

The Antecedents of Community-Oriented Internet Use: Community Participation and Community Satisfaction

Mohan J. Dutta-Bergman

Department of Communication
Purdue University

The linkage between the Internet and the offline community has been the subject of considerable research in the last decade. Scholars have been particularly interested in the effects of the Internet on offline community, and the relationship between Internet use and community participation. Based on the social shaping of technology and channel complementarity theories, this study proposes that community participation will be positively related to community-based Internet use. In addition, it posits that satisfaction with the community will emerge as a positive predictor of community-based Internet use. A regression analysis of data gathered by the Pew Center for the People and the Press demonstrates that community satisfaction and community participation explain variance in community-based Internet use beyond that explained by demographic variables.

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Introduction

The community correlates of Internet use have been the subject of a significant body of research since the 1990s (Matei & Ball-Rokeach, 2001; Putnam, 1995; Virnoche, 1998). Of special interest to scholars are the effects of the Internet on community¹ participation (Matei & Ball-Rokeach, 2001; Putnam, 1995, 2001). Early research on the linkage between the Internet and the offline community adopted a techno-deterministic approach, embodying two widely divergent philosophical positions. While researchers on one side of the debate saw the Internet in competition with local community-based activities, positing that the Internet would displace the community, scholars in the other camp argued that the Internet was likely to strengthen weakening community ties within the United States. Both approaches to the study of the Internet and community life emphasized technology at the cost of backgrounding the sociocultural and contextual factors that surround Internet use.

Problematizing the technodeterministic approach to Internet use at the heart of much early discourse about the Internet, Matei and Ball-Rokeach (2001) applied an alternative lens that highlighted the sociocultural context as a key ingredient in media use research. These researchers borrowed from the body of research on social shaping of technology to argue that Internet use is shaped by the sociocultural practices that surround the medium (Ball-Rokeach, Gibbs, Jung, Kim, & Qiu, 2000; Hampton, 2001; Katz & Aspden, 1997; Rainie & Kohut, 2000). In this article, I apply the social shaping of technology approach to study community-oriented Internet use. More specifically, I examine the use of the medium for local community-related purposes. The subject of interrogation is not the virtual community, but rather the geographically defined local community as the topic of Internet-related activities. I introduce the theory of channel complementarity to articulate complementarity between community-based Internet use and actual community participation (Dutta-Bergman, 2004a, 2004b). The theory states the communication channels are likely to be in a complementary relationship with one another when examined in the context of the specific functions they serve.

The goals of this study of community-based uses of the Internet are (a) to bring together two variables, Internet and community, that are usually examined as disparate entities, and (b) to better capture the relationship between the Internet and the local community beyond the traditional displacement-based framework that is widely circulated in scholarship on the Internet and community life (Putnam, 1995). Although a great deal of research has interrogated the role of the Internet with respect to community participation, few studies have actually been conducted on the use of the Internet for local community-related purposes (but see Hampton, 2001; Katz & Aspden, 1997; Sparrow & Vedantham, 1996; Wellman, Haase, Witte, & Hampton, 2001).

In the next sections, I review the literatures on social shaping of technology, channel complementarity, community participation, and community satisfaction. Subsequently, based on the theoretical framework offered by the social shaping of technology and channel complementarity theories, I propose testable hypotheses about the role of community participation and community satisfaction in the realm of community-based Internet use. The hypotheses are then tested by regression analyses of data gathered by the Pew Center for the People and the Press. Based on the examination of the relationship between participation in local community and community-based Internet use, directions for future research are suggested.

Community Participation and the Internet: Theoretical Framework

Community participation, or the involvement of individuals in their local community, such as volunteering for local organizations, attending meetings of local clubs, and/or participating in local government, has been documented to be declining steadily in the United States (Putnam, 1995, 2001). Multiple social contextual factors impede or catalyze the involvement of individuals in their communities. Age, education,

income, employment, church attendance, general sociability, and personality strength are positive correlates of community participation (Putnam, 1995, 2001; Verba, Schlozman, & Brady, 1995), while media use is negatively correlated with community participation (Putnam, 1995; Uslaner, 1998). The mechanism underlying the impediment of media use to community participation is drawn from displacement theory (McCombs, 1972; Shah, McLeod, & Yoon, 2001).

Displacement Theory

Displacement theory locates mediated and community-based communication activities at two ends of a spectrum, arguing that participation in one communicative domain takes away from the time and financial resources allocated to the other (McCombs, 1972). Based on a limited resource perspective, the theory posits that the limited amount of leisure time available to individuals constrains the different communicative activities they can engage in (Finholt & Sproull, 1990; James, Wotring, & Forrest, 1995; Robinson, Barth, & Kohut, 1997). As a foundation for the displacement-based perspective, McCombs (1972) proposed the notion of relative constancy, according to which consumer expenditures of resources on communicative channels remain constant. Consumption of one particular set of communicative activities displaces other forms of communicative activities.

Since the early work of Lazarsfeld and his colleagues (1948) investigating the displacement effects of radio on the print medium, media scholars have examined displacement effects with the arrival of every new form of technology, including television (Mendelsohn, 1964), cable television (Sparkes, 1983), VCR (Henke & Donahue, 1989), and computer-mediated communication (James et al., 1995). Extrapolating the notion of displacement to the relationship between the Internet and the community suggests that those individuals who spend a lot of time consuming media in their private spaces will be unable and unlikely to participate in their local communities (Putnam, 1995; Shah et al., 2001). Spending time on the Internet, therefore, would detract from the motivation and willingness of citizens to participate in their communities.

Early findings regarding the negative relationship between Internet use and community participation make sense when located in the context of the limited functions of the Internet in its early years (Putnam, 1995). The medium was primarily used for entertainment-based surfing purposes, and for information seeking among highly specialized users of specific information-heavy websites (Shah et al., 2001). In addition, the Internet contained limited information related to local communities, thus limiting the possibilities for community-based use. However, the nature of the Internet has changed; it has become more widely available as a source of information about a variety of topics, including in the realm of the community. This evolving characteristic of the medium calls for a more nuanced approach to the examination of the relationship between Internet use and community participation.

Dutta-Bergman (2004a, 2004b) criticized the one-size-fits-all approach to media use, arguing that the displacement-based literature does not sufficiently tap into the

critical roles played by content, context, audience, and history in media space. The research questions that get asked in the competition-based framework focus on detecting competition among media types, and hence disregard other critical issues about the nature of media. More specifically, media scholars have questioned the simplistic use of time spent as the only viable indicator of media use, arguing that the reduction of media experience to the number of hours spent on particular media does not capture the diversity of experiences available to individuals within specific media types (Dutta-Bergman, 2004a, 2004b; Shah et al., 2001). After all, different media use patterns may serve different functions for the individual consumer (Dutta-Bergman, 2004a, 2004b; Shah et al., 2001).

According to this line of thinking, the functions served by a specific medium are stronger predictors of civic engagement than the time spent using the medium. Following the functional perspective of media use, Shah, Kwak, and Holbert (2001) pointed out that informational uses of the Internet are positively associated with community participation, whereas community participation is depleted by entertainment uses of the Internet. Similarly, Dutta-Bergman (2004a, 2004b) pointed out that audience members use different media content types to fulfill different goals, such that the consumption of one channel in a particular content area matches the consumption of other channels in that area. The social shaping of technology perspective attempts to centralize the role of context in media scholarship, and offers an alternative to the competition-based framework.

Social Shaping of Technology

The social shaping of technology perspective suggests that technology often reinforces pre-existing sociocultural patterns and needs to be looked at within the context that surrounds it (Matei, 2001; Matei & Ball-Rokeach, 2001). Matei and Ball-Rokeach (2001) contend that “communication technologies are the product of social choices that predate them” (p. 554). In their telephone survey of Internet use among 1,812 respondents in selected Los Angeles neighborhoods conducted as a part of the Metamorphosis project, these scholars reported that individuals who connected to the Internet were 1.4 times more likely to be members of community organizations as compared to individuals who did not connect to the Internet (Matei & Ball-Rokeach, 2003). Based on their findings, the researchers argued that the Internet forms a mesolinkage of the communication infrastructure, thus indirectly contributing to belonging in the community.

Highlighting the context surrounding the use of the Internet, Matei (2001) posited the notion of the “Internet magnifying glass effect,” suggesting that the Internet may magnify the communicative environment of those people who already have well-developed connections to other communicative resources. According to this perspective, Internet use is located within a context, affected by a plethora of sociocultural variables (Baym, 1998; Bijker, 1994, 1995; Carey, 1988; Doheny-Farina, 1996; Jones, 1997; MacKenzie & Wajcman, 1985; Matei, 1998). Located in opposition to the early research that conceptualized technology as the impetus for social

change, the social shaping of technology approach studies the social factors that lead to the creation and experience of technologies, and the “social implications of particular technology formations” (Virnoche, 1998, p. 200).

Essential to the framework is the location of agency in the individual. Whereas on the one hand individuals use technology as a resource to fulfill their needs, on the other hand technology impacts individual behavior by satisfying or not satisfying those needs. Scholars applying the social shaping of technology perspective to the linkage between the Internet and local community have demonstrated positive correlations between Internet use and community participation (Ball-Rokeach et al., 2000; Hampton, 2001; Katz & Aspden, 1997; Rainie & Kohut, 2000; Wellman et al., 2001).

For instance, Hampton (2001) observed that Internet-connected residents in a broadband-connected Toronto community compared to nonconnected individuals knew three times as many local residents, talked with two times as many, and were more likely to invite their neighbors to their homes. The study of *Netville*, “one of the few developments in North America where all homes were equipped from the start with a series of advanced communication technologies supplied across a high-bandwidth local network” (Hampton & Wellman, 1999, p. 478), demonstrated through observations and surveys that relationships were sustained through a combination of online and offline interactions. The online network served as a resource for community activities, bringing residents together in couples and in larger groups, and facilitated the provision of aid and exchange of information. The high level of online participation created local awareness and supported existing social ties in the community. Hampton and Wellman (2003) further observed that wired residents in *Netville* had a greater number of neighborhood ties and a greater volume of telecommunication contacts with neighbors via email and telephone. Thus individuals who were Internet users were also more involved in communication ties in the real world (Hampton, 2001; Matei & Ball-Rokeach, 2001).

Wellman et al. (2001) analyzed the National Geographic Society Survey 2000 and reported that Internet use supplements interpersonal communication with family and friends, organizational involvement, and political participation. Individuals who participate in political activities offline are also likely to participate in political activities online. In reporting data gathered by the Pew Internet Group, Howard, Rainie, and Jones (2001) similarly find that Internet use complements and builds upon other forms of social interaction rather than replacing them. More specifically, these researchers report that 60% of those who use email to communicate with their families are more likely to communicate more often since getting access to the Internet. Furthermore, online visitors are 24% more likely to say that they know other people to turn to in times of need as compared to people who never go online. Finally, Katz and Aspden (1997) also observed a positive correlation between experience using the Internet and community participation.

Other research on the community and the Internet has investigated community networks (Virnoche, 1998; Virnoche & Marx, 1997). Community networks “use

electronic communications to connect people who live in the same area, city, or neighborhood” (Virnoche, 1998, p. 199). Via web pages or bulletin boards, these networks provide community-specific information to residents, and “are committed to the goals of local participation, community building, and democracy” (Virnoche, 1998, p. 199). While virtual communities are not geographically limited and typically link dispersed individuals with shared interests or characteristics, community networks cater to geographic communities that often include multiple clusters with diverse interests (Virnoche, 1998).

Essential to the building of these networks is the idea that the technology will facilitate community participation by providing a platform for information retrieval and sharing (Calabrese & Borchert, 1996). Infrastructural investment in technology will catalyze communications equity and participatory democracy by providing information access to those groups that typically remain inaccessible. Also, the shift in content generation into the hands of community participants will facilitate the formation of a democratic community. The community network approach emphasizes the interpenetration of the community and the Internet; it suggests that greater use of the Internet for community-related purposes will be positively linked with community participation.

The theory of channel complementarity further supports a positive relationship between Internet-based community use and community participation at a micro level (Dutta-Bergman, 2004a, 2004b). The complementary relationship is driven by the overlapping functions performed by these communication channels. The Internet is conceptualized as a resource that may be used by individuals in connecting with one another and in sharing their thoughts and ideas (Calabrese & Borchert, 1996). The role of the Internet is particularly critical in the realm of community participation because it can provide critical and relevant information to members who are already involved in their communities. In other words, those individuals who are already actively engaged in their communities will also use the Internet as a valuable resource that carries information about the community and will selectively use the Internet for community-related purposes. Although a significant volume of the literature has examined the relationship between community participation and Internet use, limited research has been conducted about community-specific uses of the medium. The theory of channel complementarity provides the framework for articulating linkages among community-based Internet use and community participation.

Theory of Channel Complementarity

With its foundations in motivation-based theories such as selective perception theory and uses and gratifications theory, the theory of channel complementarity states that individuals are driven by underlying motives to consume certain communication channels, leading to the observed complementarity among these channels in specific functional domains (Dutta-Bergman, 2004a, 2004b). These underlying motives that drive channel consumption systematically vary within populations

and remain typically consistent within individual members (Dutta-Bergman, 2004a, 2004b). Therefore, a great deal of congruity is expected in the communication practices of the individual, being driven by the underlying interest in a specific content domain (Dutta-Bergman, 2004a, 2004b). For instance, the individual who is interested in sports is motivated by issues related to sports, and consumes a wide variety of sports-related radio channels, television programs, websites, etc. A consistent underlying interest in a particular domain (such as sports) manifests itself in the choice to read, watch, or listen to specific media content related to that domain. As a consequence, complementarity or congruence is observed in the consumption of specific communicative functions across a variety of communication channels (Dutta-Bergman, 2004a, 2004b).

The individual is loyal to the specific communicative function based on his/her underlying drives, and satisfies this function-specific need (such as need for political news) by participating in different communication channels. Rather than the nature of the medium, what is important is the communication needs of the individual consumer in a particular domain (Dutta-Bergman, 2004b). Based on his analysis of data gathered by the Pew Center, Dutta-Bergman (2004a) demonstrated congruence in the use of traditional media channels (such as newspapers, magazines, television, and radio) in specific content domains with the use of the Internet in the same content domains. In other words, individuals who used traditional media to receive news about, say, politics were more likely to use the Internet to receive political news as compared to nonusers. Similar findings were reported in Dutta-Bergman's (2004b) study of telephone and Internet use after the attacks on the U.S. World Trade Centers and the Pentagon on 9/11/2001: Individuals who communicated interpersonally via the telephone were also more likely to use the Internet to communicate interpersonally.

Extrapolation of the theory of channel complementarity to the domain of community participation suggests that individuals who participate in their local community are also drawn to the Internet for community-related purposes. Underlying the consumption of community-related Internet is the individual's interest in his/her local community. This intrinsic interest manifests itself in the consumption of the Internet to find information related to the community. In other words, the Internet serves as a resource for community-oriented individuals; they go to the medium to reinforce their pre-existing interest in the community and to equip themselves with relevant information that would facilitate their participation in the community. Online community-related information seeking and communication are just two components of the entire repertoire of the community-oriented individual's community-centered actions, situated in relationship to a plethora of other interactions and communication channels relevant for that community. The central component that draws community participation and Internet-based community use together is active interest in the local community.

H1: Community participation will be positively related to community-based Internet use.

Community Satisfaction

The second community construct explored in this article is community satisfaction (Filkins, Allen, & Cordes, 2000; Heaton, Fredrickson, Fuguitt, & Zuiches, 1979; Zuiches, 1981). Community satisfaction is reflective of the contentment of residents with their local communities and has been measured in a variety of ways. Extant research provides ample evidence to document the negative effects of dissatisfaction with local community, including the desire to seek other residential locations, community instability, and a lower quality of life (Filkins et al., 2000; Heaton et al., 1979; Zuiches, 1981). However, in spite of its tremendous consequences for the status of offline community, community satisfaction has not yet been researched in the area of Internet effects.

A significant body of research has interrogated the antecedents of community satisfaction (Theodori, 2001). Ecological factors such as the area of residence have been found to have profound effects on community satisfaction, with rural residents being more likely to be satisfied with their communities than urban residents (Marans & Rodgers, 1975). Other factors, both objective and subjective, have also been found to influence level of satisfaction. These include age, education, income, occupational status, gender, family size, friends in the community, migrant status, social/spiritual satisfaction, satisfaction with employment, social participation, residential mobility, residential satisfaction, social support networks, and duration of residence in the community (Theodori, 2001).

Although this impressive body of research on community satisfaction has previously investigated the antecedents of satisfaction, very little research has been conducted on the outcomes associated with community satisfaction (Cowell & Green, 1994; Schulze, Artis, & Beegle, 1963; Stinner & Van Loon, 1992). Schulze et al. (1963) demonstrated that those individuals who are satisfied with their communities are less likely to migrate elsewhere. Similarly, Stinner and Van Loon (1992) found that satisfaction with the economic opportunities and public services in the local community impacted migration intentions. Furthermore, community satisfaction influences individual well-being (Theodori, 2001). It may be argued that community satisfaction precedes community engagement. It is only when an individual is satisfied with his/her community that he/she is likely to take an active role in its affairs. The dissatisfied individual, on the other hand, is likely to stay away from community organizations. Satisfaction with the community, therefore, is likely to lead to the use of community networks for participation in the democratic process within the community and for gathering information about the community.

H2: Community satisfaction will positively predict community-based Internet use.

In order to examine the predictive roles of community participation and community satisfaction on Internet-based community use, this study controlled for the effects of demographic variables on Internet-based community use. Published literature posits that community participation increases with age, education, and income (Dutta-Bergman, 2005). In addition, Internet use is greater among younger participants,

and increases with education and income. Controlling for the demographic variables allowed for the examination of additional variance in community-based Internet use explained by the community-related variables.

Method

Data

The data used for testing the hypotheses were gathered by the Pew Research Center for the People and the Press (2000). The Pew Center conducts telephone-based national surveys of the media and technology consumption of individuals (Pew Research Center for the People & the Press, 2000). To avoid "listing" bias and provide representation of both listed and unlisted numbers, the surveys use random digit samples of telephone numbers selected from telephone exchanges in the continental United States. The design of the samples ensures this representation by random generation of the last two digits of telephone numbers selected on the basis of their area code, telephone exchange, and bank number.² Also, the number of telephone numbers randomly sampled from within a given county is proportional to that county's share of telephone numbers in the U.S. The survey used in this study was conducted between January 17, 2001, and February 11, 2001. Experts in the disciplines of new media, consumer behavior, and survey design were extensively consulted to guide the construction of questions related to Internet use, community participation, and community satisfaction. To ensure flow and comprehensibility of questions, the questionnaire went through multiple pretests.

For every selected telephone number, at least six attempts were made to complete an interview, with calls staggered across different times of day and days of the week. Participation in telephone-based surveys tends to vary by the different subgroups of the population, leading to nonresponse biases. In other words, some groups within the population, owing to their orientation, are particularly likely to participate in such surveys as compared to other groups. In order to compensate for these known biases, the sample data are weighted in the analysis and the demographic weighting parameters are derived from a special analysis of the most recently available Census Bureau's Current Population Survey. An iterative technique that simultaneously balances the distributions of all weighting parameters is used to derive the weights. 3,142 individuals provided usable data in the study. The mean age of the respondents was 46.27 (S.D. = 18.80). The sample was comprised of 46.3% men and 53.7% women.

Measurement

Community-based Internet Use

To measure community-based Internet use, the respondents were given the following instructions: "Next, I have a few questions about using the Internet to get information about the community where you now live. How often, if ever, do you go online to . . . ? Do you do this often, sometimes, hardly ever, or never?" The items measuring community-based Internet use were "get news about your local community," "look

for information about community events,” “look for information about local stores or merchants,” “look for information about the schools in your community,” “email public officials in your community or state,” and “look for information about local government offices or services.” Responses were measured on a scale of 1 to 4 with 1 representing “often,” 2 representing “sometimes,” 3 representing “hardly ever,” and 4 representing “never.” The community-based Internet use items were recoded.

Community Participation

In this research, community is defined as the local neighborhood where the individual resides. Participation in the community was measured by the questions “Do you belong to or ever work with” “a community group or neighborhood association that focuses on issues or problems in your community,” “a local sports league,” “a local youth group, such as scouts or the YMCA,” “a local church, synagogue, mosque, or temple,” “a local social club or charitable organization,” “some other local group I haven’t already mentioned?” Responses were measured in a yes/no dichotomous format.

Community Satisfaction

As noted in the operationalization of community participation, the neighborhood or local area where the respondent resides is defined as his/her community. Scholars interested in community satisfaction (Filkins et al., 2000) have used a global measure of satisfaction in their studies with respondents denoting their level of satisfaction along a 4-point continuum ranging from “very dissatisfied” (1) to “very satisfied” (4). Satisfaction with the community was measured by the question, “Overall, how satisfied are you with the neighborhood or area where you now live- very, somewhat, not too, or not at all satisfied?” Responses were measured on a scale from 1 to 4 with 1 representing “Very satisfied,” 2 representing “somewhat satisfied,” 3 representing “not too satisfied,” and 4 representing “not at all satisfied,” and were recoded.

Demographic Variables

Age was measured by numeric response to the question “What is your age?” A dichotomous scale measured gender with 1 representing “male,” and 2 representing “female,” and was recoded as a dummy variable. Income was measured by the question, “Last year, that is in 1999, what was your total family income from all sources, before taxes?” The item was measured on a scale of 1 to 8, with 1 representing “less than \$10,000,” 2 representing “\$10,000 to under \$20,000,” 3 representing “\$20,000 to under \$30,000,” 4 representing “\$30,000 to under \$40,000,” 5 representing “\$40,000 to under \$50,000,” 6 representing “\$50,000 to under \$75,000,” 7 representing “\$75,000 to under \$100,000,” and 8 representing “\$100,00 or more.” Education was measured on a scale of 1 to 7 for responses to the question, “What is the last grade or class that you completed in school?”: 1 represented “none or grade 1-8,” 2 represented “High school incomplete,” 3 represented “High school graduate,” 4 represented “Business, technical, or vocational school after high school,” 5 represented “some college, no 4-year degree,” 6 represented “college graduate,” and 7 represented “post-graduate training or professional schooling after college.”

Results

Initially, a correlation analysis was conducted to examine the relationship among the independent variables (see Table 1).

Individuals who are satisfied with their communities and participate in them tend to be older compared to individuals who are less satisfied with their communities. Also, both participation in the community and satisfaction with it increase with education. Similar trends are observed in the realm of income, with community satisfaction and participation increasing with income level. Community participation and community satisfaction were positively related with each other. In order to test the hypotheses, a hierarchical multiple regression was conducted (see Table 2). The demographic variables were entered in the first block and the community-oriented variables were entered in the second block.

The demographic variables explained 1.8% of the variance in community-based Internet use. Age was negatively correlated with community-based Internet use ($\beta = -.06, p < .01$). Younger participants were more likely to use the Internet for community-related purposes as compared to older respondents. Supporting the past literature, education ($\beta = .16, p < .001$) was positively related with Internet use. Income ($\beta = -.06, p < .01$) emerged as a negative predictor of community related Internet use.

The community-based variables explained 6.4% of additional variance in community-based Internet use. Hypothesis 1 stated that community participation will be positively correlated with Internet-based community use. The hypothesis was supported and community participation was positively correlated with community-based Internet use ($\beta = .25, p < .001$). The results also supported Hypothesis 2, with community satisfaction being positively correlated with Internet-based community use ($\beta = .04, p < .01$).

Discussion

This study set out to examine the correlates of community-based Internet use. Although researchers have extensively studied the relationship between Internet use and community participation, very little research has examined the use of

Table 1 Correlation among independent variables

	Age	Education	Income	Cmnty Stsn	Cmnty Prtpn
Age	1.00				
Education	-.02	1.00			
Income	.16*	.20*	1.00		
Cmnty Stsn	.05*	.03*	.04*	1.00	
Cmnty Prtpn	.12*	.12*	.05*	.10*	1.00

* $p < .01$.

Table 2 Hierarchical multiple regression explaining community-based Internet use

	Community Internet Use	
	Final Beta	R ²
Demographics		.018***
Gender	-.05**	
Education	.16***	
Age	-.06**	
Income	-.06**	
Community & Internet Indicators		.064***
Community Satisfaction	.04**	
Community Participation	.25***	
Total R ²		.082***

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

community networks (Internet based platforms that provide information about and communicative platforms for the local community) and community participation/satisfaction. Building upon the social shaping of technology approach to conceptualize the Internet as a tool in community-based communication among members (Matei & Ball-Rokeach, 2001), this study applied the theory of channel complementarity to articulate congruence between use of the Internet for community-based purposes and community participation (Dutta-Bergman, 2004a, 2004b). The results demonstrated that community-based variables explain additional variance in community-based Internet use after controlling for demographic variables.

The results of this study support the theoretical foundation provided by the amalgamation of the social shaping of technology and channel complementarity theories. The Internet, as conceptualized in the approach embodied in social shaping of technology, is a resource that is located within the broader sociocultural context. As a communication channel, it is embedded within a broader network of inter-related communication channels, demonstrating patterns that reflect the sociocultural context surrounding its use. The relationship of Internet use and participation in other communication channels is located within the realm of the specific functions served by the medium. More specifically, in the realm of community-based action, the use of the Internet is part of a set of communication choices that serve the individual's interests in the community.

The theory of channel complementarity posits that individuals who participate actively in their local communities will also seek out Internet-based resources that are related to the local community (Dutta-Bergman, 2004a, 2004b). This theory was supported by the observation that participation in the geographical community was positively associated with active use of the Internet for community-related purposes. In opposition to displacement-based arguments, it was found that those individuals who are drawn to their local communities participate in them physically and seek out Internet-based resources to enhance the quality of participation.

It is critical to note here that the theory of channel complementarity does not suggest causality; instead, it simply articulates a match among different media types in specific functional domains. To the extent that the data reflect this match, this particular project demonstrated support for the theory of channel complementarity (Dutta-Bergman, 2004a, 2004b). Users of the Internet in the specific functional domain (community-based use) were indeed also more likely to participate in other community-related activities. In other words, community-oriented individuals not only actively engage in the local community but also use the Internet to find community-relevant information. They are significantly more likely to use the Internet to gather news about the local community, look for information about community events, look for information about local stores and merchants, look for information about local schools, email local public officials, and look for information about local government services as compared to individuals who do not participate in the community. The Internet serves as a critical resource about the local community for those individuals who are already engaged in the community, supporting the articulations of the social shaping of technology perspective that technology often reinforces existing social, political, and cultural patterns.

In addition to documenting the role of community participation in community-based Internet usage, the study demonstrated the critical role of community satisfaction. Supporting the theoretical framework, the results pointed out that community satisfaction was positively related to community-based Internet use. Individuals who are satisfied with their communities are also likely to participate in online information gathering about community-related affairs. Such individuals are significantly more likely to participate in their communities, and the Internet serves as a critical resource that facilitates information gathering and communication exchange with respect to community organizations and community activities. Future research needs to examine the relationship among community satisfaction, participation, and network use. It may be argued that satisfaction leads to participation, which in turn, prompts community-based Internet use. Other conceptual frameworks exploring the relationship need to be proposed. In the demographic realm, the results supported the existing literature, with the community-based Internet user being younger and more educated as compared to the non-user.

In interpreting the results of this study, it is important to attend to the evolving nature of the Internet as a medium, and locate it in the sociocultural space of Internet functions. In its early years, the Internet was primarily used because it was entertaining, unless the users were specialized information consumers of websites such as CERN. Limited information was available on the Internet regarding local community-related purposes, perhaps explaining the negative relationships between Internet use and community participation noted in early studies. However, the change in the nature of the medium as a widely available source of information, accompanied by the increasing amount of community-related information available on the Internet, provides the foundation for articulating complementary patterns between community participation and community-based Internet use.

One of the limitations of this research is its reliance on secondary data for examining the theoretical framework. As a consequence, the study is limited by the measures that were present in the data. Community satisfaction was measured by a single item. In the existing research on community satisfaction, scholars have raised questions about the reliability and validity of the single item measure. Future research might introduce multiple items to tap into community satisfaction, and introduce alternative operationalizations of satisfaction. Also, the findings of the Santa Monica PEN studies suggest specific cases when online community participation may be triggered by dissatisfaction with the local community, and this ought to be further theorized in future research that explores citizen response to community dissatisfaction (Rogers, Collins-Jarvis, & Schmitz, 1994). Community-based Internet use was measured in a dichotomous manner. Future research ought to explore the extent of community-based Internet use on a Likert-type scale.

A large number of variables such as community mobility, employment satisfaction, and access to community resources were not included in this study. Future research should focus on conceptualizing a relationship among satisfaction, participation and media use, with an emphasis on surrounding sociocultural practices. Also, additional research is needed to investigate the causal direction of the relationship. Perhaps structural equation modeling or hierarchical modeling might provide meaningful ways of looking at the interactions between community participation and Internet use with respect to other contextual variables. The analyses presented in this study were based on 2001 data, calling for analysis of more recent Internet use in future work. Ultimately, the percentage of variance explained by the model is small and the significance of the relationship might be attributable to the large sample size of the study. This calls for further exploration of the relationships suggested here with measures that might provide greater predictive validity and explain a greater amount of variance in Internet use. Overall, this project provides an exploratory framework for examining the relationship between face-to-face community participation and use of the Internet for community-related purposes.

Notes

- 1 Community here refers to the offline community, the traditional geographically-based community in which individuals live.
- 2 Specifically, each bank is uniquely defined as the set of 100 possible numbers having the same 3-digit area code, 3-digit exchange number, and next two digits of the exchange number. For instance, the first eight digits of the number 478-343-44XX, where XX denotes any value between 00 and 99, define a "bank."

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About the Author

Mohan J. Dutta-Bergman is Associate Professor of Communication at Purdue University. His research focuses on the socioeconomic correlates of technology access and use, the relationship between technology and community, and the uses of technologies in healthcare contexts.

Address: Department of Communication, Purdue University, 100 N. University Street, West Lafayette, IN 47907 USA

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