Original Article

Metcalfe's law and operational, analytical and collaborative CRM-using online business communities for co-creation

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ABSTRACT Business Online Communities are fast becoming excellent tools for operational and collaborative Customer Relationship Management (CRM) with co-creation soon gaining pace as a strategic outcome of Collaborative CRM. This research article aims at analyzing the determinants of Individual Network Value (INV), further goes on to develop a framework for calculating Community Network Value and subsequently, empirically identifies individuals who have high INV. By segmenting the consumers, the research study discusses how organizations can identify consumer *co-creators*. The community value of a network is of great importance to organizations, especially from the CRM, Marketing and Customer Experience standpoint. The study segments consumers using hierarchical cluster analysis into groups to identify consumer co-creators. Greater participation in an online community, backed by greater commitment, online trust and loyalty towards an organization are individual traits that are useful to companies for identifying consumer co-creators for new product development, sharing innovative ideas and consumer evangelism.

INTRODUCTION

The online computer-based innovation fundamentally challenges current ways of communicating, cooperating and coordinating

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during the innovation and product development process.[1]

This has caused a fundamental change in the way companies can participate in innovation and learn from their consumers. This article highlights how the community value of a network, reputational gains for the individual, sharing innovative thoughts and practices, promoting reciprocity in a community and leveraging feedback from knowledgeable consumers, are motives for consumers and organizations to participate in activities for collaboration and innovation.[2]

Online customer communities enable organizations to establish distinguished innovation models that involve varied customer roles in new product development, which is further supported by Operational, Analytical and Collaborative CRM.

LITERATURE REVIEW

Online communities

Virtual communities are social aggregations that emerge from the net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace.[3]

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.[4]

Online communities are increasingly being used for organizational benefit to help consumers perceive greater value in organizational products and brands through well-defined Customer Relationship Management (CRM) and Customer Experience Management mechanisms.

Use of cyberspace, usage of computer-based information technology to support the activities in an online community, communication and interactivity, content typology as driven by community participants and value of volume and frequency of participation[5] are significant parameters of online communities.

There are five stages in community evolution: a potential stage, in which initial connections are developed, a building stage for context and community memory creation, an engaged stage which focuses on access to one another and community learning, an active stage in which serious collaboration starts, an adaptive stage for innovation and generation.[6–8] The amount and quality of participation is considered as the primary indicator of success.[9] This aids us in developing the premise for our research.

Member retention in online communities

The online community's ability to sustain activities is largely determined by their ability to attract and retain members,[10] as online communities rely on a members' voluntary participation to provide resources and benefits; members are key resources that are central to community viability. The number of people needed to make an online community viable and to attract others is known as its critical mass.[11–13] Participants in online communities often carve out roles for themselves just as they do in physical communities.[14]

This is the primary reason that organizations, who are actively involved in building, maintaining, leveraging and harnessing the collective intelligence[15] derived out of the interactions among the members of the product communities, give too much importance in retaining the most trustworthy members. It is deduced that increased consumer participation in a community results in increased reciprocity, and more accurate peer-to-peer responses translate into greater peer acceptance, which is indicative of greater trustworthiness of a participant.[16]

Metcalfe's law

Metcalfe's law helps explore the use of the virtual paradigms in the context of enabling collaboration and extending the reach of an organization.[17]

This finds applications in the domain of online marketing with respect to e-commerce with the Web adequately proliferating as an electronic marketplace. Of significance is the global reach of the Internet[18] in creating a larger marketplace, which is also a function of the number of

eyeballs that view a Web site,[19] considering that reach is the most visible difference between e-commerce and the physical world. The power of the network grows in relation to the number of players in the network. This is true in innovation, as well as any other business process.[20]

Metcalfe's law illustrates the important difference between an individual's value of a network and the value of the network as a whole. As per Metcalfe's law, the full value of the network, the community value, is the summation of the individual values of the members in the community.[21]

$$\text{Community Network value} = \Sigma(\text{Individual Values in a Network})$$

This law gives an idea of how consumer generated media has become so popular in comparison with conventional marketing practices.[22] Where communities are created as part of a business proposition, the law shows the importance of supporting the growth of the networks through the difficult initial phase until a 'critical mass' of participants is achieved. Many communities never make it through this phase.[23]

In this context, we explore the usage of an Online Community for effective CRM.

CRM

The CRM framework has three primary components:

Operational CRM

It involves process management technologies across diverse functions of an organization and involves the automation of horizontally integrated business processes. Thus, channel integration is important for an operational CRM system.[24] Online communities can aid this channel integration by hosting consumer enquiries, order placements, organisation–consumer interaction during order fulfilment and providing a medium for conversion of consumer-related tacit knowledge to explicit knowledge. Integration of

the same through data extraction and dissemination of actionable information across different organisational departments, will successfully serve the CRM function.

Analytical CRM

Analytical CRM comprises the analysis of customer data for strategic or tactical purposes to enhance both customer and firm value.[25] Analytical CRM aids decision making using various tools ranging from simple spreadsheet analysis to sophisticated data mining.[26] The analysis should enable insight into consumer behavior, and meet the objectives of the CRM initiatives, for the purpose of business performance management and improvement. Prediction of consumer behavior and identification of consumer segments will aid organizational decision making.

Collaborative CRM

It involves business collaboration management technologies. Collaborative CRM is an integrated organisation wide system, which allows for greater customer responsiveness throughout the supply chain.[27] Organizational collaboration results in productivity enhancement, resulting in greater profitability by enhancing cross functional effectiveness.

Online Communities can be used for operational, analytical and collaborative CRM and further, for co-creation.

Product co-creation

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.[28] Co-creation can be described as the method for organizations to create new products and take all important decisions by involving consumers from the beginning, and thus helps in extracting fact-based innovation. Value is not any longer only created in the supplier's process of designing, manufacturing, packaging and delivering of

market offerings, but also by the customer's processes of consuming these outputs.[29] Value creation goes beyond its former understanding and also impacts usage by the final customer.[30]

In an era where companies are moving away from a company and product-centered value creation to an experience-centered value creation,[31] participation is becoming a desired ingredient. There are some passionate consumers who are interested in getting involved in every phase of the new product dvelopment in an organization, they are actually the co-creators for the company. Organizations will benefit if they target and identify such passionate consumers and further retain and build strong relationships with them,[32] actively involve them in the process of co-creation and further leverage all their innovative ideas and experiences for the growth of an organization.

The process of co-creation revolves around the selection and creation of the various modes for interaction and communications, targeting the right customer set, engage them and focus on enhancing their participation levels in the process, inducing the strategic and key managers in the company to involve in the process of co-creation, strategically evaluating the customers' entire experience with the company, encouraging the development of innovative ideas and last but not the least taking the right course of action on the selected ideas.[33]

A key finding of leading businesses is that becoming a co-creative organization is about changing the very nature of engagement and relationship between the institution of management and its employees, and between them and co-creators of value, customers, stakeholders, partners or other employees.[34]

Co-creation and online community

Co-creation may take place in the context of customer communities. The process of community development goes hand in hand with product development.[35] Information technology enables new forms of producer–consumer collaboration in new product development processes.[36] Companies that have learn how to manage the process of creating unique value with

customers and other stakeholders have developed engagement programs and processes that enable interactions among all stakeholders everywhere in the system, with the goal of creating greater value by fostering more rewarding experiences.[37] The business online communities help in achieving this goal by providing excellent support in the entire process of co-creation.

We attempt to use Individual Customer Network value as a premise to help companies identify people who will be willing to participate in the co-creation process. A customer who has a high individual network value (INV) is a potential co-creator.

INV

It is defined as the value which one member provides to the whole network. The value of communication differs among individuals.

Community network value

As the network grows, the added links accelerate the growth of the community value. Each new user benefits from joining the network and contributes a new value-laden connection to all the existing members of the network.[38]

The community value of a network is of great importance to organizations, especially from a marketing, CRM and customer experience standpoint. The community value grows rapidly as the network grows and for a company, this translates into productivity, cost savings, and effective communication. The most fundamental insight of Metcalfe's law is that networks can generate increasing returns.[39] The bigger the network, the more valuable it becomes. A value network generates economic value through complex dynamic exchanges between one or more enterprises, its customers, suppliers, strategic partners and the community. These networks engage in more than just transactions around goods, services and revenue. The two other currencies are knowledge value and intangible value or benefits.[40]

DETERMINANTS OF INV

The determinants of INV are: Participation in the community network (P_i), Emotional Attachment (EA_i), Online trust (OT_i), Commitment (C_i),

Member Loyalty (ML_i), Attitude towards switching (AS_i) and Period of association with the network (PAN_i).[41] A framework for calculation of INV was subsequently created using an evaluation grid as discussed in section 'Calculation of individual network value'.

METHODOLOGY

Research instrument and sampling technique

Questionnaire
A questionnaire was developed to measure each of the seven determinants of INV.

Sampling technique and data collection
The first round of data collection was done across 200 consumers. Data was collected through hard copy questionnaires and also through online media using the 'Snowball Sampling Technique of data collection'.

The pre-requisites for a consumer to fill the questionnaire were:

(a) The consumer should have been a member of an online business/product community for at least 1 year.
(b) The consumer should have a minimum frequency of participation of at least once a month.

1. The data collected from the 200 consumers was subjected to a Factor analysis to load the respective parameters of the determinants of INV onto the respective factors.
2. The second round of data collection was done across 50 participants from the online community of Apple I Pad using online intercept sampling technique. The participants in the community were intercepted and given an opportunity to participate in the survey. The criterion for participating in the survey was a status level of 5 and a point range of 50 000 and above. In order to calculate the value of an Individual consumer in a community, the above-mentioned six variables were considered and the 50 consumers ranked the determinants of each of these six variables on a scale of 1–5.

3. Thus, for each consumer we were able to calculate the respective values for Participation (P_i), Emotional Attachment (EA_i), Online trust (OT_i), Commitment (C_i), Member loyalty (ML_i) and attitude towards switching (AS_i), which was the summation across each of the determinants for each variable, for 50 consumers (Table 7).
4. *Framework for calculating Period of association with the network (PAN_i) for each consumer.* Consumers were asked to identify the time span of consumer–product association, which would prevent them from switching to another product or brand. There were 5 categories of Period of Association. (Less than 1year, 1–2 years, 2–3 years, 3–4 years and more than 4 years). The number of consumers who opted for the respective categories were summed up ($\Sigma CPAN_i$). Further, the PAN_i index for each consumer was calculated by using the formula $[(\Sigma CPAN_i)/50]$.

Factor analysis
The principal components method of extraction was used for data reduction. Components with Eigen values greater than 1 were extracted. As the communalities were all high, the extracted components represented the variables well.

Hierarchical cluster analysis

Hierarchical clustering
Cluster Analysis, also called data segmentation, relates to grouping or segmenting a collection of objects (also called observations, individuals, cases or data rows) into subsets or 'clusters', such that those within each cluster are more closely related to one another than objects assigned to different clusters. Cluster analysis uses a number of techniques of sorting individuals into similar groups.[42]

Hence, objects in a cluster are similar to each other. They are also dissimilar to objects outside the cluster, particularly objects in other clusters.[43] Clustering algorithms function such that intracluster similarity is maximum and inter-cluster similarity is minimum. Clustering also has

applications in the field of marketing segmentation.Cluster analysis uses a number of techniques of sorting individuals into similar groups.

There are two major methods of clustering: hierarchical clustering and *k*-means clustering. For our study, we use the technique of Hierarchical Cluster Analysis. This is a statistical method for finding relatively homogeneous clusters of cases based on measured characteristics. It starts with each case in a separate cluster and then combines the clusters sequentially, reducing the number of clusters at each step until only one cluster is left. When there are *N* cases, this involves *N*–1 clustering steps, or fusions. This hierarchical clustering process can be represented as a tree or dendrogram, where each step in the clustering process is illustrated by a join of the tree.

DATA ANALYSIS AND RESULTS

Factor analysis
The extracted solutions were as follows:

1. Participation (three principal components, Table 1): All parameters of Participation loaded onto the three principal components of member centricity, responsiveness and accessibility.
2. Emotional attachment (two principal components, Table 2): All parameters of emotional attachment loaded onto the two principal components of emotional optimists and risk avoidance.
3. Online trust (two principal components, Table 3): All parameters of online trust loaded onto the two principal components of credibility and communication.
4. Commitment (five principal components, Table 4): All parameters of commitment loaded onto the five principal components of member affinity, personalization, including member participation, building member loyalty and member-to member-interaction.
5. Member loyalty (three components, Table 5): All parameters of member loyalty loaded onto the three principal components of interactive loyal, loyal persuader and loyal advocate.
6. Attitude towards switching (three components, Table 6): All parameters of attitude towards switching loaded onto the three principal components of switch for value, non switcher and switch for price.

The rotated component matrix helped determine what the components represented. This was done by using the highest loading as a determinant of the factor an attribute belonged to. Factor analysis

Table 1: Participation (P_i)

Rotated component matrix[a]

| | Component | | |
	1	2	3
EASE_ACCESS	0.038	0.273	0.769
LOW_BARRIERS	0.728	0.091	0.146
RESPTO_MEM	0.520	0.636	0.225
NEEDS_PART	0.183	0.889	0.067
DIFF_ROLES	0.635	−0.188	0.332
CONSEMPOWER	0.327	0.588	0.417
CONTENT_TYPE	0.419	0.102	0.774
MEMDURN	0.687	0.328	0.079
MEMRTN	0.623	0.395	0.076
FLEXIBLE	0.749	−0.104	0.095
INCRACCESSTORESOURCES	0.172	135	0.784
SHAREDGOAL	0.655	−0.085	0.469

[a]Rotation converged in seven iterations.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Parameters of (P_i) loaded onto member centricity, responsiveness and accessibility.

Table 2: Emotional attachment (EA_i)

Rotated component matrix[a]

| | Component | |
	1	2
EMOTIONAL_SUPPORT	0.742	0.037
PROM_BELONGING	0.825	0.040
PROM_FAMILIARITY	0.771	0.043
AFFINITY	0.777	0.011
CREATES_BONDING	0.668	0.048
AIDS_RECRUITMENT	0.567	−0.031
NOSTALGIA	0.064	0.850
UNCER_AVOID	0.106	0.772
MUTUAL__ACCOM_AGREEMENT	−0.095	0.805

[a]Rotation converged in three iterations.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Parameters of (EA_i) loaded onto emotional optimists and risk avoidance

was hence used to load the respective parameters of the determinants of INV onto the respective factors.

The figure (Figure 1) depicts the loading of the attributes on the respective factors.

Calculation of INV

An evaluation grid 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 based on their rating the following weights were extracted.

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

Community Network Value
$$= \Sigma INV_1 + \Sigma INV_2 + \Sigma INV_3 + \cdots + \Sigma INV_{100}$$

Subsequently, the formula was modified:

$$(CNV) = \Sigma_{i=1}^{n}(0.25 \times P_i + 0.13 \times EA_i + 0.16 \times OT_i + 0.12 \times C_i + 0.13 \times ML_i + 0.10 \times AS_i + 0.11 \times PAN_i)$$

Hierarchical cluster analysis

The values of INV_i depicted in Table A1 were subjected to Hierarchical cluster analysis using SPSS 16.0, and five clusters were identified (Table 7). The dendrogram is shown (Figure 2). The consumers C8, C14, C38 and C48 belong to Cluster 3. The consumer C5 belongs to

Table 3: Online trust (OT_i)

Rotated component matrix[a]

	Component	
	1	2
RESOLVE_CONSPROB	0.844	0.104
CONSUMER_UNCERTAINITY	0.848	0.000
GENERATE_CUSTSATIS	0.806	0.227
COMMUNICN_LEVEL	0.286	0.611
INCR_RELIABILITY	0.725	0.186
INCR_ALTRUISM	0.435	0.406
PROMSELF_DISCLOSURE	−0.085	0.877

[a]Rotation converged in three iterations.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Parameters of (OT_i) loaded onto credibility and communication

Table 4: Commitment (C_i)

Rotated component matrix[a]

	Component				
	1	2	3	4	5
SUPPT_MEM	0.781	0.242	0.152	0.133	0.187
EXPLICIT_GOAL	0.857	0.083	−0.033	0.108	−0.087
SPECIFIC_NEEDS	0.473	0.483	0.268	0.179	0.207
PROM_SAME_IDENTITY	0.354	0.681	0.021	0.162	0.049
MOTIVATE_CONTRI	0.011	0.499	0.629	0.016	0.164
INTERPERSONAL_SIMILARITY	0.523	0.172	0.630	0.019	−0.125
CLUSTER_MEMBERS	0.670	0.191	0.147	0.192	0.277
GROUPS	0.154	0.847	0.139	−0.036	−0.018
PROMOTE_FREQ_INTERACTION	0.001	0.403	−0.058	0.199	0.788
PROM_INTERDEPTASKS	0.247	−0.226	0.302	−0.026	0.769
PROM_COMPETITION	0.120	−0.104	0.354	0.568	0.088
REDUCE_REPELLING_FORCES	0.061	0.040	0.842	0.172	0.143
PROM_DIVERSITY	0.146	0.174	0.163	0.765	−0.075
PROM_TESTIMONIALS	0.121	0.061	−0.138	0.809	0.166

[a]Rotation converged in seven iterations.

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Parameters of (C_i) loaded onto member affinity, personalization, inducing member participation, building member loyalty and member-to-member interaction

Table 5: Member loyalty (*ML*ᵢ)

Rotated component matrix[a]

	Component		
	1	*2*	*3*
RECOMMEND_PROD	0.042	0.044	0.820
JOIN	0.469	0.569	0.311
RESOLVE_PROB	0.204	0.662	0.281
PROACTIVE_HELP_ RESOLVE_PROB	0.170	0.862	0.035
REBUY	−0.273	0.557	0.624
INTERACTION	0.277	0.309	0.646
MEMBERSHIP_GROW	0.595	0.005	0.441
GOODWILL	0.753	0.252	0.188
FEEDBACK	0.824	0.099	−0.029
TEST_IDEA	0.633	0.474	−0.291

[a]Rotation converged in seven iterations.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Parameters of (*ML*ᵢ) loaded onto interactive loyal, loyal persuader and loyal advocate

Table 6: Attitude towards switching (*AS*ᵢ)

Rotated component matrix[a]

	Component		
	1	*2*	*3*
BRAND_SWITCH	0.184	−0.068	0.720
LOW_COST	0.238	−0.199	0.590
CHANGE_BRAND	0.792	−0.127	0.073
DISCOUNT	0.147	0.461	0.615
UNIQUE_EXPERIENCE	0.742	−0.290	−0.051
EMOTIONAL_ ATTACHMENT	0.333	0.738	−0.067
PERCEIVE_QUALITY	0.514	0.315	0.067
REPUTATION	−0.061	0.836	−0.051

[a]Rotation converged in four iterations.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Parameters of (*AS*ᵢ) loaded onto switch for value, non-switcher and switch for price

Cluster 2, consumer C10 belongs to Cluster 4, whereas C12 belongs to Cluster 5. All remaining consumers belong to Cluster 1.

Consumer segmentation, extraction of consumer profiles and proposed targeting strategies

On the basis of Table A1, the profiles of the 50 consumers divided into five clusters were identified and appropriate targeting strategies were formulated (Table 7).
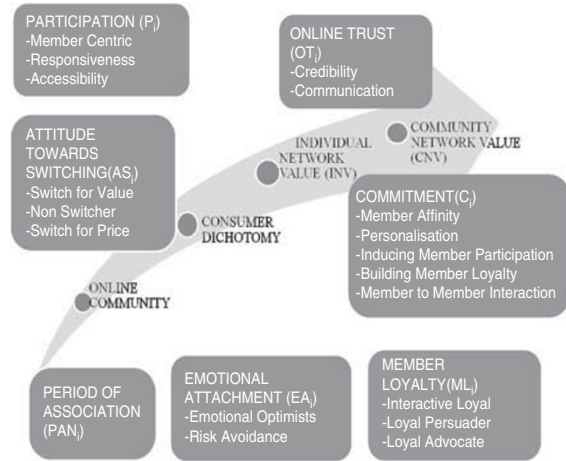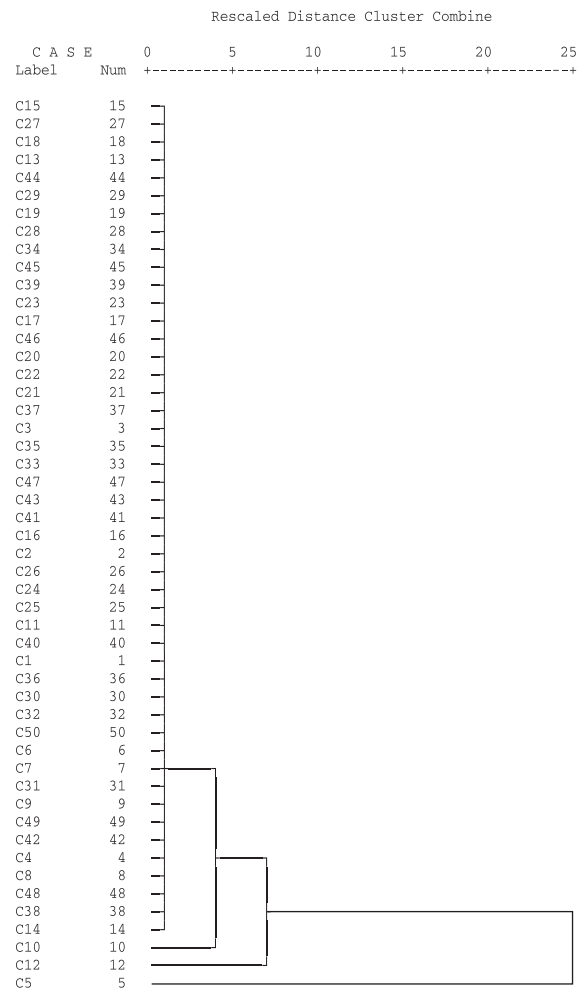

Figure 1: Determinants of individual network value.

Figure 2: Dendrogram using single linkage (SPSS output).

Table 7: Consumer cluster profiles

Cluster number	Cluster profile	Consumer segment	Implications
Cluster 1	Consumers score medium to high on participation, medium to high on emotional attachment, medium to high on online trust, high on commitment, high on member loyalty, medium to high on attitude towards switching and medium to high on period of association with the network	Impending Co-creators	Consumers with *high potential* to become *loyal to* the organization. High end loyalty programs, incentives and value added benefits will work towards cementing the consumer–organization relationship
Cluster 2	Consumers score medium on participation, low on emotional attachment, medium on online trust, medium on commitment, low on member loyalty, medium on attitude towards switching and high on period of association with the network	Unauthentic non-chalants	Consumers with high longevity with the company and low emotional connection, depicting *spurious loyalty* and placid nature, will need significant marketing intervention for revitalization of their relationship with the company
Cluster 3	Consumers score high on participation, high on emotional attachment, high on online trust, very high on commitment, high on member loyalty, medium on attitude towards switching and high on period of association with the network	Potential protagonists	*Sustainable Loyal* customers with greatest potential for becoming *consumer evangelists*, if barriers to switching are high. Loyalty schemes and reward mechanisms will work best with these consumers. Have the highest potential for being used for *Co-creation*
Cluster 4	Consumers score high on participation, very low on emotional attachment, low on online trust, very low on commitment and medium on member loyalty, high on attitude towards switching and low on period of association with the network	Passionate unfaithfuls	Enthusiastic people willing to interact with the organization online, but *not loyal* to the organization
Cluster 5	Consumers score medium on participation, low on emotional attachment, medium on online trust, medium on commitment, medium on member loyalty, medium on attitude towards switching and medium on period of association with the network	Vacillating indecisives	Ambivalent consumers, demonstrating low attitudinal loyalty

CONCLUSIONS AND MANAGERIAL IMPLICATIONS

Cluster 3 is the most significant group of consumers as it contains individuals most suitable to become consumer evangelists. They can be used as *consumer co-creators*, for new product development and sharing innovative ideas. *Cluster 1* is the biggest cluster and the organization will benefit from investing in these consumers. Additional customer centric strategies can help improve consumer scores on participation, online trust, commitment and loyalty.

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. Co-creation can generate significant new value from existing assets and established customer relationships. An online community can be built and managed for informing product innovation and engaging customers in co-creation of a consumption experience. It requires companies and customers to exert more effort than traditional transactions because it is about building relationships, not completing purchases.[44]

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APPENDIX

Table A1: Calculation of individual network value (INV_i)

Serial number	Customer Number	$W(P_i)$	P_i	$W(P_i) \times P_i$	$W(EA_i)$	EA_i	$W(EA_i) \times EA_i$	$W(OT_i)$	OT_i	$W(OT_i) \times OT_i$	$W(C_i)$	C_i	$W(C_i) \times C_i$	$W(ML_i)$	ML_i	$W(ML_i) \times ML_i$	$W(AS_i)$	AS_i	$W(AS_i) \times AS_i$	$W(PAN_i)$	PAN_i	$W(PAN_i) \times PAN_i$	INV	Cluster Membership
1	C1	0.25	41	10.25	0.13	24	3.12	0.16	16	2.56	0.12	52	6.24	0.13	40	5.2	0.10	18	1.8	0.11	0.24	0.0264	29.1964	1
2	C2	0.25	32	8	0.13	19	2.47	0.16	12	1.92	0.12	44	5.28	0.13	38	4.94	0.10	18	1.8	0.11	0.24	0.0264	24.4364	1
3	C3	0.25	40	10	0.13	23	2.99	0.16	18	2.88	0.12	42	5.04	0.13	37	4.81	0.10	20	2	0.11	0.12	0.0132	27.7332	1
4	C4	0.25	43	10.75	0.13	23	2.99	0.16	19	3.04	0.12	58	6.96	0.13	42	5.46	0.10	19	1.9	0.11	0.24	0.0264	31.1264	1
5	C5	0.25	23	5.75	0.13	10	1.3	0.16	12	1.92	0.12	36	4.32	0.13	14	1.82	0.10	15	1.5	0.11	0.24	0.0264	16.6364	2
6	C6	0.25	40	10	0.13	22	2.86	0.16	18	2.88	0.12	48	5.76	0.13	41	5.33	0.10	17	1.7	0.11	0.2	0.022	28.552	1
7	C7	0.25	43	10.75	0.13	27	3.51	0.16	14	2.24	0.12	52	6.24	0.13	26	3.38	0.10	22	2.2	0.11	0.22	0.0242	28.3442	1
8	C8	0.25	47	11.75	0.13	22	2.86	0.16	18	2.88	0.12	60	7.2	0.13	45	5.85	0.10	22	2.2	0.11	0.2	0.022	32.662	3
9	C9	0.25	43	10.75	0.13	22	2.86	0.16	18	2.88	0.12	56	6.72	0.13	41	5.33	0.10	21	2.1	0.11	0.24	0.0264	30.6664	1
10	C10	0.25	43	10.75	0.13	8	1.04	0.16	8	1.28	0.12	27	3.24	0.13	32	4.16	0.10	24	2.4	0.11	0.12	0.0132	22.8832	4
11	C11	0.25	43	10.75	0.13	22	2.86	0.16	19	3.04	0.12	48	5.76	0.13	41	5.33	0.10	21	2.1	0.11	0.24	0.0264	29.8664	1
12	C12	0.25	34	8.5	0.13	13	1.69	0.16	12	1.92	0.12	35	4.2	0.13	21	2.73	0.10	17	1.7	0.11	0.22	0.0242	20.7642	5
13	C13	0.25	37	9.25	0.13	16	2.08	0.16	13	2.08	0.12	49	5.88	0.13	37	4.81	0.10	23	2.3	0.11	0.24	0.0264	26.4264	3
14	C14	0.25	45	11.25	0.13	24	3.12	0.16	21	3.36	0.12	59	7.08	0.13	42	5.46	0.10	16	1.6	0.11	0.2	0.022	31.892	1
15	C15	0.25	39	9.75	0.13	20	2.6	0.16	15	2.4	0.12	40	4.8	0.13	35	4.55	0.10	20	2	0.11	0.22	0.0242	26.1242	1
16	C16	0.25	38	9.5	0.13	16	2.08	0.16	15	2.4	0.12	36	4.32	0.13	39	5.07	0.10	19	1.9	0.11	0.24	0.0264	25.2964	1
17	C17	0.25	40	10	0.13	18	2.34	0.16	13	2.08	0.12	43	5.16	0.13	35	4.55	0.10	18	1.8	0.11	0.12	0.0132	25.9432	1
18	C18	0.25	38	9.5	0.13	18	2.34	0.16	19	3.04	0.12	41	4.92	0.13	35	4.55	0.10	18	1.8	0.11	0.12	0.0132	26.1632	1
19	C19	0.25	38	9.5	0.13	14	1.82	0.16	15	2.4	0.12	44	5.28	0.13	43	5.59	0.10	22	2.2	0.11	0.24	0.0264	26.8164	1
20	C20	0.25	34	8.5	0.13	20	2.6	0.16	15	2.4	0.12	47	5.64	0.13	39	5.07	0.10	16	1.6	0.11	0.2	0.022	25.832	1
21	C21	0.25	34	8.5	0.13	19	2.47	0.16	14	2.24	0.12	46	5.52	0.13	39	5.07	0.10	16	1.6	0.11	0.2	0.022	25.552	1
22	C22	0.25	32	8	0.13	20	2.6	0.16	14	2.24	0.12	59	7.08	0.13	35	4.55	0.10	14	1.4	0.11	0.2	0.022	25.762	1
23	C23	0.25	43	10.75	0.13	20	2.6	0.16	17	2.72	0.12	38	4.56	0.13	31	4.03	0.10	19	1.9	0.11	0.2	0.022	24.882	1
24	C24	0.25	41	10.25	0.13	14	1.82	0.16	10	1.6	0.12	42	5.04	0.13	35	4.55	0.10	16	1.6	0.11	0.2	0.022	24.752	1
25	C25	0.25	32	8	0.13	20	2.6	0.16	14	2.24	0.12	50	6	0.13	33	4.29	0.10	16	1.6	0.11	0.2	0.022	24.442	1
26	C26	0.25	33	8.25	0.13	17	2.21	0.16	18	2.88	0.12	44	5.28	0.13	30	3.9	0.10	19	1.9	0.11	0.24	0.0264	26.1264	3
27	C27	0.25	34	8.5	0.13	24	3.12	0.16	17	2.72	0.12	47	5.64	0.13	34	4.42	0.10	17	1.7	0.11	0.22	0.0242	26.8242	1
28	C28	0.25	38	9.5	0.13	24	3.12	0.16	16	2.56	0.12	48	5.76	0.13	32	4.16	0.10	17	1.7	0.11	0.2	0.022	26.312	1
29	C29	0.25	33	8.25	0.13	21	2.73	0.16	17	2.72	0.12	42	5.04	0.13	45	5.85	0.10	21	2.1	0.11	0.22	0.0242	29.4342	1
30	C30	0.25	40	10	0.13	27	3.51	0.16	15	2.4	0.12	56	6.72	0.13	36	4.68	0.10	16	1.6	0.11	0.22	0.0242	28.8442	1
31	C31	0.25	42	10.5	0.13	19	2.47	0.16	19	3.04	0.12	49	5.88	0.13	41	5.33	0.10	19	1.9	0.11	0.2	0.022	29.512	1
32	C32	0.25	40	10	0.13	18	2.34	0.16	21	3.36	0.12	59	7.08	0.13	37	4.81	0.10	17	1.7	0.11	0.2	0.022	27.382	1
33	C33	0.25	37	9.25	0.13	21	2.73	0.16	18	2.88	0.12	51	6.12	0.13	36	4.68	0.10	19	1.9	0.11	0.2	0.022	26.922	1
34	C34	0.25	41	10.25	0.13	18	2.34	0.16	14	2.24	0.12	49	5.88	0.13	33	4.29	0.10	17	1.7	0.11	0.22	0.0242	27.6642	1
35	C35	0.25	39	9.75	0.13	23	2.99	0.16	23	3.68	0.12	49	5.88	0.13	28	3.64	0.10	24	2.4	0.11	0.22	0.0242	29.1542	1
36	C36	0.25	40	10	0.13	26	3.38	0.16	20	3.2	0.12	51	6.12	0.13	31	4.03	0.10	20	2	0.11	0.2	0.022	25.572	1
37	C37	0.25	32	8	0.13	20	2.6	0.16	14	2.24	0.12	47	5.64	0.13	39	5.07	0.10	20	2	0.11	0.2	0.022	33.1064	3
38	C38	0.25	45	11.25	0.13	22	2.86	0.16	19	3.04	0.12	67	8.04	0.13	43	5.59	0.10	23	2.3	0.11	0.24	0.0264	26.7064	1
39	C39	0.25	35	8.75	0.13	17	2.21	0.16	14	2.24	0.12	51	6.12	0.13	42	5.46	0.10	19	1.9	0.11	0.24	0.0264	29.9232	1
40	C40	0.25	43	10.75	0.13	27	3.51	0.16	17	2.72	0.12	53	6.36	0.13	39	5.07	0.10	15	1.5	0.11	0.12	0.0132	27.2064	1
41	C41	0.25	42	10.5	0.13	20	2.6	0.16	14	2.24	0.12	46	5.52	0.13	34	4.42	0.10	19	1.9	0.11	0.24	0.0264	30.4032	1
42	C42	0.25	45	11.25	0.13	17	2.21	0.16	16	2.56	0.12	59	7.08	0.13	43	5.59	0.10	17	1.7	0.11	0.12	0.0132	27.472	1
43	C43	0.25	38	9.5	0.13	20	2.6	0.16	19	3.04	0.12	51	6.12	0.13	33	4.29	0.10	19	1.9	0.11	0.2	0.022	26.422	1
44	C44	0.25	35	8.75	0.13	24	3.12	0.16	17	2.72	0.12	39	4.68	0.13	41	5.33	0.10	18	1.8	0.11	0.2	0.022	27.0042	1
45	C45	0.25	40	10	0.13	21	2.73	0.16	12	1.92	0.12	49	5.88	0.13	35	4.55	0.10	19	1.9	0.11	0.22	0.0242	25.9042	1
46	C46	0.25	30	7.5	0.13	22	2.86	0.16	17	2.72	0.12	48	5.76	0.13	38	4.94	0.10	21	2.1	0.11	0.22	0.0242	26.922	1
47	C47	0.25	41	10.25	0.13	22	2.86	0.16	14	2.24	0.12	51	6.12	0.13	30	3.9	0.10	20	2	0.11	0.2	0.022	27.392	1
48	C48	0.25	43	10.75	0.13	28	3.64	0.16	21	3.36	0.12	58	6.96	0.13	44	5.72	0.10	20	2	0.11	0.22	0.0242	32.452	3
49	C49	0.25	47	11.75	0.13	30	3.9	0.16	17	2.72	0.12	40	4.8	0.13	42	5.46	0.10	19	1.9	0.11	0.22	0.0242	30.5542	1
50	C50	0.25	40	10	0.13	28	3.64	0.16	22	3.52	0.12	52	6.24	0.13	31	4.03	0.10	19	1.9	0.11	0.2	0.022	29.352	1