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The Development of Trust in Virtual Communities

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ABSTRACT

This empirical study applies an existing scale to measure trust in the context of virtual communities on the Internet, and explores factors that build trust in this unique environment. The results show that trust is composed of two dimensions: trust in others' abilities and trust in benevolence/integrity. In addition, this research found that trust has relationships with perceived responsiveness, disposition to trust, and perceptions regarding the degree to which others confide personal information. Trust itself affected participants' desire to get and to provide information to others in the online community.

INTRODUCTION

The rapid growth of virtual communities on the Internet [9] and accompanying research expansion [12, 21] provides a fertile area of study. Virtual communities arise as a natural consequence of people coming together to discuss a common hobby, medical affliction, or other similar interest. Virtual communities can be defined as groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or site.

Given that trust is among the most important antecedents of interpersonal interaction in general [15], and affects online behavior in particular [5, 6], this study examines the role of trust in virtual communities and how it affects the participants' desire to provide and receive information. The research also examined effects of group behavior and disposition to trust on the development of trust in other community members. The research model proposed by this study is presented in Figure 1.

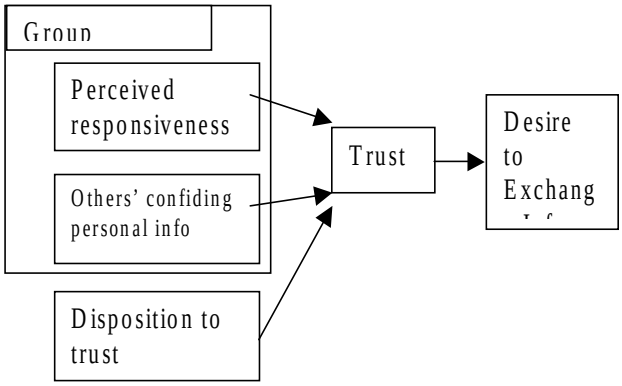

Figure 1

THE CONCEPT OF TRUST

The definition of trust is dependent upon the situation in which it is being considered [15]. Extending this logic, trust in virtual communities is likely to be better understood in the context of interpersonal relationships, i.e., trust between human beings [19], or what Luhmann [15] terms personal trust. His definition positions trust as a mechanism required to reduce social complexity and uncertainty, conditions that exist in virtual communities. In this context, trust has been defined as the willingness to take a risk [16]. This definition has been also used in the study of trust in virtual teams [13]. Giffin [8] has defined trust as "reliance upon the communication behavior of another person in order to achieve a desired but uncertain objective in a risky situation" (p. 105), further emphasizing that inherent in the notion of trust is some element of risk. Trust is thus a set of beliefs about others that will justify this risk [8].

Trust is a pivotal and essential element in long-term social relationships [2, 15]. Individuals will often refrain from any interaction with others whom they do not trust [15]. Trust is the confidence an individual has in that another person or persons will behave only as they are expected to and will do so in a socially acceptable and ethical manner [14, 15, 16]. This confidence is essential in long-term relationships because in the lack of a comprehensive set of rules to govern such relationships [2]. Trust also reduces the fear that the trusted party will take unruly advantage or engage in otherwise opportunistic behavior [4]. Trust should be important in online communities for the same reasons. In an online community such opportunistic behaviors could include selling personal information that was provided with the understanding of confidentiality, using the community to deliberately and stealthily market products and services, making unfair practical jokes at members, and, in general, behaving in a dysfunctional manner that ruins the community. Such behavior applies also to any other type of community, except that in the case of an online community the anonymity provided by the Internet make such behavior much easier to perform by the perpetrator and much harder to notice by the victim.

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HYPOTHESES

Trust is built through successful interpersonal interaction [2, 6, 15]. An individual who posts messages on a community most often expects some type of response. If there are no responses, trust in others will not develop, because of a lack of a successful interpersonal interaction. Conversely, if an individual posts a message and in a short period of time there are numerous replies, trust should be built. Thus it is hypothesized:

H1: Participants' perceptions of other members' responsiveness will be positively related to their trust in other community members.

An individual must have some cause for developing trust in others [15]. In a virtual community trust is built by reading what others post. If others post personal information about themselves, they are making themselves appear to be more than just a stranger, and are showing that they trust others with sensitive information. By disclosing their gender, age, or perhaps a personal problem, they are less a stranger and more an acquaintance or friend. This personal information is intimately related to the development of trust.

Handling personal information with sensitivity has been suggested as building trust for e-commerce sites [3]. Just as trust is essential for consumers to divulge personal information for electronic commerce, it is proposed here that virtual community members will have increased trust in others when they see others confiding personal information on the virtual community. Thus it is hypothesized:

H2: Participants' perceptions of the degree to which others confide personal information will be positively related to their trust in other community members.

Disposition to trust is defined as a general willingness to depend on others [17]. This trait is stable across situations [16]. Disposition to trust may be especially effective when the parties are still unfamiliar with one another [16, 19], as might be the case in a virtual community, where almost anyone can reply. Mayer et al. [16] proposed that disposition to trust is positively related to trust. Disposition to trust has been empirically found to be directly related to trust in virtual settings [6, 13]. Therefore, it is hypothesized that:

H3: Participants' disposition to trust will be positively related to their trust in other community members.

Trust enables and determines the nature of interpersonal relationships [2, 6, 13]. In a trusting environment, people are more inclined to help others and to request others' help, while in a less trusting environment, people tend to shun away from providing information or requesting it [2, 15]. It is thus hypothesized that when participants are trusting, that they will be more inclined to provide and request information:

H4.1: Participants' trust will be positively related to their willingness to provide information to others.

H4.2: Participants' trust will be positively related to their willingness to request information from others.

METHOD

The methodology used to test the hypotheses was a cross-sectional survey. Much of the past scholarly research in computer-mediated communication (CMC) has conducted experiments in laboratory settings [20]. However, external validity in these cases is problematic since participants are a captive audience, sample size is small, and researchers usually contrast CMC with face-to-face interaction [20]. Experiments also have limitations due to the difficulty in manipulating the experimental conditions [19]. To maximize external validity, this research used field survey methodology as the most appropriate to test actual membership perception regarding trust in real virtual communities.

The population of interest was members of virtual communities on the Internet. It was highly desirable to use the technology of the Internet to both contact a subset of this population and to collect the data. Therefore, the survey was posted on the Internet as a Web page, and the request to participate was posted directly on the virtual communities.

MEASURES

Existing scales from the literature were reviewed and items were carefully adapted or developed for each construct. Both a pretest and pilot were conducted. All of the items (Appendix) were measured with 7 point Likert-type scales ranging from strongly disagree to strongly agree.

Trust

Trust is considered in this study as a belief. The measurement of the components of trust is taken from Jarvenpaa, Knoll, and Leidner [13]. The scales were altered slightly to fit the virtual community environment.

Responsiveness of Others

No existing scale could be found to measure the responsiveness of others in an environment such as a virtual community. Gefen and Keil [7] developed a scale to measure the responsiveness of developers. While not directly applicable to this study, the notion of being responsive to requests [7], was incorporated into the scale developed for this study. The items in this scale referred to the timeliness and quantity of responses.

Degree to Which Others Confide Personal Information

No existing scale could be found to measure the degree to which people confide personal information in an environment such as a virtual community. Thus a scale was developed specifically for this study. Consistent with the literature reviewed above [3, 18], the items in the scale ask about the willingness of others to share personal information.

Disposition to Trust

The scale to measure disposition to trust was adapted from Gefen [6]. Gefen used the scale to measure disposition to trust in the environment of the Internet, which is similar to the environment in the present research.

Desire to Exchange Information

The most often cited reason for joining a virtual community is to exchange information [10, 21]. A scale to measure this desire was created specifically for this study. Drawing on the reasons from the literature, the items in the scale ask about coming to the community for information, facts, advice on carrying out tasks, and to share their knowledge. The first three items focus on getting information, the last two on giving information.

SAMPLING PROCEDURE

Researchers have developed criteria in order to include communities from study, such as minimal traffic volume and a minimum number of different posters [22]. Therefore, rigorous criteria were developed regarding minimum number of postings and users. These criteria were chosen to make sure the communities were large and active. Communities using bulletin boards were targeted for this study since they could be easily observed.

In order to collect data from a wide variety of communities and to maintain randomness in the sample, a rigorous procedure was adopted in order to select communities for the study. A random number generator was used to pick communities from search engine results. Forty communities were selected, and the message requesting participation was posted on each of these directing respondents to the URL for the survey.

Data Collection and Response Rate

Community members were given 10 days to respond. A total of 696 responses were received from the 40 communities. Of this total, 663 responses from 36 communities were usable.

Self-selection is a limitation, which can be addressed by matching the demographics of the sample with the demographics of known population of Internet users, a procedure that has been used in similar Web-based survey research [1]. Unfortunately, there is virtually no public data available about the demographics of bulletin board users. However, several surveys of Internet users can be used to compare demographics [23, 24, 25]. The present sample is fairly similar to other surveys of Internet users.

Response rate calculation is difficult since it is impossible to know how many people viewed the post requesting participation. Several attempts at response rate calculation are reported here. One possible measure is the number of completed surveys per the number of unique visits to the survey. The rate of completions per visit was 60.66%, and the rate of usable surveys per visit was 57.71%.

A contact was made with one of the communities to gather information about community size to estimate response rate. This board averages about 875 visits per day. In the first 24 hours of the survey request, 44 surveys were received. If this was an average day, approximately 5% of visitors responded. Respondents from this community, according to survey responses, believe the core group of regular contributors is about 61 to 80 people. 87 of the 90 respondents are active posters. Therefore, it may be that most active community members did respond to the survey, yielding a response rate near 100%.

Response rate could be calculated by observing the community after the survey request was posted, and seeing how many people posted during this time period. This is problematic because as the request to survey moves farther down in the list of active threads it is unlikely that someone posting on the board five days after the researcher's post would even scroll that far down to read all posts. Nevertheless, to provide another possible way of ascertaining response rate, the number of unique posters on another board was counted for the 10-day period. There were 107 unique people who posted. There were 10 responses from this board, which is 9.3% of 107. This ignores any lurkers who might have read the post but declined to participate.

SAMPLE CHARACTERISTICS

The largest response from a single community was 90, (13.57%). There were 14 communities from which there were fewer than 10 respondents (n=78).

The majority (62%) was male, and 78% were between 18-49 years of age. The vast majority (91%) was Caucasian, and most (67%) had an education of at least some college. Most respondents were from the United States (93%) and were employed full time (70%). These demographics are consistent with most surveys of Internet users (www.cyberatlas.com). The respondents spent an average of 3-6 hours a week in the community and have been members, on average, for 9-12 months.

MEASUREMENT OF THE VARIABLES

A factor analysis using the Principal Components method with Varimax rotation was performed. Results suggested that several items be dropped from the scales in order to achieve a high level of reliability and validity. Specifically, an item was dropped if (a) it did not meet the threshold loading of 0.40 on any factor, (b) its highest loading on an expected factor was not above 0.60, or (c) it showed a significant variance across multiple factors [11].

Perceived responsiveness, desire to give information, and desire to get information loaded exactly as expected. Each had acceptable Cronbach alpha reliabilities: .85 for desire to get information, .89 for desire to give information, and .90 for responsiveness. Confiding personal information and disposition to trust also loaded on separate factors as expected after dropping the items, with resulting Cronbach alphas of .89 and .86 respectively.

The trust items loaded on two distinct factors. Other researchers [2, 13, 16] have suggested that trust is composed of trust in abilities, benevolence, and integrity. One factor emerged as the trust in abilities dimension (alpha=.91). Trust in benevolence and trust in integrity were merged together in the other factor. Other researchers [5] have found similar results. Since very few of the integrity items remain in the factor analysis, it may be that integrity needs to be measured differently in the online environment. To maintain consistency, this factor was named trust in benevolence/integrity (alpha=.88).

TESTING THE HYPOTHESES

Linear regression was used to test the proposed relationships. The results are presented in Tables 1 and 2.

Abilities Integrity Variables	Trust in Trust in Benevolence/	
Perception of Responsiveness	.317**	.371**
Others confide personal info	.196**	.152**
Disposition to trust	.157**	.168**
R^2	.214**	.241**

**p<.001 Table 1

Variables	Desire to Give Info. β	Desire to Get Info. β
Trust in Ability	.168**	.266**
Trust in Integrity/Benevolence	.191**	.302**
R^2	.101**	.253**

**p<.001 Table 2

The perception of others' responsiveness was significant in the regressions, supporting H1. The degree to which others confide personal information was significant, supporting H2. Finally, disposition to trust was also significantly related to trust, supporting H3. Trust itself affected both the desire to give and desire to get information, supporting H4.1 and H4.2.

DISCUSSION

Two dimensions of trust emerged in this study. Trust in abilities was distinct, but trust in benevolence and integrity com-

bined into one dimension. It may be that conformance to socially acceptable behavior or standards (integrity) and a desire to do good (benevolent intentions) are synonymous in the virtual community environment. Jarvenpaa et al. [13] applied the trust scale in a virtual team setting where the teams were composed of students working on a class project. This situation is distinctly different from the case of virtual communities where participants are drawn by a common interest.

This research sought to understand what mechanisms build trust in virtual communities. Investigate of trust antecedents revealed that perceptions of responsiveness, the degree to which others confide personal information, and one's own disposition to trust were all positively related to the dimensions of trust. This indicates that virtual community members will trust more when they perceive others are responsive with regard to personal, subjective perceptions of quantity and timeliness of responses. As expected, when others confide personal information, trust in others is higher. Thus when others show that they are willing to take a risk by giving information about themselves, higher trust in these others exists. This is significant because it shows that even though participants may come to talk about a particular topic (Honda motorcycles or real estate appraisal), they will trust others more if they know something personal about them. Disposition to trust is also positively related to trust in others, indicating that people who are generally trusting exhibit more trust in others.

As expected, trust plays a significant part in participants' desire to exchange information. People are more likely to have a desire to exchange information with others if they feel trust in others' abilities and benevolence/integrity.

The results of this study have limitations. There are thousands of communities on the Internet, and identification of the population of interest (virtual community users) is difficult at best. Response rate was virtually impossible to calculate. Finally, the cross-sectional design does not afford the opportunity to infer causality among the constructs.

IMPLICATIONS

The results of this study have many implications. Bulletin boards are beginning to be used frequently in education and organizational work in order to allow students or professionals to exchange information asynchronously. Work groups with these characteristics are certainly similar in many ways to virtual communities. Bulletin boards provide an appropriate to support this work. The primary reason why people join and use virtual communities is to exchange information. For the bulletin boards to be successful (i.e., for participants to exchange information) and foster the sense of community indicative of success, trust must be present. This research shows that it may be important to have team members that have a high disposition to trust, and it is important that the participants feel that others are responsive and willing to confide personal information. Communities will not achieve their goal, information exchange, without trust.

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