International Journal of Information Management 31 (2011) 317–326

Contents lists available at ScienceDirect

International Journal of Information Management

journal homepage: www.elsevier.com/locate/ijinfomgt

Innovations and communication through innovative users: An exploratory mechanism of social networking website

Chia-Liang Hung[a,*], Jerome Chih-Lung Chou[b], Tse-Ping Dong[c]

[a] Department of Information Management, National Chi Nan University, 470, University Rd., Puli, Nantou County 545, Taiwan, ROC
[b] Department of Information Management, Hwa-Hsia Institute of Technology, 111, Gong Jhuan Rd., Chung Ho, Taipei 235, Taiwan, ROC
[c] Graduate Institute of Global Business and Strategy, National Taiwan Normal University, 31, Shida Rd., Da'an Dist., Taipei City 106, Taiwan, ROC

ARTICLE INFO

Article history:
Available online 11 January 2011

Keywords:
Innovation
Communication
Lead user
Toolkit
Web 2.0

ABSTRACT

The study focuses on which users to target and why and how to inspire their participation by applying combination of von Hippel's lead user and user innovation toolkits with Rogers' innovation diffusion theories. After an investigation of a social networking website, this study finds that individuals with large number of hits are highly active users of new functions. Moreover, they are likely to use toolkits to customize their personal uses and respond to others' problems. Therefore, they garner appreciation from others in return, achieve higher ranks in the top hit parade, and obtain better-expected benefits from the website's incentive compensation. This study also evaluates the toolkits' efficacy in the Web 2.0 context and finds that they are not equivalents. This research offers insights useful for web service providers to target innovative users and create an environment using web toolkits to induce user-generated innovation and achieve better effect of innovation communication.

1. Introduction

1.1. Research background

After the dot-com bubble burst in 2000, Internet enterprises set off in search of sustainable business models. It is clear that outstanding technology is not sufficient for the success of Internet business (Turban, King, & Lang, 2009). Surviving and new Internet enterprises have developed the second-generation Internet business models, generally known as Web 2.0. Therefore, Amazon sells books and other items over the Internet by not only smoothing out the logistics between bricks and clicks but also aggregating more reader-posted book reviews. eBay operates its own way of C2C online auctions by accumulating sellers' and buyers' credit records as well as continually improving transaction security. Nevertheless, firms with fast growing Internet businesses are indeed incorporating a different business model. Some of them emphasize on encouraging user participation and cooperation within the user community as well as between users and enterprises. The widespread deployment of the Internet has greatly enhanced the ability of firms to engage with customers for aggressively utilizing the creativity of diverse users from all over the world (Dahan & Hauser, 2002). In this case, the great volume of user-generated content dominates information resources. Successful Internet providers have become the maintainers of community platforms. For example, YouTube maintains a video sharing platform, while Flickr focuses on image sharing and Wikipedia concentrates on encouraging mass collaboration to create an up-to-date encyclopedia. By creating virtual customer environments, firms can tap into customer knowledge through an ongoing dialogue (Nambisan, 2002; Sawhney & Prandelli, 2000). In the world of Internet businesses, innovative users have created some friendly gadgets that have been widely circulated among users themselves. For example, Internet widgets are available for displaying time, weather, stock prices, dictionaries, and news on the PC desktop without opening the browser. Thus, Yahoo, Apple, and Google now all open APIs (application interfaces) or additional innovative toolkits to inspire innovations from users all over the world (Programmableweb, 2009).

McKinsey found that early adopters of Web 2.0-related technologies in corporate websites obtained better financial returns (Bughin & Manyika, 2007). They usually (more than 70%) applied Web 2.0 tools to communicate with customers as well as to manage internal collaboration. In addition, more than 50% of the companies in the fields of retail, high-tech, telecommunication, financial services, and pharmaceuticals are planning to invest in Web 2.0-related technologies in the next three years (Bughin & Manyika, 2007). They intend to install blogs, RSS (Really Simple Syndication), podcasting, and other interactive web technologies in order

* Corresponding author. Tel.: +886 49 2910960x4640.
E-mail addresses: clhung@ncnu.edu.tw, clhung57@gmail.com (C.-L. Hung), jerome.chou@gmail.com (J.C.-L. Chou), tpdong@ntnu.edu.tw (T.-P. Dong).

0268-4012/$ – see front matter © 2010 Elsevier Ltd. All rights reserved.
doi:10.1016/j.ijinfomgt.2010.12.003

to communicate with customers and partners, and to augment social networking for promoting collective intelligence across the boundaries of firms as well as between departments. Thus, firms increasingly understand the transformative role of customers in future competition. The Italian motorcycle manufacturer, Ducati, has initiated a web-based collaborative innovation platform with more than 160,000 motor fans since early 2000. Thereby, it experienced spontaneous creativities from Ducati motor owners in the front-end stage as well as the back-end process of new product development (Sawhney, Verona, & Prandelli, 2005). In addition, Wang and Head (2007) found that the higher degree of web interactions among customers, user community, and online retailers would increase the web surfing satisfaction, and further maintain the customer relationship.

1.2. Research motivation

According to von Hippel's lead user theory, lead users are at the leading edge of an important market trend and so are currently experiencing needs that many users in that market will experience later (von Hippel, 1986). In addition, they anticipate relatively high benefits by obtaining solutions to their needs, and therefore may innovate (von Hippel, 1986). Certainly, this kind of user is an important source of innovation for the manufacturer. Identifying lead users, firms under the Web 2.0 context could also induce the online creative user's participation in effective innovations and encourage innovation communication.

While optimistic claims abound on how best practice firms are leveraging the Internet to connect with customers, there is little formal research on collaborative innovation and marketing communication. Therefore, this study focuses on the mechanism using Web 2.0 technologies to inspire and communicate innovations with customers, partners, and augmented social networks. This paper presents a detailed operational mechanism by a Taiwan-based community website to show how a firm is applying von Hippel's lead user theory to improve its new service development and marketing campaign in the Web 2.0 context. Additionally, this study determines the efficacy of mechanism mediated by innovation toolkits embedded in websites, which von Hippel (2005c) had emphasized as a prominent factor in encouraging user participation and inspiring user innovation.

2. Literature review

2.1. What is Web 2.0?

The concept of "Web 2.0" began with a conference between O'Reilly Media and MediaLive International. Dale Dougherty, a web pioneer and vice president of O'Reilly, noted that "Web 2.0"—the second generation of web companies—had emerged (O'Reilly, 2005). Internet expert O'Reilly (2005) demonstrated the following seven principles of Web 2.0: web as platform, harnessing collective intelligence, data as the next "Intel inside," the end of software release cycle, lightweight programming models, software above the level of a single device, and rich user experiences. Turban et al. (2009) argue that Web 2.0 is the popular term for advanced Internet technologies and applications including blogs, wikis (documents written collaboratively in a simple Web markup language), RSS, and social bookmarking. Users are empowered with greater freedom and autonomy in online activities ranging from tagging, publishing, to self-programming (Anfinnsen, Ghinea, & de Cesare, 2010; Millard & Ross, 2006). Web 2.0 offers greater collaboration among users, content providers, and enterprises, based on a democratic, personal, and do-it-yourself distributed medium than Web 1.0, which traditionally centered on vendors' or publishers' centralized management (Turban et al., 2009). For example, Wikis have made Web 2.0 economy popular among interested communities spontaneously collaborating for information construction (Tapscott & Williams, 2006), del.icio.us.com is an exchange of internet bookmarks, and 43Things.com offers space for users to share their perceptions and expectations and even to mutually encourage achievement. In the context of Web 2.0, users have become the key content creators, evaluators, and disseminators. Thus, the management of creativity contributed from user participation is critical to Web 2.0 operations. The word creativity is similar to words of originality, expressiveness, and imagination (Selker, 2005). The creativity over Internet means a combination of flexibility, originality and sensitivity to novel and useful ideas, which enables the thinker to break away from the usual sequence of thought, into different and productive sequences, the result of which gives satisfaction to himself or herself and possibly others' (Brennan & Dooley, 2005). Creativity produces things defined by the effect required, distinctive, and differentiated in an abstract or imperfect specification invoking brainstorming spontaneously and evolutionarily among users rather than an invariable prescription (Freeman, 2009). Zeng, Salvendy, and Zhang (2009) emphasized that web creativity includes new ideas enhancing users' online affect, importance, interactivity, novelty, changeability, personalization, and aesthetics. Consequently, more creative the web is, more appealing to users will be (Zeng et al., 2009). Yusuf (2009) also claimed that the capital arising from networks, that is, the wikicapital, is the bedrock of a creative society. It is critical for modern firms to encourage and develop the wikicapital to favor achievements and initiative, and therefore translate web creativity into innovation (Yusuf, 2009).

To shift more weight of management in innovation, production, and marketing to the user, there are four suggestions to Web 2.0 business (Hwang, Su, & Hung, 2006): (1) Weaving the community: Operators have to increase the size of web communities for social networking. The larger the community, the greater will be the network externality. (2) Inducing user participation: Operators have to design a scalable platform with deliberate incentives to accumulate user content. (3) Customizing the experiences: Operators must develop a user-friendly environment to create personal experiences using convenient plug-in-and-play modules, tags, annotations, and similar functions. (4) Integrating web services: Operators have to cross over different platforms to re-mix multiple sources of content for enhancing the value of the information.

In summary, we argue that Web 2.0 businesses combine a centralized diffusion orientation that Web 1.0 excels and a decentralized creative innovation at the same time. The key source of value for Web 2.0 is the mutual and evolving contribution of users in an open and democratic platform where users can develop their own social networks, share preferences, re-mix, redefine and refine collective intelligence, and, as a result, enrich the entire surfing experience. Therefore, Web 2.0 encourages underlying innovations to emerge, communicate, diffuse, and then to benefit themselves as well as entrepreneurial suppliers.

2.2. Finding innovative users

Regarding to leveraging user innovation, the *participatory design* is one approach of finding innovative ideas from users or user groups, which involves users as co-designers at a very early stage in the development of a system (e.g. Ehn & Kyng, 1991). Another popular approach has been to adopt *ethnographically inspired* methods such as an empathic participant observation, where researchers observe the current work practices of a group of users, and further consider this information when creating a new system (e.g. Leonard-Barton & Rayport, 1997). However, these approaches are