CHAPTER 1

Introduction

The era of 1990’s has witnessed evolution of commerce activities from close environment to online that is open and easily accessible. Internet served as a boon for organizations to conduct trade and marketing activities at global scale. But the business activities in this reactive web era were limited to online search for product or services with unidirectional transactional steps. The need for interactive two-way communication over web lead to evolution of Web 2.0. It is also known as people centric web or social web that facilitates the web users to create and most importantly to distribute their own content at an unprecedented scale. Online discussions, expressing opinions, chats, blogs etc. have become the key mode of communication among the people. This digital society generates tons of data everyday over the WWW. Analytical studies [Lerman, 2007; Kautz et.al. 1997] are performed over these databases to discover useful knowledge in terms of users’ buying behavior, topic popularity, product popularity, product sales trends etc. Thus companies are re-engineering their marketing policies to tap into this powerful resource.

Social networking sites (SNS) are web-based services that allow individuals to construct a public profile within a bounded system, articulate a list of other users that share, and connect together [Boyd and Ellison, 2007]. Burke [2006] defined social network sites as a free relationship of people who interact through websites regardless of geographical distance. Companies are now tapping the potentials of SNS for marketing opportunities to connect, communicate, and market online [Boyd and Ellison, 2007; Mulero and Adeyeye, 2011]. The online social networks based marketing proves advantageous in terms of reducing the costs of product and service delivery, increasing production volume, improving product and service qualities, and extending geographical boundaries in bringing consumers and business owners together as compared to
traditional marketing means [Legris et al., 2003; Thompson 2005]. It also facilitates the companies to manage customer relationships as well as attract valuable employees and investors into a business [Pelemo, 2008]. This outstanding potential compared with traditional way of marketing has been exploited and explored by consumers and organizations to the fullest, in enhancing business transactions [Fors, 2008]. This proliferating significance of social networks motivates the work of this thesis.

1.2 Outline of Thesis

Chapter 2 explores the role of social media as an e-marketing tool. The chapter discusses the significance of social media and techniques to mine this vast pool of information. It deliberates on influence modeling, the influence exerted by peers in the social web, and its potential for organizations to disseminate product awareness.

Chapter 3 presents a distinct evolutionary strategy to capture a vast segment of e-market by promoting products to limited yet influential consumers. The approach is based on the concept of viral marketing wherein messages spread through word of mouth. The social connectivity of web users is mined for spreading product awareness. The strategy comprises of three phases:- Market analysis phase, Market Segmentation and the final Targeted Product Promotion phase.

Chapter 4 elaborates on market analysis phase, the first phase of the presented framework. The product features are extracted by using opinions and experiences shared through online product expressed by varied web users. The most relevant features are determined by using firefly algorithm based feature selection approach. The user interest towards each of the relevant features is subsequently estimated for dynamic user profile generation.

Chapter 5 presents an evolutionary approach for market segmentation, the second phase of presented strategy. A distinct clustering technique based on firefly algorithm is employed to divide the market into homogenous segments. The user interest estimated in the previous phase forms the input for this phase. The efficacy of firefly algorithm v/s
differential evolution (DE) and particle swarm optimization (PSO) algorithm for clustering is established through rigorous experiments.

Chapter 6 presents the third phase; identification of users for targeted product promotion. It focuses on spreading product awareness to significant users who are positively inclined towards the product and have the potential to influence other web users. A hybrid metric that integrates the social similarity and interest similarity of users is formulated to compute influential probabilities. The efficacy of presented metric is evaluated for predicting the user preferences for a product. The users capable of maximizing influence spread are identified by computing the weight using this hybrid metric. Experiments are conducted to evaluate the suitability of various nature inspired algorithms for optimal identification of targeted users. The efficacy of presented approach is evaluated for spread of market campaigning with a given budget.

Chapter 7 concludes with the findings of the work and provides the suggestion for future enhancements.