



Managing customer experiences in online product communities[☆]

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ABSTRACT

Many companies have established online product communities or forums as a vehicle to extend product support services to their customers. Customers' interactions in such online forums with peer customers and vendor representatives resolve their product-related queries as well as inform on their product purchase decisions. Despite the significance of such interactions, there has been limited theoretical attention so far on how companies can manage customer experiences in online product communities. Drawing on theories and concepts from diverse areas including computer-mediated communication, consumer psychology, and online communities, this study proposes a four dimensional construct – Online Community Experience (OCE) – to capture customer experiences in such online product communities, and examines its impact on customer attitudes regarding the product, the company, and the quality of service. Data collected from customers in online product forums offered by four companies is used to test the study hypotheses. Implications for research on online consumer behavior and marketing are discussed.

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1. Introduction

Online product communities have become an integral part of the Web-based initiatives of most companies. Companies as varied as Microsoft, P&G, Sony, IBM, Sega, and Ducati have established online product-centered communities that enable customers to interact with the company as well as amongst themselves. Prior research in the area of online consumer behavior has considered customer experiences in online environments. However, much of this research has largely focused on customers' experiences in interacting with the Web (for example, Web browsing, online information search, etc.) – referred to as “Web experiences” (Hoffman and Novak, 1996; Novak et al., 2000). Another stream of research has focused on customers' online shopping and retail experience (e.g. Noble et al., 2005; Overby and Lee, 2006). These studies have considered how online customer experiences shape shopping preferences and product purchase intentions. The unique nature of online product communities as a ‘social space’ as well as the diverse types of interactions facilitated by them indicates the need to go beyond such “Web experience” and

develop a comprehensive conceptualization of customers' Online Community Experience (Fig. 1).

Recent studies have indicated the promise of studying the impact of customer interactions in online product communities on varied customer-based outcomes (Dholakia et al., 2004; Gruen et al., 2006). However, the lack of focus on the overall interaction experience in these communities has inhibited the ability to develop a more holistic understanding of this issue and forms the primary motivation for this study.

The main objective of this study is to conceptualize and develop a new construct, Online Community Experience (OCE), that focuses on measuring member experience in online communities and to examine its impact on organizations that offer such online communities. Given the limited scope of this empirical study, the focus here is on one type of such online community, namely, *firm-hosted online product community*. The OCE construct and the study findings are generalizable to different types of online communities and as such this study also seeks to contribute to the broader literature on online communities; however, some context-specific limitations do apply to such generalization which will be delineated at the end of this paper.

The study data is collected from customers of four different firm-hosted online product communities – IBM's Lotus Notes online forum, Adobe's Dreamweaver online forum, Intel's Network connectivity online forum, and Microsoft's Office Suite (Word, Excel, and Access) online forum. A factor analysis and then regression analysis are used to validate the measurement scale for the OCE construct and to test study hypotheses respectively. The study findings indicate the critical need for organizations to measure and monitor OCE given its potential impact on customer attitudes and perceptions.

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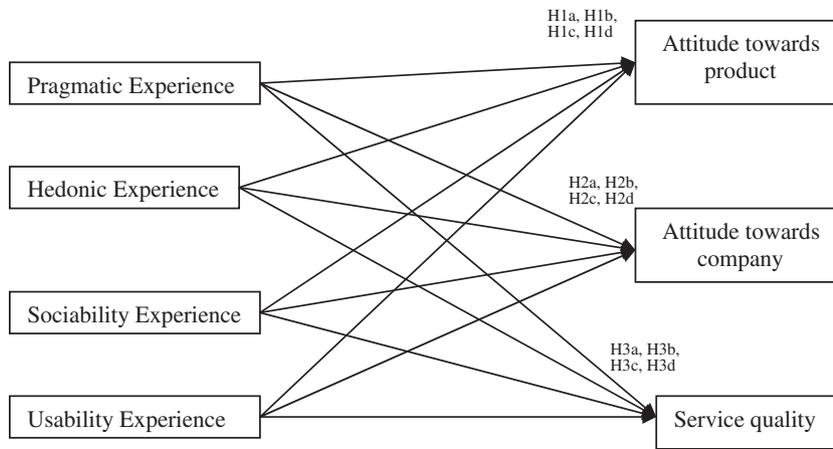


Fig. 1. Research Model.

2. Theoretical background

2.1. Customer experience in online environments

Prior studies in psychology and communication have identified two central components in measuring human experience – a cognitive component and an affective component (Blumberg, 1979; Forgas, 2000). While the cognitive dimension emphasizes the information processing perspective and the experience that underlies information acquisition and processing, the affective dimension reflects the feelings and emotions derived as a result of interactions with stimuli from the external environment. These two components have also been variously conceptualized as “utilitarian” and “hedonic” dimensions (Noble et al., 2005; Hirschman and Holbrook, 1982; Overby and Lee, 2006; Voss et al., 2003; Dhar and Wertenbroch, 2000) and as “extrinsic” and “intrinsic” dimensions (Babin et al., 1994; Batra and Ahtola, 1990).

Starting in the mid-1990s, several researchers have applied this two-dimensional experience framework to investigate customer experiences in online environments. For example, this is in the context of online shopping experience (Babin et al., 1994; Mathwick, Malhotra and Rigdon, 2001; Overby and Lee, 2006; Bridges and Florsheim, 2008), Web browsing behavior (Hoffman and Novak, 1996), and online retail behavior (Jones et al., 2006; Noble et al., 2005). In general, these studies focus on experience conceptualized as a monolithic construct (e.g. consumer’s Internet experience) or as a two-dimensional construct focusing on utilitarian/hedonic dimensions only. Similarly, drawing on Csikszentmihalyi’s (1990) concept of “flow”, Hoffman and Novak (1996) propose that these two dimensions can be viewed as “goal-oriented” and “experiential”.

2.2. Customer experience in online communities

Online communities constitute a social space wherein relationships and ties are formed among the members and a common set of values and norms are established and shared. Wherever there are people interacting with one another, there is a potential for positive or negative social experience (Simmel and Hughes, 1949). In the computer-mediated communication literature, the term ‘sociability’ is defined as the perceived support the online environment provides for or the extent to which this facilitates the emergence of the social space (Kreijns et al., 2004). This does not reflect any particular technological feature or other aspect of the online environment; instead this reflects how well the community members and their activities or interactions shape the sociability potential of the online environment for other members (Kreijns et al., 2004; Nie 2001).

Studies indicate considerable significance of sociability in the context of online communities (e.g. Preece, 2000; Nie, 2001; Farnham et al., 2001). For example, Preece (2000) proposes that sociability in an online community can be improved by clarifying the purpose of the community, having good social policies implemented in the community, and by explicitly promoting member participation. Similarly, activities such as flaming and hazing hinder or lower the sociability experience of the members (Honeycutt, 2005; Davis 2002). Sociability has also been considered in the context of offline brand communities. For example, brand communities develop their own unique rituals and traditions to vitalize the social processes within the community and to develop a culture that promotes a unique social identity that enhances the overall sociability (Muniz and O’Guinn, 2001; Carlson et al., 2008). However, most of the above studies on sociability in online communities are conceptual and there is limited empirical work in this area.

In addition, an online community relies on a computer-mediated environment involving information acquisition and information processing through human–computer interactions. This brings forth the importance of usability as members navigate through the online environment and execute a range of computer-mediated tasks (e.g. posting messages). There is a rich and long tradition of studying usability in computer-mediated environments, although there are very limited efforts to extend this to the context of online communities. Usability has been defined as the “extent to which (a product) can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” (ISO 9241-11 definition).

The application of usability to computer-mediated environments primarily focuses on users’ ease of use, ease of navigation, efficiency and effectiveness in the computer-mediated environment (Nielsen, 2000; Bevan et al., 1991). Another stream of research focuses on the impact of usability on user behavior in computer-mediated environments, particularly their impact on learning capabilities, confidence, and self-efficacy (Preece, 2000; Shneiderman and Plaisant, 2004). There is considerable research on identifying measures for evaluating the usability of websites and software products (Nielsen, 2000; Bevan, et al., 1991; Chin, et al., 1988; Lewis, 1995; Tullis and Stetson, 2004). More recently usability studies are being done in the context of social networking communities like Facebook and MySpace (Hart et al., 2008; Fox and Naidu, 2009). While quite similar, these social networking communities are much more dynamic and serve a totally different purpose than an online product/customer community. For example, the interaction volume and frequency is much less in a customer community compared to a networking community, the demographics are quite different and most importantly the function of the community for its users are also different.

In the context of the current study, the above discussion implies two key issues. First, online product communities constitute a social space for customers and second, it involves interactions that are

computer-mediated. As such, there is a need to pursue a broader conceptualization of customer experience, one that goes beyond the pragmatic/hedonic framework that has dominated studies on online customer experience, and incorporates customers' sociability and usability experience as well. Such a broader conceptualization would enable viewing the online product community not just as a vehicle for information search and information processing but also as an online social space – and thereby provide a richer and truer picture of customer's overall experience.

2.3. Potential impact of Online Community Experience (OCE)

As noted previously, firm-hosted online product communities are increasingly becoming the most common vehicle for facilitating customer's product-related interactions, and as such, customer experience in such communities could potentially impact customers' attitude towards the product. As much of these interactions are product related, views and experiences of other customers who are using the same product can influence one's attitudes and perceptions (Bickart and Schindler, 2001; Gruen et al., 2006). Further, product-content focused interactions may serve as product advertisements, the only difference being that there could be negative messages as well. But, as research in the area of credibility and attitude change shows, a combination of negative and positive or two-sided messages can be perceived as more credible and persuasive than one-sided messages (Hovland, et al., 1953; Settle and Golden, 1974). In addition, even if there are negative remarks, a community could be friendly and nice and provide an overall positive experience to the customer and this could also impact customers' attitudes towards the product and the company. There are also other outcomes of customer-to-customer know-how exchange in online communities, for example, customers could develop affective bonds with one another (as well with the firm) that are based on their common affiliation with the underlying product/brand, in turn leading to greater brand loyalty (Gruen et al., 2006).

Another potential impact would be on customers' perceptions regarding the organization's service quality. Companies such as Dell, Ducati, and Sony have positioned their online product community as part of their service offerings. In addition, interactions in a company's online community may give customers a sense of participation and this can improve their perceptions regarding the service quality. Prior studies on offline environments show that active customer participation in service delivery will have a positive impact on their perceptions regarding the service quality (Payne et al., 2009; Bendapudi and Leone, 2003). These studies also indicate that such customer participation in service delivery could significantly improve customers' perceptions about the company too. Given that online product communities enable customers to assume an active role in service delivery – for example, answering peer customers' product-related queries – the above findings would likely extend to the current study context too.

3. Research model

3.1. Online Community Experience

The term 'experience' is generally understood as the content or essence of one's direct observation or participation in an event – here, in the online community. Online Community Experience (OCE) is defined as the overall experience a customer derives from his/her interactions in an online community. More specifically, this construct reflects a *community member's* (e.g. *customer's*) *feelings and impressions based on his/her interactions in the online community* (e.g. *in the firm-hosted online product community*). This study proposes to examine whether customer's experience in an online product community will be comprised of four dimensions: a pragmatic dimension, a hedonic dimension, a sociability dimension, and a

usability dimension and whether these four dimensions of OCE will have an impact on customer attitudes towards the product (A_{product}) and the company (A_{company}) and also on customers' perceptions regarding the overall service quality of the company.

3.1.1. Pragmatic dimension

Online product communities play an important role as a venue for customer support – a place where one could go to get solutions to specific product-related problems or to get advice and recommendations on new products. Hence the pragmatic value of the community forms an important dimension of the customers' overall Online Community Experience.

The pragmatic dimension of OCE is defined as the *pragmatic or utilitarian value the customer experiences from the interactions in the online product community*. This dimension is related to goal-oriented behavior (Hoffman and Novak, 1996) of the customer and reflects whether the customer found the experience in the online community useful, valuable, and/or worthwhile (Mathwick et al., 2001). As such, the pragmatic dimension relates to the utilitarian and practical aspect of the customers' experience in the community.

3.1.2. Hedonic dimension

The hedonic dimension of OCE is defined as the *intrinsic value the customer derives from the interactions in the online product community*. This dimension reflects the enjoyment and excitement customers derive from being in a place where their object of interest is the main focus (say, the product or brand). Highly involved interactions related to the object of interest provide the context for the customer to derive a sense of excitement and fun – and may translate into positive hedonic experience (Voss et al., 2003; Mummalaeni, 2005). Interactions may sometimes become frustrating, boring, or even unappealing to the customer, rendering the hedonic experience to be low (Honeycutt, 2005; Mummalaeni, 2005).

3.1.3. Sociability dimension

The sociability dimension of OCE is defined as the *social experience customers derive from the interactions in the online product community*. This dimension captures customers' perceptions regarding the overall openness, friendliness and politeness of the community members. As noted previously, the online product community – specifically, the community of peer customers that constitute the social environment – may deliver positive social experiences that facilitate establishing strong network ties and relationships (Preece, 2000). On the other hand, when negative interactions dominate the online community – for example, flaming or rude and inappropriate postings – will lower the sociability experienced by community members (Honeycutt, 2005).

3.1.4. Usability dimension

The usability dimension of OCE is defined as the *customers' experience in navigating and using the online community environment*. As such, this dimension captures the ease of use and clarity of the technological features of the online product community. Higher levels of usability experience reflect the ability of the customer to navigate and participate in the online community environment smoothly and effortlessly and without any obstructions or annoyances that might distract them from their goals or interest in the community (Nielsen, 2000; Shneiderman and Plaisant, 2004; Preece, 2000). On the other hand, lower levels of usability experience imply technological and other types of navigational distractions that affect customers' interactions and information acquisition processes (Venkatesh and Agarwal, 2006; Nielsen, 2000).

3.2. OCE and customer attitude towards product and company

Customers' perceptions about their interaction experience in the online product community could impact their perceptions about the

product as well as the company. Online product communities are owned (and often operated) by the companies themselves and the linkage between the online product community and the host company is clearly visible to the participating customer. As such, customers could attribute their experiences in an online product community directly to the company as well as to the associated product or brand (Settle and Golden, 1974; Burnkrant, 1975).

Positive Online Community Experience (on the four dimensions) would likely lead customers to conclude that the entities (e.g. product, company) affiliated with the community are also endowed with similar positive attributes. Negative interaction experiences would, on the other hand, potentially induce the customer to blame such experiences on the product/company affiliated with the online community, and thereby, contribute to the development of more negative perceptions about them. Thus, the four dimensions of customers' Online Community Experience (OCE) will be positively associated with customer attitudes towards the product and the company.

Hypothesis H1. Customers' perception of their *Online Community Experience* – (a) pragmatic, (b) hedonic, (c) sociability, and (d) usability – will be positively associated with their *attitude towards the product*.

Hypothesis H2. Customers' perception of their *Online Community Experience* – (a) pragmatic, (b) hedonic, (c) sociability, and (d) usability – will be positively associated with their *attitude towards the company*.

3.3. OCE and perceived service quality

In many companies, particularly technology-based companies, online product communities have become part of the company's core service infrastructure. For example, companies such as Microsoft, Dell, and IBM position their online product communities as after-purchase product support centers. Customers' product-related queries in the online forum are answered either by peer customers or by company representatives. Indeed, in the case of most of these companies, customers are routed to the online product community directly from the company's customer support website. As such, customers often assign online communities with the same or equal status as other customer service avenues (for example, customer service hotline).

Given such a positioning of online product community, customers are likely to evaluate their Online Community Experiences as "service interactions" and formulate opinions or perceptions of the company's service quality based on such interactions. Specifically, positive interaction experiences may reflect timely and effective support of customers' product-related issues and queries, and in turn, contribute to positive perceptions of the company's overall quality of service whereas negative experiences may be interpreted as poor quality of service. Thus, customers' Online Community Experience will be positively associated with their perceptions regarding the company's service quality.

Hypothesis H3. Customers' perception of their *Online Community Experience* – (a) pragmatic, (b) hedonic, (c) sociability, and (d) usability – will be positively associated to their perceptions regarding *the company's overall service quality*.

4. Methodology

4.1. Data and study method

As noted previously, the data for this study was collected from customers participating in the online product communities relating to the following four companies – IBM, Adobe, Intel, and Microsoft. The major criteria used to select these online communities were that, (a) the community is run by or is directly connected to the company that

offers the product/service, and (b) the discussions in the online community center around topics related to the product/service. In all these four online product communities, the nature of the customer interactions were similar – customers posed queries related to the product/service and these queries were answered by peer customers or by an employee of the company who participated regularly in the community.

A Web-based questionnaire survey was used to collect data from these online community members. The customer respondents were sent emails inviting them to participate in the survey. The email included a link to the survey website. The respondents were people who had interacted in that online community in the past one-month time frame. The email addresses of these online community members were taken from their postings in the community. A set of 650 customers who had interacted in the above four online communities in the one month prior to the study time period was identified. These customer respondents were sent emails inviting them to participate in the survey. A sample of 206 responses was obtained. Due to the idiosyncrasies of the Web questionnaire survey system (which gave an erroneous "time out" message to some of the respondents), 28 incomplete responses had to be thrown out. Thus, a final set of 178 usable responses was retained for data analysis. The subjects had an average age of 41, were mostly male (86.5%), and possessed at least an undergraduate degree (79%). The subjects' mean tenure in the community was approximately 54 months.

4.2. Study measures

Online Community Experience: A multi-item 7-point semantic scale was developed to collect data on customers' Online Community Experience. For the first two dimensions, the items were adapted from existing scales developed for measuring offline customer experience (e.g. Voss et al., 2003; Mathwick et al., 2001) – for pragmatic experience, a set of 7 items was identified and for hedonic experience, a set of 11 items was identified. For measuring sociability experience, a set of 5 items was identified based on an existing scale used to measure sociability in the online collaborative learning environment (Gunawardena, 1995; Tu, 2002) as well as on qualitative studies conducted on sociability in online communities (e.g. Preece, 2000). For usability experience, a set of 6 items was identified from studies on usability in the human-computer interaction literature (Brooke, 1996; Tullis and Stetson, 2004; Chin et al., 1988; Lewis, 1995).

Following a factor analysis (see Table 1), 3 items were dropped due to weak loading ('satisfying/unsatisfying'; 'stimulating/boring'; 'absorbed intently/not absorbed intently') and a final 26-item scale was adopted for the study. The Principal Component method of factor analysis was used. In an unconstrained Varimax rotation with eigenvalues above 1, 4 distinct factors were revealed as predicted. The final OCE scale had a 7-item pragmatic experience measure with a reliability score of Cronbach $\alpha = .95$, an 8-item hedonic experience measure with a reliability score of $\alpha = .93$, a 6-item usability experience measure with a reliability score of $\alpha = .93$, and a 5-item sociability experience measure with a reliability score of $\alpha = .88$. The summed scores for each factor is used in the hypotheses testing. All the four dimension measures had reliability scores greater than the suggested threshold level of .70 (Nunnally and Bernstein, 1994; Fornell and Larcker, 1981).

Attitude towards product/company: Attitude towards the product (A_{product}) and the attitude towards the company (A_{company}) were measured using standard existing scales obtained from the Marketing Scales Handbook (Bruner and Hensel, 1992). A 12-item 7-point semantic differential scale was used to measure A_{product} and a 6-item 7-point semantic differential scale was used to measure A_{company} (Table 2). In each case, factor analysis revealed a single-factor measure with satisfactory reliability scores ($\alpha = .95$ for the A_{product} scale; and $\alpha = .95$ for the A_{company} scale).

Table 1
Factor analysis results for OCE.

Items	Component			
	OCE:Prag	OCE:Hedo	OCE:Soc	OCE:Uab
OCE: Worthwhile/worthless	.870	.093	.101	.154
OCE: Useful/not useful	.870	.134	.073	.237
OCE: Productive/not productive	.866	.164	.110	.162
OCE: Valuable/not valuable	.860	.217	.098	.111
OCE: Practical/impractical	.830	.147	−.031	.150
OCE: Informative/non informative	.830	.136	.154	.064
OCE: Relevant/irrelevant	.826	.172	.100	.128
OCE: Happy/sad	.139	.827	.102	.103
OCE: Pleasing/annoying	.223	.823	.084	.158
OCE: Fun/not fun	.058	.798	.156	.112
OCE: Exciting/not exciting	.061	.797	.233	.034
OCE: Captivating/not captivating	.226	.796	.261	−.106
OCE: Entertaining/not entertaining	.003	.774	−.035	.159
OCE: Deeply engrossing/not deeply engrossing	.223	.740	.296	−.082
OCE: Enjoyable/not enjoyable	.343	.716	.062	.089
OCE: Friendly/not friendly	.054	.200	.917	.193
OCE: Lonesome/Communal	.062	.140	.902	.136
OCE: Personal/impersonal	.026	.231	.846	.163
OCE: Polite/impolite	.305	.033	.756	.066
OCE: Inviting/not inviting	.082	.358	.731	.200
OCE: Easy/difficult	.145	.112	.062	.803
OCE: Not tiring/tiring	.050	.170	.059	.789
OCE: Not stressful/stressful	.040	.098	.030	.760
OCE: Not confusing/confusing	.176	−.020	.203	.753
OCE: Simple/Complicated	.217	−.060	.195	.729
OCE: Consistent/Not consistent	.298	.096	.198	.725

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Note: All dimensions of experience were measured using 7-point semantic differential scale. Attitude towards product and attitude towards company were also measured using 7-point semantic differential scales. Perception of overall service quality was measured using a 7-point Likert scale. Numbers in bold is just to bring attention to the factor loadings for that factor. Numbers that are not in bold are cross loadings.

Perceived overall service quality: Customers' perception of the overall service quality of the company was measured using a scale adapted from the widely used Servqual instrument (Parasuraman et al., 1991). Specifically, a 15-item 7-point Likert scale that included items related to the reliability, responsiveness, assurance, and empathy was used. The 'tangibles' dimension was left out from the original scale, since most of these customers would have interacted with the service personnel of the company through either phone or online interactions. Factor analysis revealed a single-factor service quality measure that was then used in the data analysis. Prior studies have shown that such a single-factor Servqual measure (e.g. Cronin and Taylor, 1992; Carman, 1990; Cronin and Taylor, 1994) would be appropriate, as the five-factor solution has been found to be inconsistent in many industry contexts. The final measure was found to be reliable ($\alpha = 0.97$).

Table 3 provides the basic statistics (means, standard deviation, and reliability). All the measures were checked for both internal consistency and discriminant validity. The reliability coefficient (composite reliability) ranged from .88 to .97, exceeding the recommended minimum of .70 (Nunnally and Bernstein, 1994; Fornell and Larcker, 1981). The standardized item loadings for the constructs ranged from .72 to .92, exceeding the recommended minimum of .60 (Fornell and Larcker, 1981). The factor loadings along with cross loadings are provided in Table 2. Average variance extracted for all the constructs exceeded the recommended minimum of 0.5 (Bagozzi and Yi, 1988), thus indicating discriminant validity of the measures. Also, all of the correlations among the latent constructs were found to be significantly less than one, thus providing further evidence of the discriminant validity of the measures used (Bagozzi and Yi, 1988).

Table 2
Factor scores for A_{product}, A_{company} and service quality.

	ServQ	A _{pro}	A _{com}
<i>Perception of overall service quality</i>			
Employees of the company are always willing to help you	0.895	.102	.068
When you have a problem, the company shows a sincere interest in solving it	0.879	.052	.143
The company provides its services at the time it promises to do so	0.866	.089	.052
When the company promises to do something by a certain time, it does so	0.860	.113	.162
Employees of the company are never too busy to respond to your requests	0.850	.076	.099
The behavior of employees of the company instills confidence in customers	0.850	.009	.223
Employees of the company have the knowledge to answer your questions	0.849	.036	.199
Employees of the company give you prompt service	0.838	.028	.234
Employees of the company understand your specific needs	0.837	.032	.152
The company has employees who give you personal attention	0.825	.036	.255
The support service offered by the company is available to you at all times	0.811	−.111	.157
Employees of the company are knowledgeable about the product and product-related issues	0.806	.148	.181
Employees of the company are consistently courteous with you	0.780	.111	.216
The company gives you individual attention, if needed	0.753	.063	−.006
The company has your best interests at heart	0.716	.063	.188
<i>Attitude towards product</i>			
Elicits positive opinion/negative opinion	.079	0.898	.124
Satisfactory/unsatisfactory	.094	0.857	.093
Like extremely/dislike extremely	.000	0.856	.092
Important/unimportant	.047	0.847	.136
Valuable/not valuable	.061	0.839	.123
Impressive/not impressive	.104	0.838	.207
Distinctive/common	.017	0.793	.024
Superior/inferior	.092	0.786	.120
Pleasing/annoying	.110	0.777	.086
High quality/poor quality	.021	0.765	.328
Useful/not useful	−.021	0.761	.227
<i>Attitude towards company</i>			
Quality conscious/not quality conscious	.322	.131	0.893
Impressive/not impressive	.200	.306	0.868
Positive opinion/negative opinion	.304	.214	0.863
Distinctive image/not distinctive image	.111	.311	0.811
Reputed/not reputed	.240	.307	0.786
Customer friendly/not customer friendly	.397	.075	0.743

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Numbers in bold is just to bring attention to the factor loadings for that factor. Numbers that are not in bold are cross loadings.

4.3. Data analysis

Regression analysis was conducted to test the study hypotheses. Since the data was pooled from the four online product communities,

Table 3
Correlations, means, S.D. and Cronbach α .

Variables	Mean	S.D	α	1	2	3	4	5	6	7
1. OCE prag	5.9	.87	.95	1						
2. OCE hedo	4.4	1.06	.93	.38**	1					
3. OCE soc	5.4	.98	.88	.37**	.21**	1				
4. OCE usab	5.2	.92	.93	.27**	.41**	.35**	1			
5. A _{product}	5.8	.92	.95	.26**	.28**	.25**	.25**	1		
6. A _{company}	5.8	.97	.91	.24**	.22**	.20**	.34**	.43**	1	
7. Servq	4.9	1.17	.97	.30**	.20**	.18*	.27**	.16*	.51**	1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

a class variable, company, was included in the analysis to isolate the influence of the company. Table 4 provides the results from the regression analysis.

5. Results and discussion

OCE and attitude toward product: Hypothesis H1 predicted that the four dimensions of Online Community Experience will be positively associated with customer's attitude towards product. Results indicate very good support for this hypothesis. Pragmatic experience (H1a: $\beta = .21$, $p < .01$), Hedonic experience (H1b: $\beta = .18$, $p < .05$), Sociability experience (H1c: $\beta = .17$, $p < .05$) and Usability experience (H1d: $\beta = .17$, $p < .05$) and were all found to be positively associated with the attitude toward product (A_{product}).

OCE and attitude toward company: Hypothesis H2 predicted positive association between the four dimensions of OCE and the customers' attitude towards the company. The regression results indicate that this is true for three of the four dimensions. Specifically, H2a which predicted association between pragmatic experience and attitude towards company was supported (H2a: $\beta = .19$, $p < .01$) as was H2b, between hedonic experience and attitude towards company (H2b: $\beta = .14$, $p < .05$). Similarly, H2c which predicted association between sociability experience and attitude towards company was also supported (H2c: $\beta = .30$, $p < .001$). However, the results did not offer support for the predicted relationship between usability experience and attitude towards company.

OCE and service quality: Hypothesis H3 predicted positive association between the four dimensions of OCE and the customers' perceptions regarding the quality of service offered through the online community. The regression results indicate that this holds true for pragmatic, hedonic, and sociability experience dimensions. Specifically, H3a – association between pragmatic experience and service quality – was supported ($\beta = .25$, $p < .001$). Similarly, the results support both H3b (relating to hedonic experience) and H3c (relating to sociability experience) (H3b: $\beta = .23$, $p < .001$; H3c: $\beta = .20$, $p < .01$). Usability experience (H3d) was not found to be associated with service quality.

The above results were as expected and support the theoretical rationale offered earlier for the various hypotheses. The only findings that were contrary to expectations related to the impact of usability experience on customer attitudes and perceptions. The variance evidenced in the usability experience among the study subjects (S.D: .92; min: 3, max: 7; and median: 5.3) indicates that customers do perceive different levels of usability in the online product community environment. While usability experience was related to attitude towards product (albeit weakly), this dimension was not related to the other two dependent variables.

Overall, the study findings indicate the potential significance of the OCE construct given its role as an antecedent of customers' perceptions and attitudes regarding product, company, and service quality.

Table 4
Regression results – impact of OCE.

Variables	A_{product}		A_{company}		ServQ	
	β	S.E	β	S.E	β	S.E
Constant	-.02	.17	-.22	.17	-.38	.17
Dummy variable	.01	.06	.10	.06	.18	.06
OCE Pragmatic	.21**	.07	.19**	.07	.25***	.07
OCE Hedonic	.18**	.07	.14*	.07	.23***	.07
OCE Sociability	.17*	.07	.29***	.07	.20**	.07
OCE Usability	.17*	.07	.09	.07	.065	.07
R- squared	.13		.16		.18	
Adj. R-squared	.11		.13		.16	
F for change in R ²	5.19***		6.37***		7.61***	

*** $p < .001$; ** $p < .01$; and * $p < .05$.

5.1. Study limitations

In this study, data was collected only in online communities related to technology-based products. This might limit the generalizability of the study findings, particularly to online communities that relate to non-technology products and services. However, an increasing number of traditionally non-technology consumer products (e.g. toys, cameras, home appliances, etc.) now incorporate computer technology to some extent, and as such the findings from the current study context are likely to be increasingly generalizable as time goes on. Second, in this study context, the primary role of online product communities was to serve as a vehicle for delivering product support services to customers. This might have biased the study findings to certain extent given the dominance of the pragmatic goals in such contexts. Future studies that validate the OCE construct in online product communities with emphasis on other types of customer interactions (e.g. customer co-innovation; brand communities, etc.) may provide additional insights on the role and the impact of OCE.

Third, some of the demographic characteristics of the study subjects (relatively young, educated, and mostly male) that are peculiar to software and other technology-based product communities indicate the need to exercise caution in generalizing the study findings to online product community contexts with other demographic features (for example, communities where women or seniors form the majority). However, none of the study variables reflect subjects' technology-based knowledge or understanding (only the content of the community discourse is technology-based), and as such, will not affect generalizability to online communities in other contexts.

6. Implications and conclusions

The research model and study findings hold several important implications for future research and managerial practice. First, in this study, a new theoretical construct called OCE was introduced that could potentially impact future research in understanding consumer behavior in online product communities. With more and more companies deploying online product communities, there is a critical need to understand how they can enhance the effectiveness of these communities in delivering positive experiences for customers. As mentioned previously, while prior studies emphasize the importance of Online Community Experience, there is limited attention being paid to conceptualizing or empirically capturing this concept. This study develops and empirically validates a multi-dimensional conceptualization of OCE that is rooted in prior research in the area of computer-mediated communication, human-computer interaction, online communities, and consumer psychology and offers a sound theoretical foundation for future research on customers' Online Community Experiences.

The second implication relates to the findings regarding the potential impact of OCE. Online communities are increasingly becoming a 'lounge' area for customers to hang out and talk to one another. Results indicate that OCE can play a crucial role in shaping customers' perceptions regarding the product, the company, as well as the service quality. There could also be other impact of OCE – for example, on customer co-innovation, product purchase intentions, brand loyalty, etc. Future studies should consider these and other potential impacts of OCE.

The significance of OCE as revealed by the study findings also implies the need for future studies to focus on identifying the factors that would shape customers' Online Community Experience (i.e. the antecedents of OCE). In order to examine this, one would need to consider the key functions of the online community. For example, some online product communities serve as information exchange forums for product-related content. In such communities, pragmatic

experience would likely be providing additional sources of product-related information or having an employee answer those queries that peer customers are not able to. Similarly, sociability experience would likely be enhanced if people with similar background are given the opportunity to form sub groups. Studies from the communication literature show that most human communication will occur between a source and a receiver who are alike. As such the degree to which individuals are congruent or similar in certain attributes (e.g. demographic variables, beliefs and values, etc.) may be an important antecedent of sociability experience. In other words if members of the community feel 'homophily' (Touhey, 1974) with other members, that could potentially enhance their sociability experience. Similarly, factors related to the quality of the web design may shape the extent of pleasure and arousal, that is, impact the hedonic and usability experience dimensions (Mummalaneni, 2005).

Finally, there is a need for studies that examine customers' offline experiences and their Online Community Experiences together. Online experiences don't stand isolated from offline experiences, and they could interact with and/or influence one another. Future research could incorporate both these customer experiences and see how such experiences (online and offline) are integrated and how they would affect customers' overall product-related perceptions and attitudes. Findings from such studies that employ the OCE scale developed here may also hold important implications for strategies and practices related to customer relationship management and brand management.

In conclusion, this study proposed and factor analyzes a new theoretical construct called Online Community Experience and also shows that such interactions in an online product community shape customers' product and company related attitudes and perceptions.

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