ABSTRACT

Virtual business community is a well-known cyberspace metaphor for the building of business trading and collaboration via online networks. A virtual business community could grow and prosper over time if its members are honest and trustworthy. They should also have a strong willingness to work together to reach pre-established goals. In order for communities to be successful and sustainable, there must be mechanisms to promote trustworthy behaviour amongst members. In this paper, we present a scientific method for supporting the sustainability of virtual business communities based on trustworthy behavior and transactions. The method proposes the use of a neutral third party agent to proactively and continuously monitor the performance of community members who carry out an interaction. This third party agent assists the administrator of the virtual business community to take the necessary steps to isolate or remove any untrustworthy or non-complying members in the community. Once the community comprises only those who are trustworthy in interaction, all members of the community will benefit and have greater social welfare.

We validate our proposed method with computer simulation using multi-agent system (MAS). MAS is an agent based modeling approach for Social Behavior Science. The value of computer programs as models for discovery, understanding and formalization has been better appreciated. These models were derived from work in a sub-area of artificial intelligence called distributed artificial intelligence (DAI). DAI could be applied to modelling social phenomena, which each agent representing one individual or organizational actor. The results of several simulations indicate that the method can help a community to identify the non-complying members so that the administrator can take the necessary steps to isolate them from the community. The ability to identify all non-compliant agents in the community will produce a community comprised only of compliant members. If community members always have an interaction and transaction with those compliant members, then they will derive maximum gain and incur minimum loss (high social welfare). The result shows that with the help of our method, as the number of interactions increases, a community will be able to identify all the non-compliant members, thereby promoting and increasing social welfare.

Keywords: Virtual business community, sustainability, trustworthy behavior