

SOCIOLOGICAL FACTORS AFFECTING TRUST DEVELOPMENT IN VIRTUAL COMMUNITIES

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Abstract

This study explores how people trust each other in Virtual Communities (VCs). The online presence is certainly different from the physical world.; the broad question in this research is whether trust is developed differently or not. The main sociological factors that influence trust in physical communities have been hypothesized for their contribution to the development of trust in VCs. A quantitative online survey instrument was developed based on existing literature on Sociology detailing the sociological perspective of trust, as well as on the fields eCommunities, eCommerce and Information Systems (IS).

Introduction:

Virtual Community (VC) is a phenomenon that some describe as “new social life forms” [11 pp.1] and due to the ease in which communities can be established online e.g. via a forums and bulletin boards, they are spreading at a rate greater than physical societies. However, it is widely believed that VCs are in fact an online manifestation of physical communities, despite its strong reliance on technology and physical distance between its participants. This prompts further investigations for better understanding of the ways various factors associated with physical communities operate in VCs [17].

One key factor in physical communities is ‘Trust’. In the context of social phenomena, it is “...other people and their actions [that] make up the most important environment of our lives and those are the crucial targets of our own actions” [28, pp21]. For this reason we place trust in people and services every day. “If we did not place our trust so routinely, life would be practically unliveable” [25, pp.2]. Trusting decisions are made everyday; we trust the food we eat and the train to take us to work. Trust is certainly a pre-condition for the existence of any society [17].

This research presents a fresh sociological view of trust development in online environments. Many of today's Virtual Communities (VCs) utilize bulletin board style setups where people can create their own virtual identity by registering and participating in online discussions. For this reason it is very important to explore how people trust each other in a VC environment. The online presence is certainly different from the physical world. The broad question in this research is whether trust is developed differently or not. Despite strong emphasis in the literature on importance of trust in e-commerce transactions little attention has

been given to the sociological perspective of trust development in VCs and that how and in what ways (if any) this traditional view can be applied to VCs. To fill the gap, this study aims to discover application of the traditional sociological concepts of trust in Virtual Environments.

Literature Review

Many empirical sociological studies on VCs make reference to the sociological definition of “community”. For instance Rothaermel & Sugiyama [9] believe that VCs are similar to a “community of mind described by Tönnies [15], except that it forms through an electronic communication medium and is not bound by space and time” [9, pp. 299].

It is important to realize that VCs are multidisciplinary and their definitions vary depending on the perspective used, which can include technology, commercial (including business, economics and e-commerce) and sociology [4]. However, regardless of perspective, the common core attributes of all VCs are:

- People.
- Shared goal and purpose which is the reason for being in the community.
- Policies that govern use.
- Interactions, activities and participation involving emotions.
- Use of computer systems, and
- Shared social conventions, language and protocols [4], [13].

All definitions of VC revolve around the above common core concepts. Some researchers define VCs by focusing on “...the types of practical Virtual Communities [as opposed to the] metaphysical properties” [7, pp. 2710]. One such definition is from Ridings et. al. [24] who see VCs 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 mechanism” [24, p273]. The technologically orientated papers on the other hand tend to refer to VCs according to the technological platform on which it is delivered e.g. bulletin boards, listservs etc. These technologies form the foundation of community interactions [5]. Sociologists define VCs on the basis of the strength and type of relationships and the way people bond in an online environment without the constraints of geographical location and ethnicity [3].

From a sociological perspective, joining VCs allow for knowledge exchange and relationship development [4]. To understand how this works, there are two basic actions that people can use in VCs and that is to receive information [4] or to give out information. VCs based on common experiences (e.g. healthcare, mental health, childcare, parental issues etc.).

The concept of ‘trust’ has been defined from a number of perspectives including sociology, philosophy and economics [21], [26]. Under the technological perspective, trust is viewed as a system consisting of interacting agents that take on various roles e.g. a citizen, service provider, owner etc. [17], [20]. For example, Daneshgar et. al. [2] proposes a framework for VCs with members playing various roles including ‘initial contributor’, ‘opposer’, ‘argumentator’, and ‘supporter’. Figure 1 shows components that make up trust in online communities according to Carter and Ghorbani [20.:

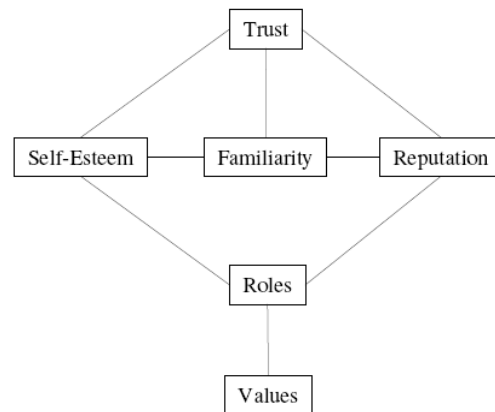


Figure 1 - Concept Dependency Map; (adopted from [20, p. 8])

Ebner et. al. [21] transformed their trust model into a working prototype for virtual healthcare communities (see Figure 2).

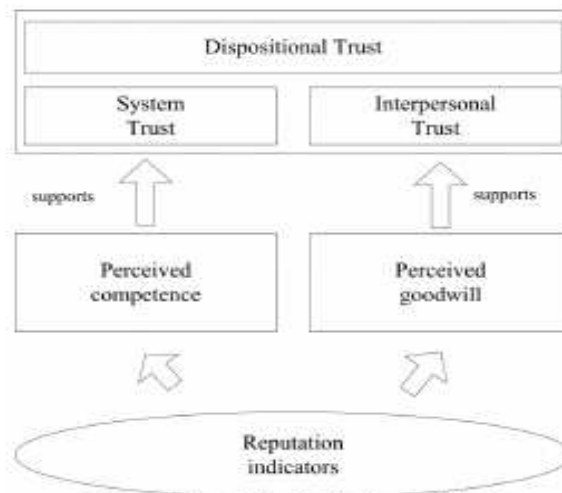


Figure 2 - Reputation Indicators of Trust; (adopted from [21, pp. 2])

E-commerce papers examine the trust between people and transactional websites with an emphasis on value adding and enhanced customer trust. It is widely believed that online transactions and exchanges are characterized by “uncertainty, anonymity, lack of control and potential opportunism” [22], [26]. For this reason many papers seek to find “practical solutions that might be offered to encourage the development of trust among online consumers and retailer” [25, pp.3].

Some researchers focus on developing trust within a specific e-commerce environment such as e-Auctions [19] & [25] and commercial VCs [26] while others suggest general concepts and models of trust in e-commerce. For example, Wang et. al. [27] presented a comprehensive coverage on trust, delving deeply into Human Computer Interaction (HCI) literature to find a reason why people trust technology e.g. via various trust cues on the websites such as smartly placed ads, images and working links.

The most commonly used types of trust in both E-commerce and computer science papers are explained in two levels [22]:

- **Personal and Interpersonal trust** – this includes dispositional trust, trusting beliefs, intentions and trust related behaviours.
- **Trust in the institution or environment** – this area includes system trust where a user trusts the environment in which the transaction/exchange occurs.

There are very few studies that focus on trust based on sociological definitions. One such influential paper is by Ridings et. al. [24]. Their research was on the antecedents of trust that aims to foster “voluntary online cooperation between strangers [participating] in VCs” [24, pp.271]. Trust was placed in the middle as a mediating variable and was looked at from both sides: (i) what caused trust to develop, and (ii) whether or not trust will predict a persons’ desire to exchange information. The focus however was not on trust development alone (as is the case in this study) but rather on the overall process of trust, from development to what happens after trust is placed. The three factors they considered to influence trust development were ‘perceived responsiveness’, ‘others confiding personal info’, and ‘disposition to trust’.

Research Methodology

Hypotheses

This research focuses on examining how trust is developed in VCs using traditional sociological concepts of trust and arrived at the following set of hypotheses:

H1: On a personal level an individual can determine the overall trustworthiness of another party within a VC by considering their *Reputation*, *Performance* and *Appearance*.

H2: On a contextual level, *Accountability* mechanisms and *Situational* factors contribute to the development of overall trust.

Furthermore, this research will also examine relationships that exist among each of the above two groups of factors:

H1A: The factors under the personal level are all positively related with one another.

H2A: The factors under the contextual level are all positively related with one another.

Definitions: Following definitions have been adopted in this study:

Performance: is defined as the actions of an individual, their present deeds conduct and results. In physical world, performance is measured by sporting times, exam marks, share prices and other competitions. People are also judged by their performance at face value. Therefore it is an area that is most prone to manipulations [28]. In this study, and in line with the above real life examples, following indicators of performance in a VC were selected:

- Responsiveness of an individual [24].
- Comprehensive and elaborate replies.
- The total number of posts.

Appearance: In physical societies it refers to external characteristics such as ethnicity, age, gender, body language, smile dress, prestigious house and car etc., and is closely related to how individuals present/show their personality, identity and status. The features that aid in trust development is largely dependant on the individual and their own circumstances, but in general, “people tend to trust others who are similar to them and to distrust those who are dissimilar from them [because] we are merely better at predicting the behaviour of those most

like ourselves” [28, pp.79-80]. This study claims that for VCs, keeping in mind that this assessment of trust is purely superficial, members can develop trust based on:

- The number of hits and views in of a thread.
- Appearance of a members’ signature and profiles.
- English in posts are well worded, good mannered and polite.
- Members’ current age, gender, sex and situation.

Contextual Level: The above concepts relate to acquiring some knowledge or information about potential targets of trust. In order to consider trust development as a whole, some features of the external context also need to be explored within which the interactions take place. The relevant concepts in this category are: *Accountability* and *Situational* factors, and are explained below:

Accountability: The sociological definition of accountability deals with the “enforcement of trustworthiness [including] the presence of agencies monitoring and sanctioning the conduct of the trustee” [28, pp.87]. In physical life situations accountability is present in every day trades and in every contract that is signed. Accountability enhances the development of trust because it changes the “trustee’s calculation of interests” [28, pp.87]. In the realm of the Internet, accountability has been explored extensively by numerous e-commerce literatures with focus on enhancement measures such as authentication and authorization in the technology [23], [27] and those who investigate how individuals present themselves online [6], [14]. It is believed that “accountability of self presentation in cyberspace should be understood as a context dependent phenomenon” [6, pp.3]. It is entirely up to the member to develop trust to a particular member, and to decide whether or not this piece of information or this member is trustworthy. Some factors associated with the accountability in VCs also relate to anonymity/visibility and structural arrangements [28, pp.89-90]. Authors believe that in a VC some of these factors could be:

- Whether a user is registered or anonymous,
- Personal information in profiles (e.g. email address, instant messenger etc.), and
- The presence and actions of moderators.

Situational Factors: These are defined as features of the setting in which the trust development takes place. The environments in which members interact and give/receive information form a big part in their decision to accept a piece of information or trust a particular member. Under the sociological perspective one major situational factor would be the size of a community. It is generally believed that trust is easier to come by in close-knit, small, intimate communities as opposed to anonymous urban crowds. This is due to the mutual visibility of all members; and it decreases the cost of monitoring activities. Another situational factor relates to the perception of the surroundings. People tend to trust the safety of clean, elegant parks and streets than dirty, dark and vandalized surroundings. The final factor to consider is ‘self policing mechanism(s)’ such as law and order in physical societies [28, pp.95-96]. In this study the authors have decided on the following situational factors for trust development in VCs: (i) the actual design of the VC e.g. bulletin board style and graphics as explored by Wang et al. [27] for e-commerce websites, and (ii) contents of the VC.

Research Methodology

An online quantitative survey instrument was developed based on existing literature on Sociology, eCommunities, eCommerce, and Information Systems. Two pilot studies were

conducted as preliminary investigations as well as to test the survey instrument. Descriptive statistics were used to analyse the demographics and multiple selection questions. The Pearson 'r' correlation method was used to analyse the Likert scales and to test associations among the concepts. The survey was made online.

Population Selection Criteria

The main criterion for selection of target population was the degree of reliance of the community on members' trust for their best performance and results. According to Madge and O'Connor [8] parents make up a large proportion of those Internet users seeking help for not only themselves but also for their family members. The Internet is increasingly being recognized as a place for social support [10]. For this reason the Parental VCs were selected for the two pilot tests. These VCs often deal with the parental issues from childbirth to family life and they are very popular.

Summary of Results

Table 1 shows a summary of results for this study.

Table 1 - Pearson Correlations between measures of Trust Development

Measures		Total Reputation	Total Appearance	Total Performance	Total Situational Factors	Total Accountability	Total Overall Trust
Total Reputation	'r'	1	0.774	0.781	0.658	0.656	0.608
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	(N)	(316)	(316)	(316)	(316)	(316)	(316)
Total Appearance	'r'	0.774	1	0.829	0.699	0.726	0.588
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	(N)	(316)	(316)	(316)	(316)	(316)	(316)
Total Performance	'r'	0.781	0.829	1	0.693	0.721	0.627
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	(N)	(316)	(316)	(316)	(316)	(316)	(316)
Total Situational Factors	'r'	0.658	0.699	0.693	1	0.823	0.588
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	(N)	(316)	(316)	(316)	(316)	(316)	(316)
Total Accountability	'r'	0.656	0.726	0.721	0.823	1	0.655
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	(N)	(316)	(316)	(316)	(316)	(316)	(316)
Total Overall Trust	'r'	0.608	0.588	0.627	0.588	0.655	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	(N)	(316)	(316)	(316)	(316)	(316)	(316)

All correlations are significant at the 0.01 level (2-tailed).

In the above table all correlation coefficients are positive, implying that high score on one factor is associated with high score on the other, and are positively correlated. The strength of a relationship can be determined by its 'r' value. A value of 0 indicates no relationship and a value of 1.0 means a perfect positive correlation. The significance of the strength is gauged on the basis of the following recommendations [32];

- Small Strength $r= 0.10$ to $r=0.29$
- Medium Strength $r=0.30$ to $r=0.49$
- Large Strength $r=0.50$ to $r=1.0$

Table 1 shows strong relationships between each pair of factors and significant relationships exist among Reputation, Performance and Appearance; these are the factors fall under the Personal level category. On the other hand, the Situational Factors and Accountability are strongly correlated; they fall under the Contextual Level category.

For Situational Factors, presence of a broad range of topics in a VC contributed the most to trust building as it allows people to research about the area and form their own judgment of trustworthiness. For accountability, the existence of forum rules and policies had the highest number of responses. Significant correlations between reputation and performance, appearance and performance and Situational factors and Accountability all correspond to the growing area of identity and recognition research on the internet (e.g., [1], [6] & [14]). The association between Situational Factors and Accountability offers an explanation to how accountability mechanism works hand in hand with the VC environment in order to create a sense of responsibility within an individual. Lee [6] and Watson [16] both look into this "invisible influence" in their studies.

The relationship between each of the factors with the trust development factor as a whole are:

Total Reputation ' r ' = 0.608 (Sig. 2-tailed = 0.000)

Total Appearance ' r ' = 0.588 (Sig. 2-tailed = 0.000)

Total Performance ' r ' = 0.627 (Sig. 2-tailed = 0.000)

Total Situational Factors ' r ' = 0.588 (Sig. 2-tailed = 0.000)

Total Accountability ' r ' = 0.655 (Sig. 2-tailed = 0.000)

In Table 2, Accountability has the highest correlation with the overall trust ($r=0.655$, $n=316$, $P<0.0005$), which can be explained by structure of the VC and heavy presence of active moderators in the sample environments. The Appearance had the lowest correlation with the overall trust ($r=0.588$, $n=316$, $P<0.0005$). This may be related to the fact that majority of members are long-term members are therefore are more familiar with each other on the VC, and would therefore rely less on the superficial aspects in their trustworthiness assessments. All factors had shared variances above 35% with overall trust.

Testing Validity: The overall Cronbach Alpha coefficients was 0.916 for the Overall Trust, 0.708 for Reputation, 0.856 for Appearance, 0.829 for Performance, 0.899 for Situational Factors, and 0.870 for Accountability. All values exceeded the reliability threshold of 0.7 therefore the scales can be considered to be internally consistent in measuring the factors of trust development as well as overall trust.

Future Work

Below is a list of potential opportunities that authors will be considering in their future works:

- Replicating this study in other domains for increasing external validity of the results.
- Further validation of the scales that were used for measuring trust development factors in VC.
- Through extensive data mining operations and more advanced statistical methods, either identifying new factors contributing to trust development, or further confirming the current ones, or both.
- Delve into a particular factor, and investigate what happens after trust is placed (e.g., cohesion and formation of a sense of community).
- Exploring both situational factors as well as patterns of people's trust development in virtual communities: is it the advice?, the social emotional support?, the sincerity?, the information?, the environment?.
- Examining how this socially-grounded concept of trust development in VCs changes over time, and how it evolves [18].
- Examining the influence and disposition of trust on trust development.
- Considering the cultural impacts on an individual's propensity to trust.

Acknowledgement: This work was partially supported by the Asia-Pacific Ubiquitous Healthcare research Center (APuHC), University of New South Wales, Australia.

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