

# **SOCIAL NETWORKS: ROLE OF PERSONALIZATION AND INTERACTION IN VIRTUAL COMMUNITY FOR ENHANCING BUSINESS**

**Researcher: Nisha Maguluru**

**Thesis Advisor: Dr. Bih-Ru Lea ([leabi@mst.edu](mailto:leabi@mst.edu))**

**Thesis Committee: Dr. Wen-Bin Yu and Dr. Michael Nichols**

Information Science & Technology Department  
University Of Missouri-Rolla, Rolla, MO 65409

## **ABSTRACT**

A social network is a set of people, organizations, or other social entities connected by a set of social relationships. The emergence of social information infrastructures mediated by information and communication technologies provides a new way to form social networks as virtual communities with potentially unlimited boundaries. Although social networks and virtual communities could carry out development in major social and economic facets, there is limited research in applying social network concepts to design or construct a virtual community, in enhancing member participation and interaction through personalization, and in monitoring, measuring, and tracking the performance of the virtual community. Therefore, the main objectives of this research are to address these research gaps through:

- (1) Applying the social network concepts and design principles of virtual communities to promote and structure social interaction among the users to stimulate commerce and collaboration activities, to promptly disseminate linkage between discovery and societal benefits of knowledge and wealth creation, and consequently enhance business networks of the community members.
- (2) Recommending essential personalization and interaction features in a social network based virtual community that would attract the users to participate in the network ties to improve interactivity that in turn improves opportunities for creation of social capital.
- (3) Proposing a Balanced Scorecard framework to monitor and articulate the value the community delivers through user interaction and participation in a social network based virtual community to assess the performance of the network and suggest improvements.

A social network based virtual community named Innovation Information Infrastructure (I<sup>3</sup>) is used as a sample case and has been developed for entrepreneurs, who need to obtain access

to critical technology and business assets to address his/her social network issues. Virtual community concepts were used to build the proposed social network infrastructure which augments the capabilities of the social network with those of the virtual community. Several design principles were used in the proposed framework to encourage user participation.

Personalization involves the aptitude to anticipate what a user is likely to do, which leads to adapting the content and the presentation style to the needs or preferences of a user or a set of users. Intensifying collaboration through interaction encourages active participation of the members, which would augment performance of the business and achieve the business goals. Several essential personalization and interaction features were incorporated in I<sup>3</sup> project to reduce access time for required data.

Furthermore, the Balanced Scorecard (BSC) concepts are applied to develop a performance measurement framework for the I<sup>3</sup> project to translate the organization's vision and long-term strategy into short-term actions or operations and measures, and links them with strategic goals that are common throughout a social network based virtual community.

This study documents the design and deployment of a social network based virtual community, I<sup>3</sup>, with respect to the virtual community principles applied, personalization and interaction features included, and the BSC framework formulated to measure its network performance. Whereas personalization increases user participation resulting in more interaction among the members, interaction helps create more resources, such as relationships and practices, which in turn create social capital and enhance opportunities for more social interactions and dissemination of communication. The BSC framework developed assesses the performance of the network and suggests improvements in the operational processes, and monitors and articulates the value delivered through user interaction and participation.