Price Sensitivity model using K-means cluster analysis (CPS)**
- 4. Business Online Community Credibility model (BOCC)**

*Fig. 1 : Response Modelling for CRM*



#### **1.4. Research Objectives**

This research thesis focuses on studying the ability of online communities, as a channel to serve as an interface between organization and consumer and aid the organization in achieving its CRM goals. This is accomplished through the following research objectives-

- 1. Develop a model to analyze the usage of online consumer communities for identifying the components that build consumer trustworthiness for an organization.*
- 2. Create a framework for calculating the value of an online community based on its customers.*
  - 2. a. Identification of determinants of Individual Network Value (INV) and Community Network Value (CNV) and creation of a framework to use INV as a basis for identifying consumer co-creators.*
- 3. Creation of a framework for selection of consumers demonstrating high future profit or relationship potential and devise strategies to impact consumer price sensitivity for expensive, medium and low cost products for organizations.*
- 4. Creation of a model for identifying the credibility of a business online community from a community manager's perspective.*

#### **1.5. Significance of the Study**

In the twenty-first century, e-commerce and online interactivity have reached a stage of steady growth. Decisions have been made easier in the era of the cloud. As business applications are moving to the cloud, the shift from traditional software models to the Internet has steadily

gained. With the advent of cloud computing, companies pay for what they need, as the shared infrastructure implies usage of the services like a utility, wherein companies pay only for what they need with options for scalability and automatic upgrades. The ability to access vast information resources within a matter of minutes and to communicate across huge distances at ever lower costs while maintaining quality levels along with dramatic changes in competition, technology, and workforce values are causing organizations to search for new and more human ways of increasing productivity and competitiveness. Newer systems support collaboration and employee interaction. In view of the increased need for the organization to communicate with its consumers, the internet provides an excellent low cost solution for better connectivity between the organization and its partners. Organizations are waking up to the need of extending business processes beyond corporate firewalls which implies inclusion of people outside the company as readily as they do people inside the firm.

### **1.6. Scope of the Study**

This research thesis focuses on studying the ability of online communities, as a channel to serve as an interface between organization and consumer and aid the organization in achieving its CRM goals. Using the CRM concept of response modelling four specific models have been developed. *Organizations build online communities as part of their Customer Relationship Management (CRM) initiatives. The work traces the need for organizations to study the role of greater consumer participation and reciprocity which increases trustworthiness of certain consumers. There is a need for hosting the appropriate content on an organizational initiative which by matching consumer requirements helps develop a relationship between organization and consumer. The organizations need to have a mechanism in place, which is useful to identify significant consumers. Co-creation might be viewed as an aspect of customer knowledge competence which encompasses the processes that generate knowledge about specific customers. I hope to contribute to the literature by empirically testing and validating the models created.*

### **1.7. Structure of the Thesis**

This research thesis focuses on studying the ability of online communities, as a channel to serve as an interface between organization and consumer and contribute to the twin objectives of *Customer Relationship Management and Customer Experience Management*. This has been

accomplished through various research models formulated during the study. The entire research study has been organized in five chapters. A brief summary of the various chapters is as follows.

**Chapter 1** introduces the concept of the Internet and how the digital world is reshaping the business paradigms in recent years. It is a preface to the thesis. It traces the concepts of Online Communities, Customer Relationship Management, ECRM and Customer Experience Management and proceeds to spell out a detailed need of the study, outlines the research objectives, scope and limitations of the study. It also highlights the significance of the study and reasons out the perusal of research in the domain of CRM *using Online Communities and use of Online Communities as a useful tool for Customer Experience Management. The research objectives and the methodologies adapted to accomplish those have been clearly stated.*

**Chapter 2** proceeds through a detailed literature review on the various dimensions of Customer Relationship Management, Online Communities, salient features of online communities, usage of online communities for various CRM functionalities and types, Customer Experience Management, Web 2.0 Internet marketing, Metcalf's Law, Consumer Price sensitivity, Key Account Management, Customer Lifetime Value, Customer Portfolio Analysis, E-Commerce, Role of Internet in E-Commerce and various price effects in online domain. The exhaustive review of the research literature helps identify niche areas for perusal of further research. The chapter also discusses the previous established research work which has been conducted in the domain of online communities.

**Chapter 3** discusses the theoretical framework and methodology adopted in the study. It outlines the various dimensions of the study and research objectives and the set of methodologies adapted to accomplish those objectives. It explains in detail the pilot study conducted for the identification of an appropriate online tool for the study after a comparative analysis of three online tools. Netnography, which is a new qualitative, interpretive online marketing research methodology, that uses internet optimized ethnographic research techniques to study the online communities, has been applied, for the formulation of the research instrument. Further the procedures followed for the collection of data and selection of the sample of online community consumers and online community managers have been outlined. The tools and techniques followed for analyzing the data for the study are also dealt with in this section. *Using the concept of response modelling, four specific models have been developed during the entire research study. These are detailed in this chapter-*

- (i) **Consumer Trustworthiness Regression** model using Netnography (CTR)
- (ii) **Co-creation model** using INV based on Metcalf Law (C-INV)
- (iii) **Consumer Price Sensitivity** model using K-means cluster analysis (CPS)
- (iv) **Business Online Community Credibility** model (BOCC) using Linear Programming

This chapter describes in detail the various parameters and determinants which form the basis of the questions for the three self designed research instruments – RI-1, RI-2 and RI-2. Statistical Package for Social Sciences (SPSS) version 17.0 was used for statistical analyses of the collected and tabulated data. The following statistical techniques have been used for analyses across all the three research instruments-**Correlation, Regression, Prediction, Factor Analysis, Simplex Tableau Method of Linear Programming, Hierarchical Clustering, K-means Clustering and consumer profiling.**

**Chapter 4** details out the entire analysis of the three Research Instruments created- RI-1, RI-2 and RI-3. It also presents the analysis and findings of the four specific models which have been developed during the entire research study.

**Chapter 5** summarizes the conclusions of the various models and research instruments which have been formulated for the research study. It also talks about the implications to the managers and organizations model wise to facilitate well directed endeavours towards building business relationships in the B2B and B2C context. Organizational success is significantly a focus of building relationships-not completing purchases. Finally it discusses the limitations and scope for future work in the arena of using online communities for achieving twin objectives of an organization i.e. CRM and CEM. While organizations stand to gain significantly from introducing Online Communities in their CRM tool boxes, it is by adopting the right strategies that they will be able to leverage these tools.

## **2. LITERATURE REVIEW**

### **2.1. Customer Relationship Management**

Customers in the current era are much more empowered today and selling to them requires a far more strategic approach which CRM hopes to fulfil. Organizations are not only attempting to interpret the needs of the customers based on their buying behaviour, but are also predicting their future needs. CRM enables firms to customise offerings for customers and when offerings are

customised, the perceived value gets enhanced. The perceived value is equated with perceived quality by customers, leading to enhancement of customer satisfaction. This emphasises the need for integration along the value chain and aligning and integrating organizational processes back through the supply chain to enable better value delivery to the end customer. CRM can be viewed as an application of one-to-one marketing and relationship marketing, responding to an individual customer on the basis of what the customer says and what else is known about that customer (Peppers, Rogers and Dorf, 1999). It is a management approach that enables organizations to identify, attract, and increase retention of profitable customers by managing relationships with them (Hobby, J., 1999) and further identifying strategically significant customers (Buttle, F., 2001). “CRM is an IT enabled business strategy, the outcomes of which optimize profitability, revenue and customer satisfaction by organizing around customer segments fostering customer-satisfying behaviour and implementing a customer-centric process” (Gartner group, 2008). Alignment of incentives and metrics, deployment of knowledge management systems, tracking customer defection and retention levels and customer service satisfaction levels are other contributions of CRM Technology.

## **2.2. ECRM**

ECRM comprises activities to manage customer relationships by using the Internet, web browsers or other electronic touch points. A higher degree of interactivity possessed by these channels further allows companies to engage in dialogue, organize consumer redressal, solicit feedback, respond to controversies and establish and sustain long-term customer relationships. Existing companies are being challenged to rethink the most basic business relationship—the one between the organization and its customers. The three components of the ECRM framework are Operational CRM, Analytical CRM and Collaborative CRM. *Operational CRM* aims at combining sales, support and marketing databases into a single repository that tracks and manages interactions with customers, thereby focusing on improving the efficiency of customer interactions. *Analytical CRM* comprises the analysis of customer data for strategic or tactical purposes to enhance both customer and firm value. Analytical CRM aids decision making using various tools ranging from simple spreadsheet analysis to sophisticated data mining (Tanner, Jr., John, F., Ahearne, M., Leigh, T. W., Mason, C.H. and Moncrief, W.C., 2005). *Collaborative CRM* facilitates interactions between customers and companies and between members of the

company around customer information to improve communication and coordination, to raise customer switching costs and to increase customer intimacy and retention.

### **2.3. Online Communities**

An online community is a group of people with some shared interest who connect and interact with each other over time. Relationship of some sort is implied. The dawn of the information age found groups communicating electronically rather than face to face. A computer mediated community uses social software to regulate the activities of the participants. These are places where people gather to share knowledge, build recognition and tap opportunities. Initially sensed to be resource pools for value addition, where people ventured to fulfill their need for self-actualization, participation in online communities and forums started as a medium for exchange of ideas and information, and now organizations have started using these communities for marketing through consumer evangelism and support. A web based communication model utilizes the features of the network for B2C as well as peer to peer communication. On the Internet, electronic tribes structured around consumer interests have been growing rapidly. To be effective in this new environment, managers must consider the strategic implications of the existence of different types of both virtual community and community participation (Kozinets, R., 1999). The interest in online communities from a marketing perspective is driven by the belief that the complex network of personal relationships and increasing identification with the group as a community provide a foundation for a very attractive business model. (Farquhar, J. and Rowley, J, 2006). An online community is a potential source of loyalty, commitment, and increased retention of participants. Many business online communities are created for good Customer Relationship Management (CRM) and Customer Experience Management (CEM). Online business communities maintained for effective Customer Relationship Management can help to reduce price sensitivity, enable price premiums, and create opportunities for up and cross selling. The communities create barriers for customers to exit and for competitors to enter and facilitate database development, (O Malley and Tynan, 2000).

### **2.4. Customer Experience Management**

The limitations of CRM's internal orientation and technology-obsession led to the rise of Customer Experience Management. CEM focuses on designing and delivering loyalty-building experiences. CEM is not just about using technology, but about mapping the actual consumer experience and the variation in the consumer thought process which results due to any new

methods or processes adopted by the organizations. A customer's perception of an organization is built as a result of the interaction across multiple-channels, not through one channel, and that a positive customer experience can result in increased share of business (Pan and Lee, 2003). *Customer Experience Management (CEM) is the process of understanding and managing customers' interactions with and perceptions about the company/brand. The goal of CEM is to improve the customer experience in order to optimize customer loyalty.* Good Customer Experience Management is possible when organizations tap their employee resource base appropriately. *Online Communities can be useful tools for CEM by being good Collaboration Enablers.*

### **2.5. Internet Marketing and Metcalf's Law**

In the present scenario, interest in the Internet is unprecedented and its use in CRM and marketing is increasing exponentially, (Robert Peterson, and Balasubramanian, S., 1997). As per Metcalf's law, the full value of the network, the community value, is the summation of the individual values of the members in the community (Hanson Ward and Kalyanam Kirthi, 2007).

**Community Network value=  $\sum$  (Individual Values in a Network)**

More simply, Hanson says 'The value of a network increases with the square of the number of participants'. This value accrues to those who are collaborating within the network or those who are providing their services across the network. The value of the network to the individual actually increases linearly – with 3 people, there are 2 people to communicate with and with 6 people, there are 5 people to communicate with (the value is proportional to  $n - 1$ , where  $n$  is the number of members in the network).

### **2.6. Co-creation and Online Community**

With the advent of Web 2.0, customers are active co-creators of the products they buy and use. Co-creation is defined as an active, creative and social process, based on collaboration between producers and consumers that is initiated by the firm to generate value for both the firm and the customers (Humphreys et al., 2009). Business Online Communities are fast becoming excellent tools for operational and collaborative CRM with co-creation soon gaining pace as a strategic outcome of Collaborative CRM. Co-creation may take place in the context of customer communities. Much of the research on online communities suggests that the nature of these

communities with permeable boundaries and self-organization makes them a new powerful locus of collective creativity and innovation (Lee, G.K., and Cole, R.E, 2003).

## **2.7. CRM Strategies**

Customer Portfolio Analysis (CPA), the first step in the CRM value chain, acknowledges that not all customers are equally valuable to the company. Customer Portfolio Analysis asks the question: “Who are our strategic customers?”. When CPA has sorted the actual or potential customer base into different groups, they can be targeted with different value propositions. An important consideration is to analyse and sort by profit potential, not by volume, whether that is by sector, segment or individual, (Buttle, F., 2009). Key accounts or strategic accounts are the most valuable customers for a company. To put it simply: a company cannot afford to lose these customers without getting into serious difficulties. Key Account Management can be defined as: “Key account management means systematic selection, analysis and management of the most important current and potential customers of a company. In addition it also includes the systematic set up and maintenance of necessary infrastructure” (Dirk, Z., 2008).

## **2.8. Web 2.0**

Web 2.0 applications support the creation of informal users networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and refining of informational content (Constantinides E. and Fountain J. Stefan, 2008).

## **2.9. E- Commerce**

The entire value chain in a typical marketing organization starts at the supplier and ends at the consumer. E-Commerce and digital technology are playing significant roles in enriching the sales and marketing strategies of an organization. It has forced companies to find new ways to expand the markets in which they compete, to attract and retain customers by tailoring products and services to their needs, and to restructure their business processes to deliver products and services more efficiently and effectively (Shin Namchul., 2001). The term 'electronic commerce' encompasses many activities carried out through computer networks and the Internet, including inter-organizational commerce, intra-organizational transactions, and transactions involving the individual consumer (Adelaar, 2000).

## **2.10. Customer Life Time Value**

Customer Lifetime Value is the present value of the future cash flows attributed to the customer relationship. It depends on a customer's activity level, duration, the firm's retention spending,

and other related costs and benefits attachable to that specific customer or customer segment. In order to maximize the Customer Life Time Value the firm must work with desirable customers to begin or they should know how to customize the customer's experience to create highest value (Venkatesan R. and V. Kumar., 2004).

### **2.11. Consumer Price Sensitivity**

Price sensitivity depends on the ability of the consumer to compare alternatives, evaluate deals and addresses whether the total costs justify the time and effort to find better prices. Price sensitivity encompasses how consumers react to price levels and price changes. Price sensitive consumers seek low prices and are less likely to buy when prices rise. Price insensitive consumers are willing to pay higher prices for the same goods than are price sensitive consumers, and are more willing to buy if prices go up (Foxall and James, 2003), (Shimp, T. A., Dunn, T. H., and Klein, J. G, 2004).

### **2.12. Price Effects in Online Domain**

The *Reference Price Effect* connects price sensitivity with the competitive alternatives that a potential customer uses to judge the product's price (Kalyanaram G., and Russell W.S., 1995). Under *Price Quality Effect* certain specific goods which provide consumers with a unique experience or value, the price of the product influences consumer evaluation of a product, (Dodds B. William, Monroe B. Kent, 1985). *In this effect when price is a signal of quality, price sensitivity is lower.* Under *Switching Cost Effect*, for a price sensitive customer, if switching costs are high, then the customer will not switch over and vice versa. Switching costs are the expenses incurred by changing suppliers (Thompson and William, B.C., 2002). *In this effect, price sensitivity, (Tellis J. Gerard., 1986) is reduced when the product is part of a system of complementary products.* The *Difficult Comparison Effect* connects price sensitivity with the presence and awareness of alternatives. *In this effect awareness of more substitutes and lower search costs work to increase price sensitivity (Lynch G. J., Ariely Dan, 2000).*

## **3. RESEARCH METHODOLOGY**

I have applied the research technique of **Netnography**, which is very specific to the online domain for formulation of two sets of research instruments. With the help of Netnography, Online Community research can be done by either actively integrating the members of the

community or passively monitoring the community and integrating the gathered information, knowledge and ideas into the new product development process, (Kozinets, Robert V., 2002). Netnography of 40 online product communities of Apple and one online community of Dell was conducted **for building Consumer Trustworthiness Regression Model.**

*The sampling techniques involved “online intercept random sampling” as well as “snow ball sampling” for collection of data for research instrument RI-1, for formulating Co- creation Model using INV based on Metcalf Law (C-INV) and for formulating Consumer Price Sensitivity Model using K-means cluster analysis (CPS).* In total, the Research Instrument-RI-1 was sent to 300 online community consumers, of which 219 responded, thus making the response rate to be 73%. The data collection for calculation of INV values using the framework created, which led to the formulation of *Co- creation Model using INV based on Metcalf Law (C-INV)*, has been done across communities of four companies, namely Apple (Apple I Pad), Cisco (Cisco Collaboration Community), Dell (Ideastorm) and Microsoft (Microsoft Dynamics CRM) using “online intercept random sampling Technique”. These companies are the only ones where information with regard to the last date of consumer’s participation was available to facilitate online intercept sampling technique. For research Instrument RI-2 which led to the formulation of *Consumer Price Sensitivity Model using K-means cluster analysis (CPS)*, the data was collected across 200 consumers from the 40 online product communities of Apple using online intercept sampling technique. In these communities of Apple, the information with regard to the last date of consumer’s participation was available to facilitate online intercept sampling technique.

Statistical Package for Social Sciences (SPSS) version 17.0 was used for statistical analyses of the collected and tabulated data. The following statistical techniques have been used for analyses across all the three research instruments-**Correlation, Regression, Prediction, Factor Analysis, Simplex Tableau Method of Linear Programming, Hierarchical Clustering, K-means Clustering and consumer profiling.**

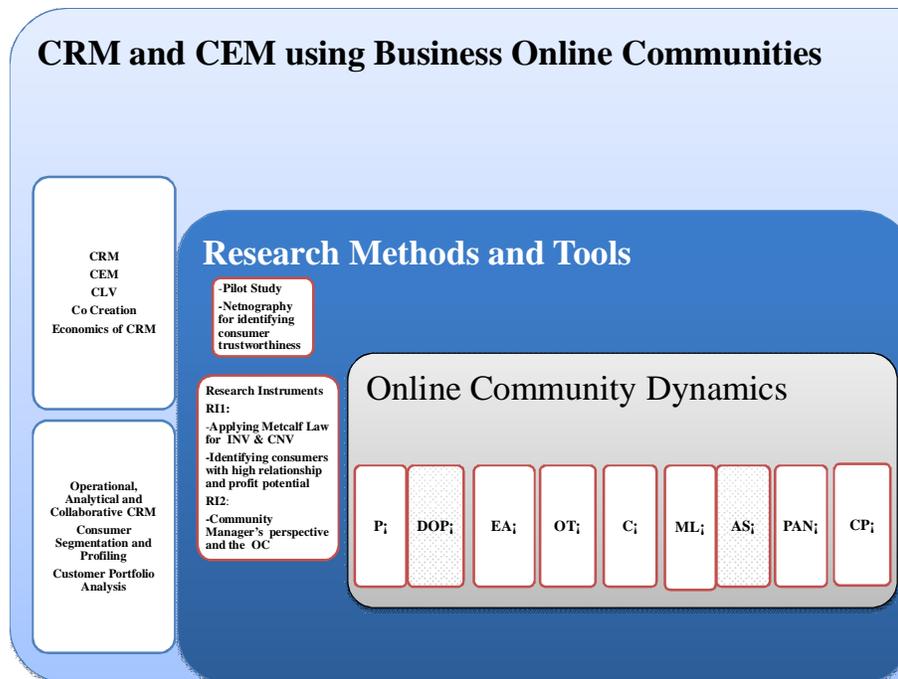


Figure 3: Achieving CRM Goals by Using Online Communities

## 4. RESULTS AND FINDINGS

### 4.1. Consumer Trustworthiness Regression Model using Netnography (CTR)

High correlation is observed between *number of views* and *number of points*. The participant points accumulated are a function of member posting; however, a high correlation between participant participation appears to lead to not only increased reciprocity, but also significantly increased trustworthiness of the community members. There was no significant correlation observed between *days since registration* and *views*. Hence, the parameter of *longevity* is eliminated, as per my previous study. The regression equation for iPhone is hence  $Y=4069.859+0.352X$ , where the expected number of views (Y) can be predicted by including the value of number of points (X) in the above given equation.

### 4.2. Analysis of Research Instrument for Online Community Consumers (RI-1)

All parameters of Participation loaded onto the three principal components of *member centricity*, *responsiveness and accessibility*. All parameters of Emotional Attachment loaded onto the two principal components of *emotional optimists* and *risk avoidance*. All parameters of Online Trust loaded onto the two principal components of *credibility* and *communication*. All parameters of Commitment loaded onto the five principal components of *member affinity*, *personalization*,

*inducing member participation, building member loyalty and member-to-member interaction.* All parameters of Member Loyalty loaded onto the three principal components of *interactive loyal, loyal persuader and loyal advocate.* All parameters of Attitude towards Switching loaded onto the three principal components of *switch for value, non switcher and switch for price.* The value of Pearson Correlation coefficient was calculated as -.442, which depicted that if the consumer has a high *Degree of Participation or involvement* in the online business community of a company then his *Attitude towards Switching* from the community or product is low.

#### **4.3. Co-creation Model using INV based on Metcalf Law (C-INV)**

An Evaluation Grid 3 mentioned in Annexure I, was circulated to a focus group of 30 respondents, who were asked to rate the seven determinants of INV on a scale of 1-5 (5-Excellent, 1-Poor). Based on their rating the following weights were extracted for each of the determinant-Participation ( $P_i$ )-0.25, Emotional Attachment ( $EA_i$ )-0.13, Online Trust ( $OT_i$ )-0.16, Commitment ( $C_i$ )-0.12, Member Loyalty ( $ML_i$ )-0.13, Attitude towards switching ( $AS_i$ )-0.10, Period of association with the Network ( $PAN_i$ )-0.11.

Based on the above determinants, the weighting criterion and Metcalf law, we create the following formula for calculating Individual Network Value.

$$\text{Individual Network Value} = (0.25 * P_i + 0.13 * EA_i + 0.16 * OT_i + 0.12 * C_i + 0.13 * ML_i + 0.10 * AS_i + 0.11 * PAN_i)$$

Under this model, the values of  $INV_i$  were subjected to **Hierarchical cluster analysis using SPSS 17.0**, and five clusters were identified. The consumers C8, C14, C38, C48, C58, C64, C88, C98, C108, C114, C138, C148, C158, C164, C188 and C198, belong to cluster 3. The consumers C5, C55, C105 and C155 belong to cluster 2, Consumers C10, C60, C110, C160 belongs to cluster 4 while consumers C12, C62, C112 and C162, belong to cluster 5. All remaining consumers belong to cluster 1. On the basis of  $INV_i$ , the profiles of the 200 consumers divided into five clusters were identified and appropriate targeting strategies were formulated.

#### **4.4. Maximising Individual Network Value (INV) using Linear Programming**

The literature review amply shows that it is viable for organizations to maximise Individual Network Value. In this context, the various determinants of INV were maximised using Linear Programming. The Simplex Tableaux Method was used for the same.

**4.5. Analysis of Research Instrument for Online Community Consumers (RI-2) - Consumer Price Sensitivity Model using K-means cluster analysis (CPS)**

The analysis of Research Instrument (RI-2) led to the creation of Consumer Price Sensitivity Model. This model attempts to study the usage of online communities to study consumer price sensitivity in the context of the type of product purchased, i.e. expensive, medium or low cost products. The consumer profiling was done on the data collected using **K-means clustering** and cluster memberships were extracted and the most significant consumers across all three product categories were identified.

<i>EXPENSIVE PRODUCTS</i>	<i>MEDIUM COST PRODUCTS</i>	<i>LOW COST PRODUCTS</i>
<i>CLUSTER 1 UNDERPERFORMING</i>	<i>CLUSTER 1 HIGH POTENTIAL CUSTOMERS</i>	<i>CLUSTER 1</i>
<i>CLUSTER 2 HIGH POTENTIAL CUSTOMERS</i>		<i>HIGH PROFITABILITY CUSTOMERS</i>
<i>CLUSTER 3 HIGH PROFITABILITY CUSTOMERS</i>	<i>CLUSTER 2</i>	<i>CLUSTER 2 HIGH POTENTIAL CUSTOMERS</i>
	<i>CLUSTER 3 UNDERPERFORMING</i>	<i>CLUSTER 3 UNDERPERFORMING</i>

*Figure 4: Consumer Clusters for each price category*

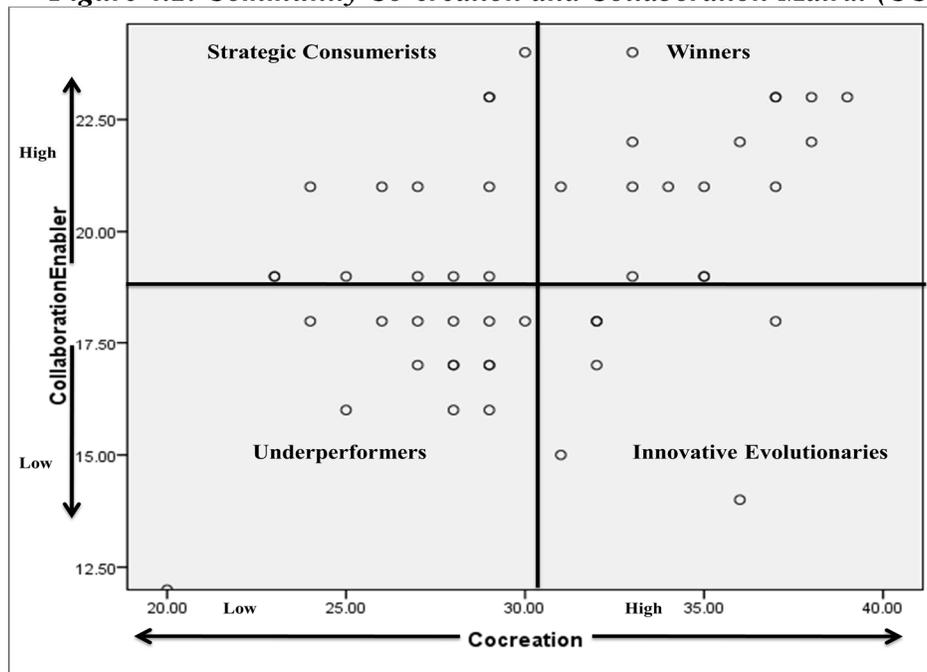
**4.6. Analysis of Research Instrument for Online Community Managers (RI-3)**

The analysis of Research Instrument (RI-3) led to the creation of **Business Online Community Credibility** model (BOCC). The various attributes pertaining to **Community Dynamics** can be loaded on the respective online community competencies of *Purpose, Policy, People and Reciprocity*. All parameters of **Customer Relationship Management** loaded onto the three principal components of *Operational CRM, Analytical CRM and Collaborative CRM*. All parameters of **Customer Lifetime Value** loaded onto the three principal components of

*identification of profit potential, diminish consumer communication costs and augment profits from current customers.*

The online communities were plotted with respect to their scores on **co-creation** and **collaboration enabler** to extract a scatter plot which was subsequently used to create a *Community Co-creation and Collaboration Matrix (CCCM)*. The output of the scatter plot and matrix has been depicted in **Figure 4.1**.

**Figure 4.1: Community Co-creation and Collaboration Matrix (CCCM)**



#### **4.6.1. Business Online Community Credibility model (BOCC) using Linear Programming**

To calculate the *Online Community Credibility Score (OCCS<sub>i</sub>)*, we consider the following variables. 1. Customer Relationship Management (**CRM<sub>i</sub>**), 2. Community Dynamics (**CMD<sub>i</sub>**), 3. Co-creation (**COCREAT<sub>i</sub>**), 4. Collaboration Enabler (**CE<sub>i</sub>**), 5. Customer Lifetime Value (**CLV<sub>i</sub>**). An Evaluation Grid 4 was circulated to a focus group of 30 community managers who were asked to rate the five determinants of *Online Community Credibility Score (OCCS<sub>i</sub>)*, on a scale of 1-5 (5-Excellent, 1-Poor). Based on their rating, the following weights were extracted for each of the determinant - Customer Relationship Management (**CRM<sub>i</sub>**)-0.25, Community Dynamics (**CMD<sub>i</sub>**)-0.22, Co-creation (**COCREAT<sub>i</sub>**)-0.2, Collaboration Enabler (**CE<sub>i</sub>**)-0.18 and Customer Lifetime Value (**CLV<sub>i</sub>**)-0.15.

$$\text{Online Community Credibility Score} = (0.25 * \text{CRM}_i + 0.22 * \text{CMD}_i + 0.2 * \text{COCREAT}_i + 0.18 * \text{CE}_i + 0.15 * \text{CLV}_i)$$

The literature review and the perspective of the online community managers amply shows that it is viable for organizations to maximise the value of an online community. In this context, the various determinants of Online Community Credibility Score were maximised using Linear Programming. The Simplex Tableaux Method was used for the same.

## **5. CONCLUSIONS AND SCOPE OF FURTHER RESEARCH**

### **5.1. Conclusions and Implications for Consumer Trustworthiness Regression Model using Netnography (CTR)**

Increased participation by virtue of points results in increased reciprocity, as depicted and subsequently views that are indicative of greater trustworthiness of participant. This implies that trustworthiness and popularity of a forum member is a direct function of his ability to give correct answers (level of Consumer Product Knowledge) to participants and level of participation. As key consumers become opinion leaders in these consumer communities it is vital for organizations to identify the components that build trustworthiness of these individuals. These opinion leaders can be subsequently leveraged by organizations to build greater value for their communities, brands and products.

### **5.2. Conclusions and Implications for RI-1**

Organizations can use online communities primarily in two areas: inside the organization to improve efficiency and productivity, and between the organization and the customers for customer acquisition, improving revenue and customer retention. Online communities have increased the connectivity to levels beyond imagination, thereby changing the flow and balance of information. The ability of marketers to shape perceptions by presenting a unified mass market branding image is faced with a counter flow of opinions which can be positive or negative.

### **5.4. Conclusions and Implications for Co-creation Model using INV based on Metcalf Law (C-INV)**

Individual network value serves as an important metric in identification of valuable customers. Participation appears to be the most important determinant of Individual Network Value. Valuable customers demonstrate high participation, high emotional attachment, high loyalty and commitment and low attitude towards switching. Organizations can use comparisons of Community Network Values of different product communities to gauge the effectiveness of new products launched and effectiveness of new campaigns launched. Based on Metcalf's Law, online communities will signify more value to the parent organization when they have more users. The comparisons of Community Network Value (CNV) of different product communities (say, of Apple) is also reflective of product performance from a consumer perspective. Product communities with high CNV are reflective of greater consumer appreciation, association and engagement than those with low CNV. The organizations need to create strategies to build a relationship with the consumer through greater consumer engagement, reducing uncertainty and greater consumer motivation. It is vital for organizations to have a mechanism in place, which is useful to identify significant consumers. Co-creation might be viewed as an aspect of customer knowledge competence which encompasses the processes that generate knowledge about specific customers.

#### **5.5. Conclusions and Implications for RI-2- Consumer Price Sensitivity Model using K-means cluster analysis (CPS)**

Segmentation of consumers and a detailed profiling can aid organizations in creating well defined strategies for impacting consumer price sensitivity, and increasing consumer switching costs. Companies can use Online Communities to execute these strategies. Highly price sensitive consumers can be subjected to greater product related content to increase the perceived value associated with the product and reduce their price sensitivity by sharing more product related content, features, schemes and product and price comparisons. Research says that a significant volume of consumers switch to another product or service because of perceived indifference of the organization they have purchased the product from. Increasing the level of interactivity between organization and consumer, solving consumer queries and hosting consumer testimonials will work in the favour of the organization. The loyal consumers, hence identified can be used as consumer evangelists and appropriate loyalty and reward programs can be designed for them.

## **5.6. Conclusions and Implications for RI-3-Business Online Community Credibility**

### **Model (BOCC) using Linear Programming**

The online communities classified as **winners** are those which score high on co-creation and collaboration. They facilitate a dynamic environment in terms of reciprocity and optimal level of customization for a win-win organization – community member relationship. Organizations will benefit if their communities qualify as **winners**. The Internet often resembles a living ecosystem more than any specific product or technology. Each day brings growth, decline, change and surprising developments. Entire communities of customers, suppliers, product and services have sprung into existence. Organizations will benefit more from creating focussed groups which specialise in particular community objectives. Communities will gain as they become ubiquitous, are able to speed up diverse aspects of business and life, are able to meet consumer/member expectations, allow reciprocity and sharing, and aid specialisation along with virtual value activities. Detailed virtual value analysis can give companies a tool for spotting information collection, design, and distribution activities to make their site a more valuable resource.

## **6. LIMITATIONS AND SCOPE OF FUTURE RESEARCH**

Online communities represent a new age digital tool, in a relatively lesser explored medium from the perspective of research in management. This brings up constraints of data availability both regarding data to be collected from individual companies as well as communities. A significant limitation can be viewed in the context of the database of online communities. As I scouted around for databases of online communities, the entire data set ended at a 100 companies with multiple communities. Contacting the consumers or members of various online communities was a great challenge in itself as the virtual domain while offering several benefits also posed restrictions in the context of physical proximity to respondents. Data could be collected from online community members who had to be approached through online intercept sampling technique, which made it a very tedious, time consuming task. Future research opportunities exist in the context of the scale and volume of the members that can be contacted.

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