

Chapter 18

A Computational Model of Social Capital in Virtual Communities

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ABSTRACT

This chapter presents a Bayesian Belief computational model of social capital (SC) developed within the context of virtual communities. The development of the model was based on insights drawn from more than five years of research into social capital in virtual communities. The Chapter discusses the key variables constituting social capital in virtual communities and shows how the model was updated using practical scenarios. The scenarios describe authentic cases drawn from several virtual communities. The key issues predicted by the model as well as challenges encountered in building, verifying and updating the model are discussed.

INTRODUCTION

This chapter presents the Bayesian Belief computational model of social capital (SC) developed within the context of virtual communities. The development of the model was based on insights drawn from more than five years of research into social capital in virtual communities. The Chapter discusses the key variables constituting social capital in virtual communities and shows how the model was updated using practical scenarios. The scenarios describe authentic cases drawn

from several virtual communities. The key issues predicted by the model as well as challenges encountered in building, updating, verifying and updating the model are discussed.

A MODEL OF SOCIAL CAPITAL

There are fundamentally many variables constituting social capital in virtual communities. For examples, social capital is frequently defined as a function of positive engagement or engagement which is shared by many definitions. More specifically, when people engage in positive engagement

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on issues of mutual interests they are more likely to get to know more about each other which is critical to the development of social capital.

The value derived from positive engagement can include sharing personal experiences with others, endorsing positive behaviour or discouraging negative one, sharing information, recommending options, and providing companionship and hospitality, all of which are not only vital elements for community living but social capital.

Productive relationships crucial to social capital occur when people have a common set of expectations, mediated by a set of shared social protocols and are willing to identify with each other as members of the same community. Another important aspect of building social capital in virtual communities is when members establish a certain level of shared understanding. The process of establishing shared understanding often draws upon a set of shared beliefs, shared goals and values, experiences and knowledge. Shared understanding is essentially enhanced by various forms of awareness. And for many years researchers in human computer interactions have established that awareness is critical to effective interactions and productive social relationships in virtual settings (Gutwin, et al., 1998).

Maintaining different forms of awareness in a virtual community therefore, lubricates and increases the value of engagement and possibly increases shared understanding. In any enhancing social capital in virtual communities, people need to be aware of people they are interacting with. They want to know where others are located (demographic awareness) and what they are up to. In more professional settings or in distributed communities of practice, people are often curious of what others do or are interested in (professional awareness), what others know (knowledge awareness) or what they are able to do (capability awareness)

Trust is another influential variable of social capital. Several research studies used trust as proxy for measuring social capital. Trust is a

critical ingredient and a lubricant to almost many forms of social interactions. Trust enables people to work together, collaborate, and smoothly exchange information and share knowledge without time wasted on negotiation and conflict (Cohan & Prusak, 2000). Trust can also be treated as an outcome of positive attitudes among individuals in a community.

Further, in virtual communities, trust can only be created and sustained when individuals are provided with an environment that can support different forms of awareness. In other words, people with shared vision and goals and shared language and terminology are more likely to develop trusting relationships with each other than those interested in different things and who do not understand each other.

These variables are the detailed specification of the elements of social capital in virtual communities. The second step in building a model of social capital is to map the variables (see graph 1) into a graphical structure based on qualitative reasoning. In particular, the knowledge of the structure of the model was grounded in current research into social capital and physical communities as well as recent work on social capital in virtual communities (Daniel, McCalla & Schwier, 2005). And the qualitative reasoning of the causal relationships among variables was based on the results of synthesis of current research on social capital. This research suggests that people's attitudes in virtual learning communities can strongly influence the level of their engagement with each other and consequently their ability to know various issues about themselves, which in turn can influence their level of trust in each other. In other words, when people have positive attitudes towards each other, they are more likely to engage on fruitful discussion that in turn raises their level of awareness in terms of what is being discussed but also increase their understanding of the strengths and weakness of others in the community.

The causal relationships among the variables in the graph is shown by the direction of the ar-

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