

# User Innovation in Internet Businesses

by

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M.S. Electronic Commerce (2003)

Carnegie Mellon University

Submitted to the System Design and Management Program  
in Partial Fulfillment of the Requirements for the Degree of

**Master of Science in Engineering and Management**

at the

Massachusetts Institute of Technology

[ June 2007 ]  
May 2007

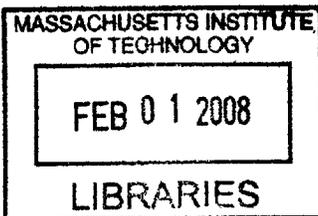
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BARKER

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## **Abstract**

This paper examines the concept of user innovation, how this concept has been applied to internet businesses, and behaviors and motivation of the users who have participated in user innovative activities for internet businesses. This thesis presents definitions and characteristics of both user innovation activities in web businesses. As a major research method, a survey is conducted to identify the trend and phenomenon of current user innovation activities on the web. Major discoveries from the web user innovation survey are two. First, most lead users who participate in user innovation activity in the web businesses do not significantly differ by gender, age, or profession. Second, most lead users participate in user innovation activities for social-networking purpose as well as the goal of contributing to society. User innovations are seldom oriented or initiated from

financial benefit purpose as similar as many traditional user innovations are formed for non financial benefit reasons. Internet businesses can leverage these findings to bring a user innovation to their business more effectively.

Thesis Supervisor: Thomas Allen  
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## **Acknowledgements**

I would like to thank my thesis advisor Professor Tomas Allen, for providing me with the valuable research resources and data, various research methods, and his valuable guidance. I would like to acknowledge the valuable resources provided by Professor Eric von Hippel.

I would like to thank Lakhani, Frenke, and Nelson for their contribution to identify user innovation activities in software development over the web. I would like to thank Professor Pat Hale for his and warm supports to my work. I would like to thank my parents, Seong-Kil Park and Mi-Ja Lee, my parents-in-law, my sisters, and my brother-in-law and sister-in-law for their support and love. I express my deep appreciation and thanks to my grand mother who always encouraged me to be happy and had passed away during my work in year 2006.

A special note of thanks to Eunjoo Chung and Dawnjoo Park for their support, patience, and love.

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# Chapter 1 Introduction

## Motivation

The amount of user innovation<sup>1</sup> on the web nowadays is staggering and rapidly increasing. These activities are extremely important because they are often critical to the success of internet businesses. User innovation activities are directly associated with generating web content, which is the main value of many internet businesses. Such innovations aid internet businesses by attracting more users. This eventually provides the businesses with an opportunity to make some advertisement revenue. By correctly understanding user innovation on the Web and applying this to their business or marketing strategy, internet business can achieve their goal of encouraging user innovation more efficiently and cost-effectively.

An interesting observation is that lead users<sup>2</sup> who actively participate in the user innovation activities on the web and eventually contribute to the success of internet businesses are seldom paid by those businesses who have achieved significant financial success through their activities. To understand this phenomenon, it is required to conduct research on the lead users who have contributed to the web businesses' success without receiving any financial compensation from their activities.

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<sup>1</sup> An activity of users to enhance products or services they have used for themselves

<sup>2</sup> A group of users who lead a user innovation

## **Research Objectives and Method**

This thesis examines the concept of user innovation, how this concept can be applied to internet businesses, and most of all the behaviors and motivation of the lead users who have participated in user innovation activities on the web. Key findings from this thesis will eventually help internet businesses to achieve user innovation much more effectively. We hope internet business will bring user innovation activities to their business and achieve business goals by properly leveraging these findings.

The main method used for the examination is that of a survey. The survey collected data on the following areas of interest.

1. Who are the lead users in the web businesses?
2. What are the user innovation activities in the web businesses?
3. Why do the lead users participate in the user innovation activities of the web businesses?

Another research method to be conducted is analysis on existing journals and books on the areas of interest. The book, *Democratizing Innovation*, written by the user innovation expert Eric von Hippel, will be thoroughly examined and important issues associated with web user innovations will also be captured. This research activity will help to define the gap between traditional user innovation and web-related user innovation.

## Chapter 2 User Innovation

### What is User Innovation

According to Eric von Hippel, who is the originator of the user innovation concept, user innovation means the activity of users of products and services – both firms and individual consumers – to develop innovations for themselves solving their own needs at private expense.

In traditional manufacturer-centered innovation manufacturers identify user needs, develop products at private expense, and profit by protecting and selling what they have developed. In user-centered innovation, in contrast, lead users innovate to solve their own needs at their own expense and then freely reveal their innovations. Similarly, the “functional” definition of innovation depends upon the *functional* relationship between innovator and innovation: An innovation is a user innovation when the developer expects to benefit by using it; an innovation is a manufacturer innovation when the developer expects to benefit by selling it. Figure 1.1 shows how a manufacturer can build a product-development process that systematically searches for and evaluates lead user-generated innovations. According to von Hippel, it turns out that the way to build the product development process searching for and evaluating lead user-generated innovation should differ depending on whether the lead users sought are at the leading edge of “advanced analog” fields or at the leading edge of target markets. Advanced analog means a market or person with a need analogous to that in the target market but stronger. For instance, airplane braking is an advanced analog for auto braking because the problems are similar (analogous) but more severe in aerospace. Eric von Hippel also

mentioned in his book, *Democratizing Innovation* (2005), searching for the former is more difficult, but experience shows that the user-developed innovations that are most radical (and profitable) relative to conventional thinking often come from lead users in “advanced analog” fields.

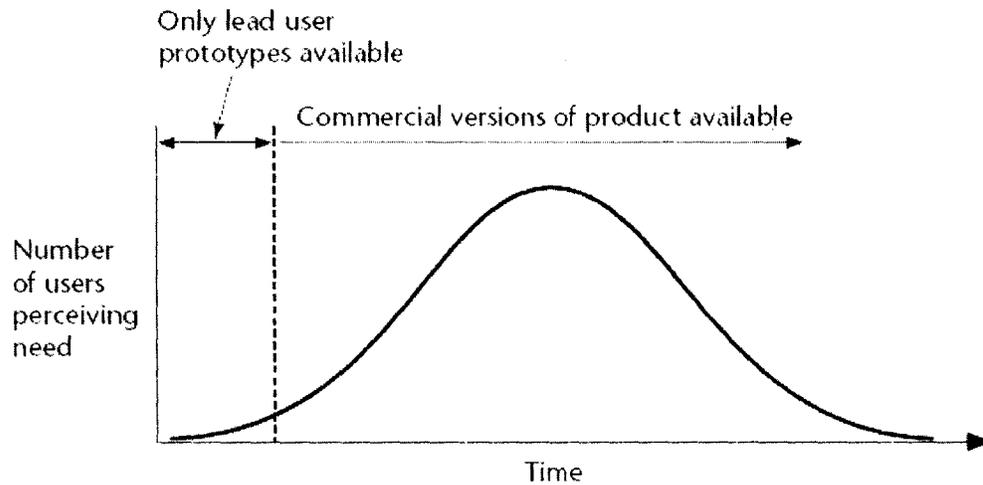


Figure 1.1 Innovations by lead users precede equivalent commercial products.

Source: von Hippel, *Democratizing Innovation*, 2005

Historically, user innovation has been common across industry as seen in Figure 1.2.

Industry	User Innovation
Health Products	Gatorade
Personal Care	Protein-base Shampoo
	Feminine Hygiene
Sports Equipment	Mountain Bike
	Mountain Climbing-Piton
Apparel	Sports Bra
Food	Chocolate Milk
	Graham Cracker Crust
Office	White-out Liquid
Computer Application (Software)	Electronic Mail
	Desk Top Publishing

## Figure 1.2 Examples of Important Consumer Product Innovations

Source: Von Hippel, Course 15.840 Innovation in the Marketplace at MIT, 2006

Eric von Hippel mentioned in his book that innovation is being democratized, which means that users of products and services—both firms and individual consumers—are increasingly able to innovate for themselves. He points out three major factors for the democratization: improvements in design tools via computing (e.g. computer aided design tool, simulations tool, etc.); improvements in communication (e.g. the Internet); all being provided at lower costs.

As a result of these factors, the current trend toward democratization of innovation is not limited to traditional information products such as software and physical products, but extended to web-based information products or services such as a contents-sharing web portal. As an instance of the latter, consider a website that allows users to share knowledge and expertise with each other. The website users get benefits from asking questions and getting answers to the questions. The users innovate the web-based service for themselves to solve their needs at their own expense, which are time and effort to post questions and answers to the website. Obviously the users get no compensation from the website owner, even though they are enhancing the service of the website. This thesis will look into detail of this kind of user innovation in terms of activity, motivation, and the users themselves.

## How Users Innovate

The user-centered innovation process is different from the traditional model where products and services are developed by manufacturers and are protected by copyrights or patents. In the traditional model, developed products and services are protected from being imitated by others. In this model, users' only role is to express their needs, which manufacturers can capture and meet by producing new products or services.

The manufacturer-centric model fits certain fields and conditions, but a growing body of studies shows that users are the first to develop many new industrial and consumer products and services. Moreover, users' contribution to the development of new products and services is steadily growing larger because of the dramatic advances in computer and communications capabilities and technologies. Figure 1.3 shows how fast the Lego user group grew and significantly contributed to the manufacturer of Lego products.

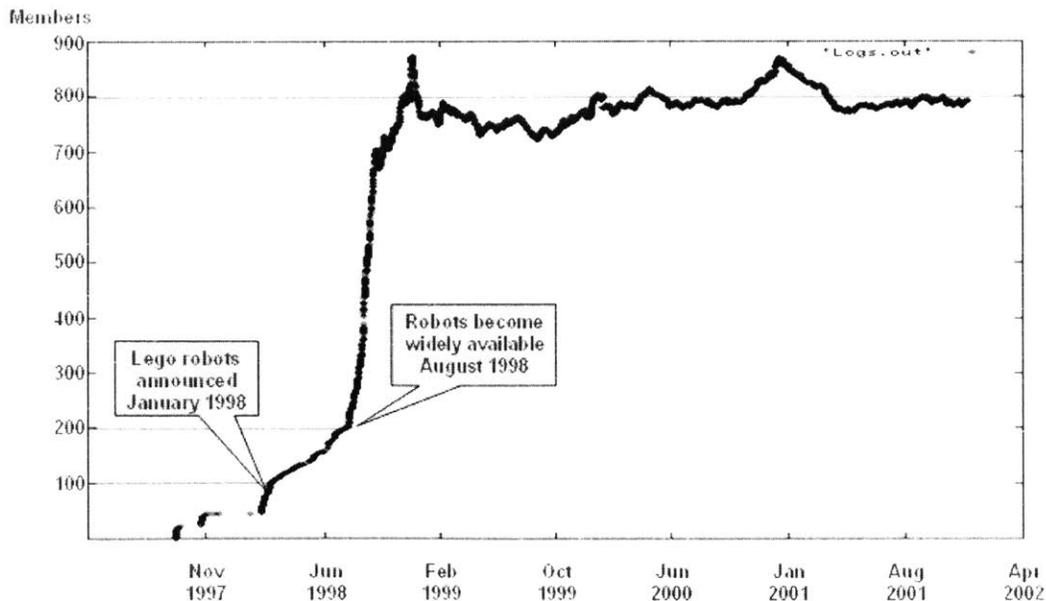


Figure 1.3 Lego Users Group NETwork. An independent discussion site for Lego enthusiasts

Source: Russel Nelson, administrator of Lego-robotics (russnelson.com)

In the book, *Democratizing Innovation (2005)*, von Hippel described in detail how the emerging process of user-centric democratized innovation works. According to the author, the ongoing shift of innovation to users has some very attractive qualities, and it is becoming progressively easier for many users to get precisely what they want by designing it for themselves. He also insists that innovation by users increases social welfare while the ongoing shift of product-development activities from manufacturers to users is painful and difficult for many manufacturers.

In addition, user-centered innovation provides huge advantages over the manufacturer-centric innovation that has been the conventional mode of operation for many years. In user-centered innovation, users can develop exactly what they want, rather than depending on manufacturers to act as their imperfect agents. Furthermore, individual users do not necessarily develop everything they need on their own. In other words, they can benefit from innovations developed and freely shared by others.

In many areas of user innovation, there exists a set of users group called “lead users”. They are people who are ahead of the majority of users in their population with respect to an important market trend, and they expect to obtain relatively high benefits from a

solution to their needs. Empirical studies show that the correlations between innovation by users and lead user status are highly significant and the effects are extremely large. Since lead users are leading the market with respect to vital market trends, many of the products they develop for themselves may appeal to other users as well and provide the foundation for products manufacturers would want to commercialize. Research supports these propositions. Studies on innovating users discovers them to have two characteristics of “lead users”: (1) they are far ahead of the majority of users in their populations in terms of catching up with market trends and (2) they expect to obtain relatively high benefits from a solution to meet their needs. The two defining characteristics of lead users and the likelihood that they will develop new or modified products have been found to be highly correlated (Morrison et al. 2004). In addition, it has been found that the higher the intensity of lead user characteristics shown by an innovator, the greater the commercial attractiveness of the innovation that the lead user develops (Franke and von Hippel, 2003).

In Figure 1.4, the increased concentration of innovations toward the right indicates that the likelihood of innovation is higher for users with higher lead user index values. Figure 1.4 also shows that innovations developed by lead users tend to be more commercially attractive. Here, innovation attractiveness is the sum of the novelty of the innovation and the expected future generality of market demand.

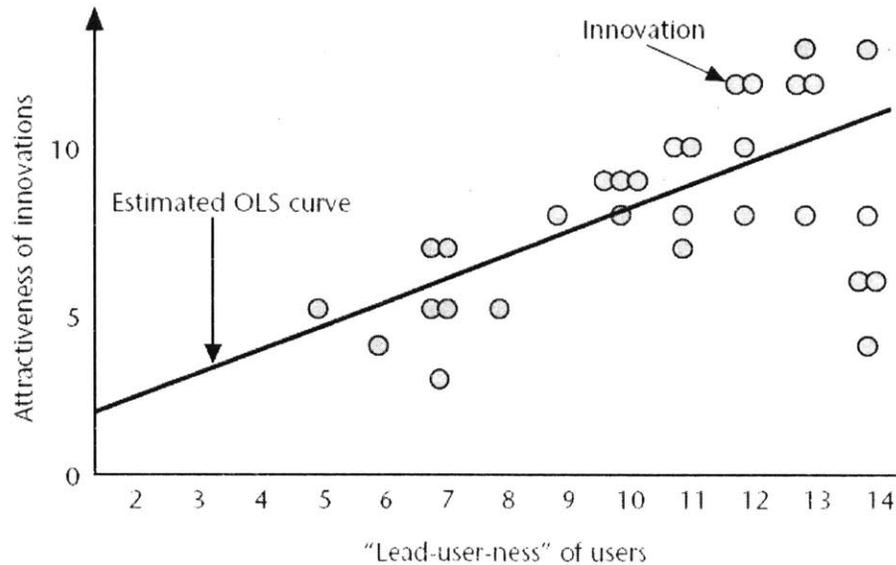


Figure 1.4 User-innovators with stronger “lead user” characteristics develop innovations having higher appeal in the general marketplace. Estimated OLS function:  $Y = 2.06 + 0.57x$ , where  $Y$  represents attractiveness of innovation and  $x$  represents lead-user-ness of respondents. Adjusted  $R^2 = 0.281$ ;  $p = 0.002$ ;  $n = 30$ .

Source: Franke and von Hippel, 2003

Another study result referred to by von Hippel shows that there is a significant correlation between the size of innovating user group and both the user position on trend and the user’s expected benefit. In Figure 1.5, higher innovation benefit expectations drive up innovation likelihood. It turned out that “ahead of the trend,” increases innovation attractiveness and when both components – user position on trend and user’s expected benefit - are high, a high fraction of users develop attractive innovations.

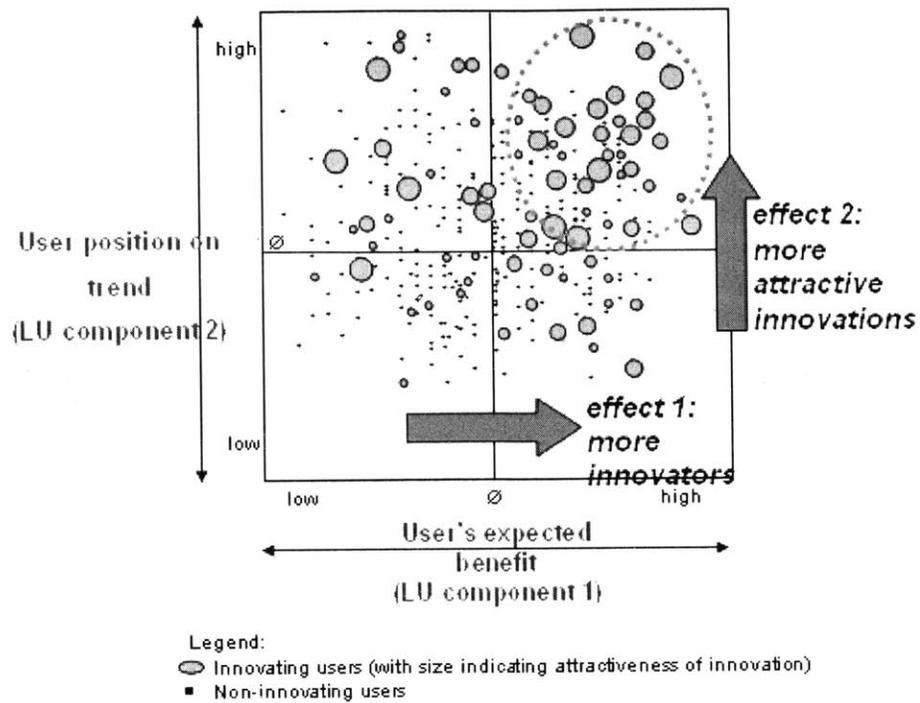


Figure 1.5 Effect of lead user component

Source: Von Hippel, Course 15.840 Innovation in the Marketplace at MIT, 2006

## Why Users Innovate

There could be many different reasons for users to innovate for themselves, but beyond the motivations to innovate there exists an inherent factor among humans. The factor being supported by two studies on this market segmentation is that users have their own custom need. Usually market-segmentation studies are carried out by means of cluster analysis which identifies how many different types of segment exist in a specific market. After cluster analysis places a measure of within-segment need, variation is determined. This is the proportion of total variation which is within each segment, and it shows how much users' needs deviate from the averages in their respective segments. For instance, if within-segment variation is high, users within the segment will have fairly heterogeneous needs and are likely to be dissatisfied with a standard product designed to serve all customers in their segment. Studies done by Franke and Reisinger (2003) and Franke and von Hippel (2003) prove that in general within-segment variation is high.

Indirect factors that motivate user innovation could be (1) needs for customization, (2) supportive tools, and (3) free revealing phenomena<sup>3</sup>. First, customers often want "exactly right product", but manufacturers cannot satisfy this customers' demand for various reasons including among others cost efficiency, manufacturing capability, profitability, etc.. Second, robust tools such as the Internet have been instrumental in supporting user innovation activities and in making them affordable for individual innovators. Lastly, the free revealing phenomenon has become very common. Due to the benefits obtained from

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<sup>3</sup> Phenomena that groups of users reveal their intellectual property to collectively enhance a certain product

collective invention, even competitors sometimes work together on a product development under a free revealing environment.

Going back to the direct factors that motivate user innovation, apparent motivations of users to innovate vary depending on users themselves. One good example that supports this is a survey conducted by Lakhani (2005) on hackers' motivation to participate in the open source development activity, which is a well-known user innovation activity. As seen in Figure 1.6, users innovate for many different reasons.

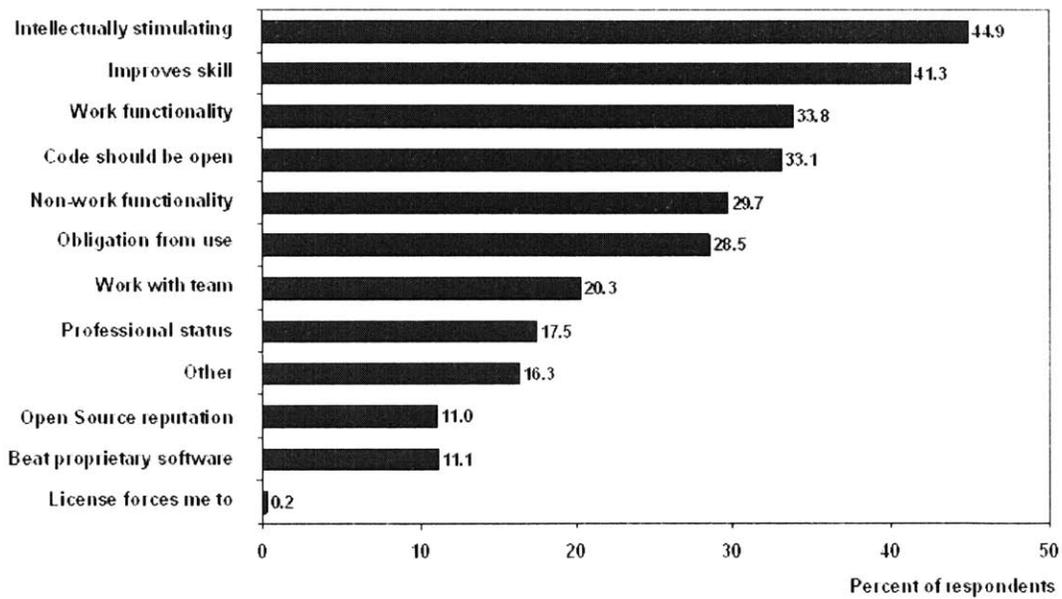


Figure 1.6 Overall Hacker Motivations

Source: Lakhani, 2006. (Question asked for top three motivators of F/OSS<sup>4</sup> participation and the sample size is 684.)

In Figure 1.7 we see that the motivation to participate in user innovation activity can vary depending on the presence of compensation. According to Lakhani's survey on the

<sup>4</sup> An open-source software development project

motivations for contributing to the open source community, work functionality is the largest motivator for the paid contributors recording 62% of answers from the respondents, while intellectual simulation and improving skills are the most common motivators among the volunteer contributors, recording 46.6% and 46.2% of responses, respectively.

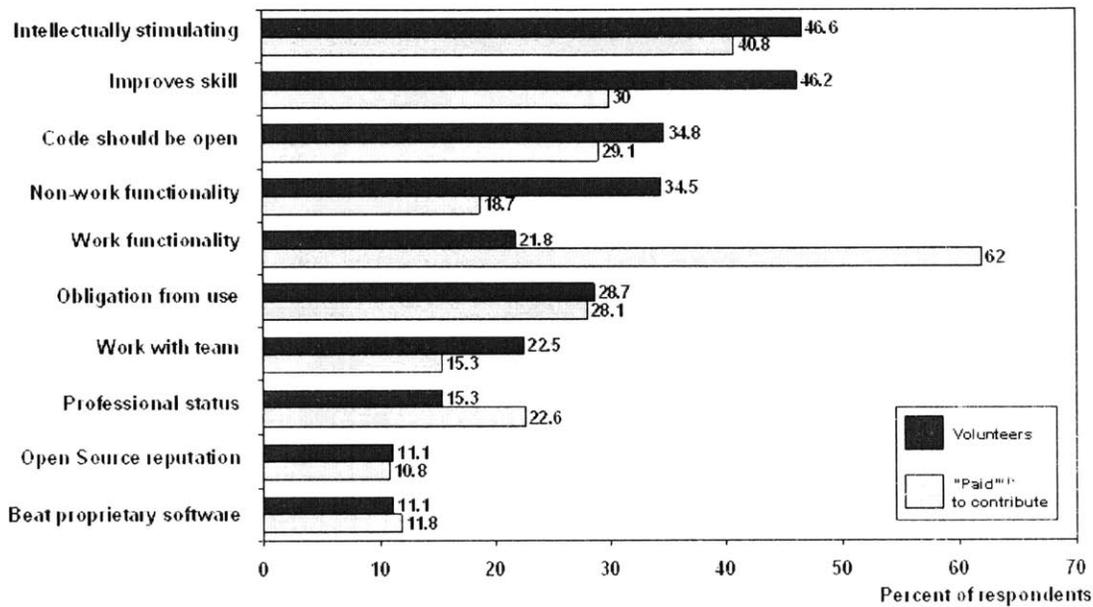


Figure 1.7 Motivations Differ between Paid and Volunteer Contributors

Source: Lakhani, 2006. (The respondents include those working on F/OSS full time, part time, and those sanctioned by supervisors. Question asked for top three motivators of F/OSS participation. Sample size is 684, among them 479 are volunteer and 205 are paid.)

## **Chapter 3 User Innovation in Internet Businesses**

### **Web Businesses & User Innovation**

These days, so called Web2.0 services, have been extremely popular among web users. Many of Web2.0 services by web business entities provide web users with various kinds of online services including social networking, contents provision, information search, contents management, and so forth. And these business enterprises gain huge financial profits through directly providing a web service, or selling their business to giant online enterprises such as Yahoo, Google, and Microsoft.

An interesting fact is that the success of the Web 2.0 businesses is not fully attributable to the business entities themselves. In most cases, users of those web services contribute to that business success by helping the web service providers to establish a large user base from which their business value is generated. A more interesting fact is that most of the users never get compensated by the Web 2.0 enterprises at all. This is what I define as user innovation activities in Internet or Web businesses.

The impact of user innovation activities on the web nowadays is staggering and rapidly increasing. These activities need to be researched in very careful manner because they are the most critical factor in Internet businesses' success. For instance, MySpace.com that allows its users to post photos and texts and share the contents with other users has been sold to a giant media company for approximately \$580 million. Similarly, YouTube.com, which lets users to post short video clips and share those with other users, was acquired by Google for reportedly \$1.65 billion. In both cases, the users of the websites didn't get financially compensated by the web business owner and they

innovated for themselves to improve use of the websites. These two cases clearly show that how user innovation can bring a huge business success for Internet businesses. To understand the huge success of the web businesses, we need to better understand the user innovators, so called lead users, who substantially contributed to such business success.

## Surveying Lead Users on the Web

To better understand the user innovators, lead users, who heavily contribute to the success of Internet businesses, it is required to look into the profile of the lead users on the Web, the ways they innovate for themselves, and the reasons why they innovate. For researching into the lead users' profile, activity, and motivation, we conducted a survey especially targeting Internet users. The survey was designed to study lead user's profile, user innovation activity, and motivation for user innovation. The survey group consists of people who have at least once participated in a user innovation activity on the Web.

### *Lead User Profile*

For this survey, respondents were randomly chosen over Internet. Survey questions were distributed to users of web services. And we define respondents who answered "yes" to our question asking if he or she has ever participated in a user innovation by publicly posting contents to the Web as "lead users". Survey results obtained from the lead users who have participated in any type of user innovation activity on the Web show several unique facts. Figure 2.1 shows that the number of female lead users is higher than that of male lead users recording 61% of the 54 respondents, but there is no significant evidence indicating that the probability of participating in user innovation activity on the Web differs by gender.

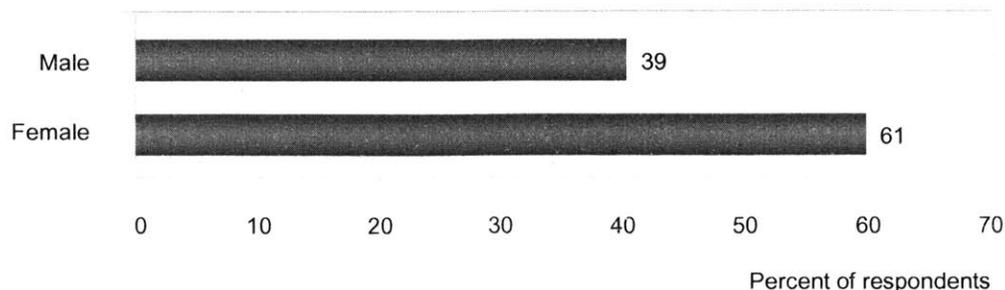


Figure 2.1 Overall genders of lead users on the Web

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

An analysis on age distributions among the Web lead users shows in Figure 2.2 that 30-45 age group is in dominant position recording 43% of the lead users.

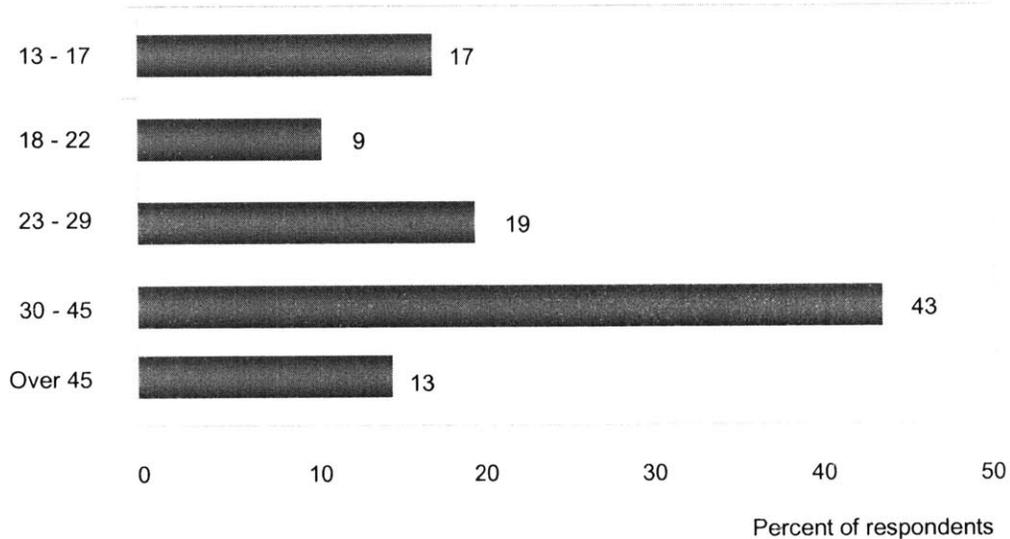


Figure 2.2 Overall ages of lead users on the Web

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

Students comprise the dominant profession among the lead users recording 33% of the total respondents (Figure 2.3). This group is very closely followed by business/administrative profession group which occupies 28% of the total respondents. Technicians, academia, and housekeepers are rare in the lead user group recording 7%, 6%, and 7%, respectively.

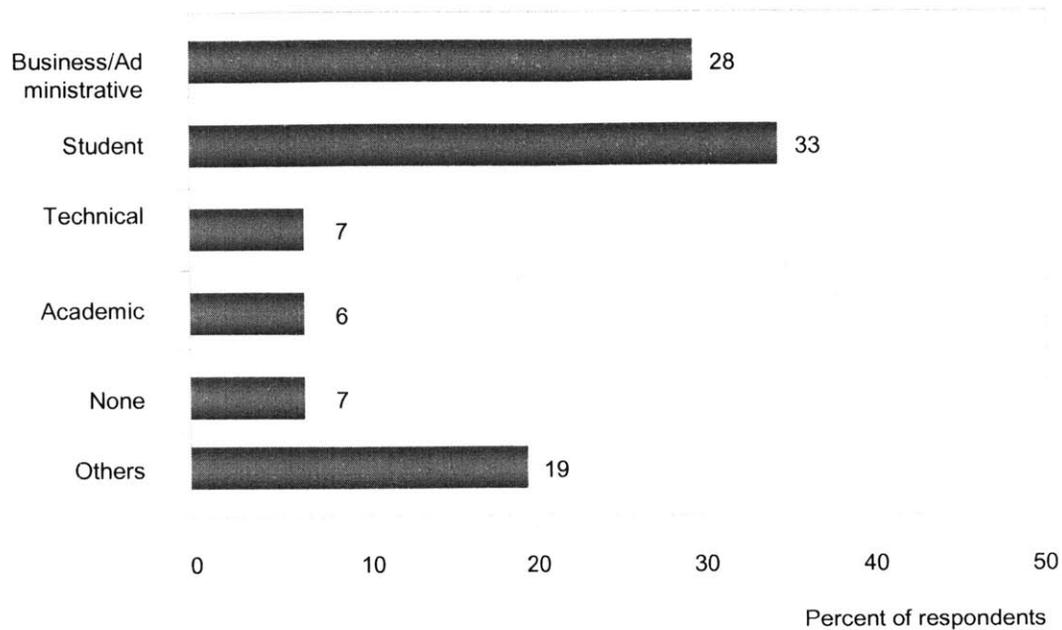


Figure 2.3 Overall professions of lead users on the Web

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

### *User Innovation Activity*

Along with the survey on the lead users' profile, another survey on the web user innovation activity patterns was conducted. According to an analysis of the survey results, most user innovation activities on the Web are pretty focused on "knowledge sharing". Sixty-nine percent of the respondents answered that they often have posted text-based knowledge to one or more web community portals, and very small number (11%) of respondents said they usually post multi-media contents such as music or movies to websites. Interestingly, picture and photo sharing, which is somewhat

common among internet users, was not an attractive service to the lead users recording only 15% of the total respondents. (Figure 2.4)

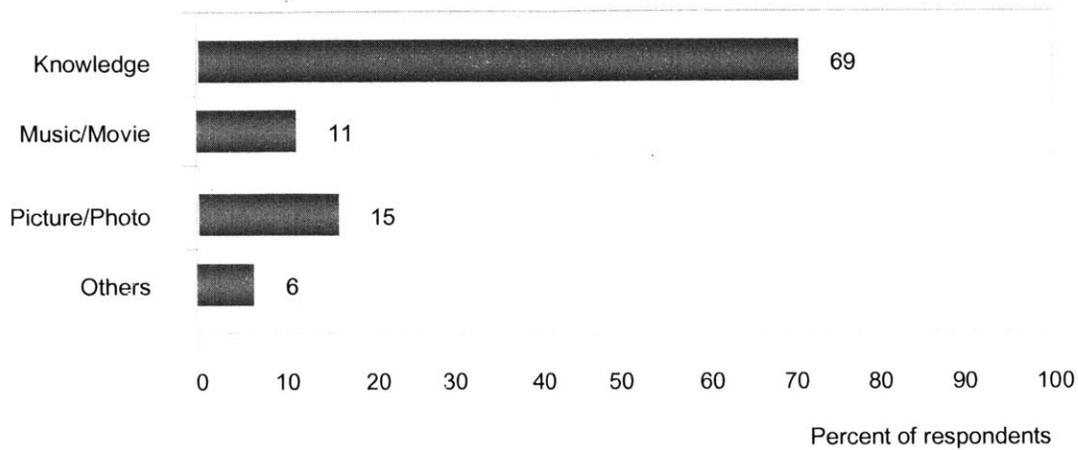


Figure 2.4 Overall user innovation activity types

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

An analysis on the frequency of user innovation activity discovers that most lead users participate in user innovation activities extremely often. Thirty-nine percent of the respondents answered that they join user innovation activities several times a day. The second largest group (24%) is lead users who participate in one or more user innovation activities once a month. And lead users who answered once a day, several times a week, and once a week are 11%, 13%, and 13% of the total respondents, respectively. (Figure 2.5)

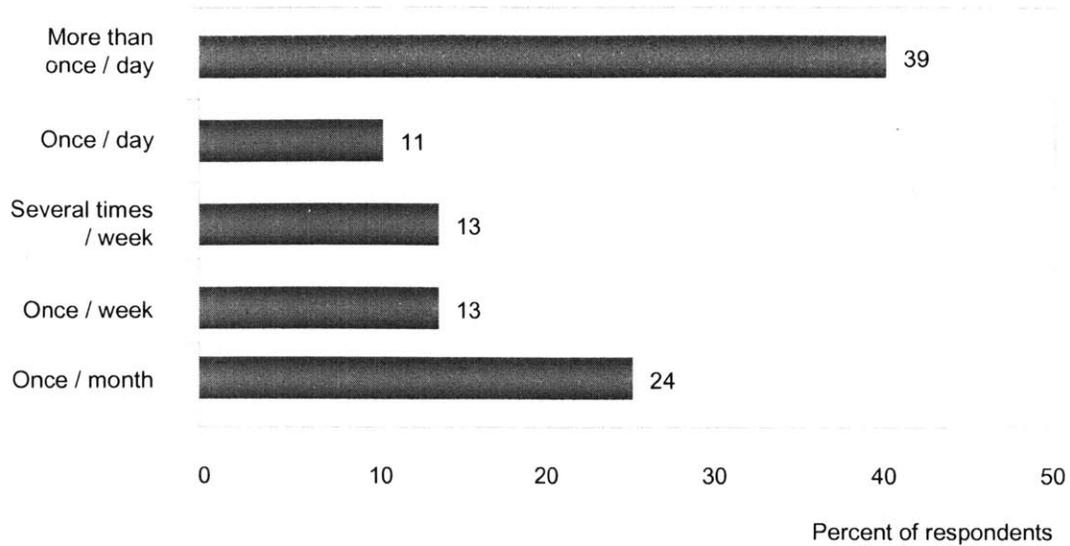


Figure 2.5 Overall user innovation activity frequencies

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

In Figure 2.6, an analysis on user innovation activity patterns shows the highest proportion of most lead users (48%) spend less than 30 minutes for each instance of participation. This group is followed by the group of lead users who usually spend 30 minutes through an hour for their user innovative activities, which made up 24% of the respondents. And 1-2 hour time spending users, 2-3 hour time spending users, and 3+ hours time spending users recorded 15%, 4%, and 9%, respectively.

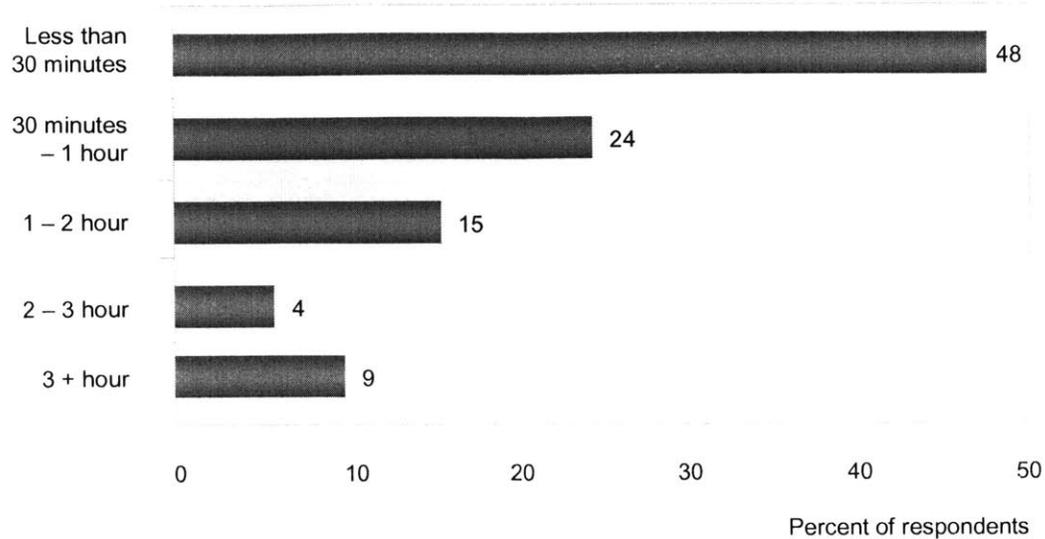


Figure 2.6 Overall user innovation activity times

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

### *Motivation for User Innovation*

According to the last survey which was focused on the motivation of lead users who participate in any user innovation on the Web, lead users innovate on the Web for several motives and goals. An analysis on the survey results finds that most lead users have been motivated to participate in one or more innovation activities by reference. They usually got to join a user innovation activity involving social networking through recommendation from a friend, colleague, or family member. The analysis shows that 46% of the responding lead users claim that they started to participate in one or more user innovation activities by reference, and 30% of the respondents say that it is because of online advertisement. And 4%, 15%, and 6% of the total respondents turn out to have

joined one or more user innovation activities by mass media, personal research, and other reason, respectively. (Figure 2.7)

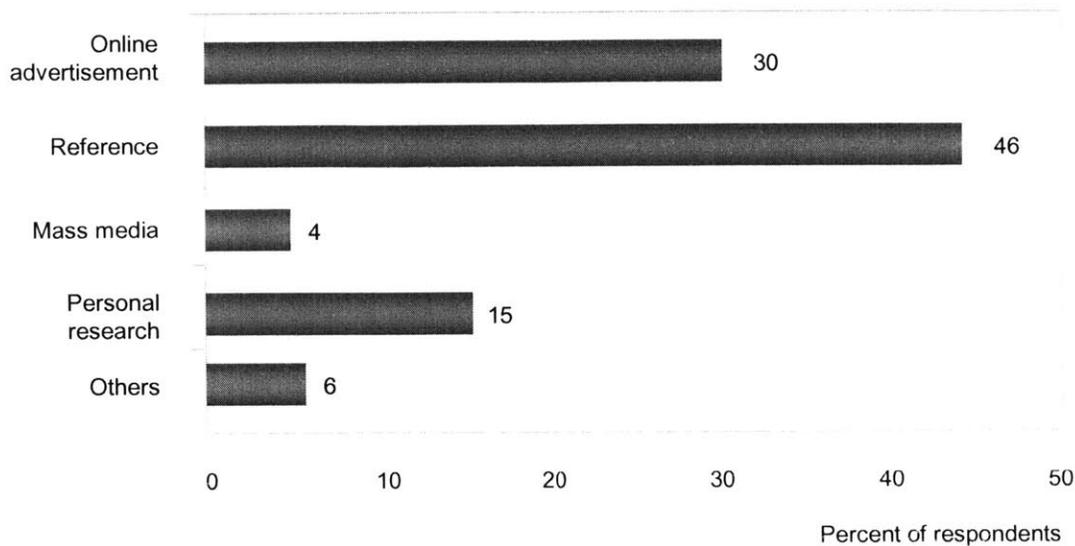


Figure 2.7 User innovation motives

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

Additional analysis on the survey results of the motivation of user innovation indicates that many of the lead users, 33% of the total respondents, have participated in the activities for the purpose of social networking. This group is followed by another group of people who have participated in user innovation activities to contribute to social welfare which recorded 28% of the total respondents. And 20%, 2%, and 17% of the respondents answered that they have joined those activities for self-contentment, financial benefit, and other reasons, respectively (Figure 2.8). As expected, user innovation activities on the Web are not oriented or initiated from need for financial benefit as commonly found with traditional offline user innovation activities. As long as

social networking activities are common on the Web, the number of user innovations is expected to grow.

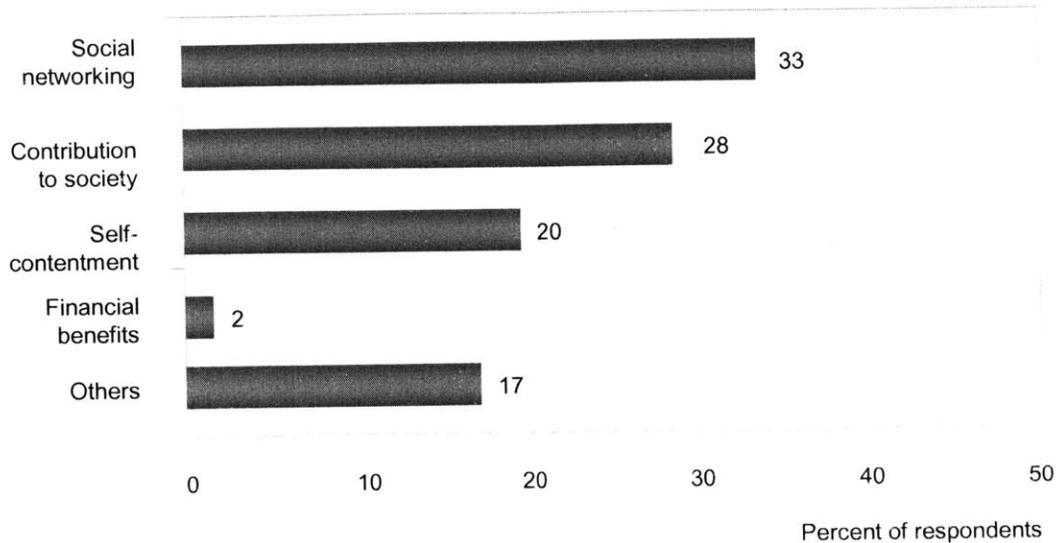


Figure 2.8 User innovation goals

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

Final analysis on the survey results on lead users' motivation shows that most lead users think of exposure to a larger network community as the most important factor that would motivate them to more actively participate in user innovative activities on the Web. This result is well aligned with the discovery from the previous analysis on lead user motivation that most lead users on the Web innovate for themselves mostly with a goal of social networking. In Figure 2.9, lead users who consider exposure to a larger network community as the most critical factor stand for 46% of the total respondents followed by another group (22%) of lead users who believe user interface of websites to be the most important factor in user innovation. And other factors like financial benefit, contents

quality, and technical infra-structure are not counted as critical by the lead users on the Web.

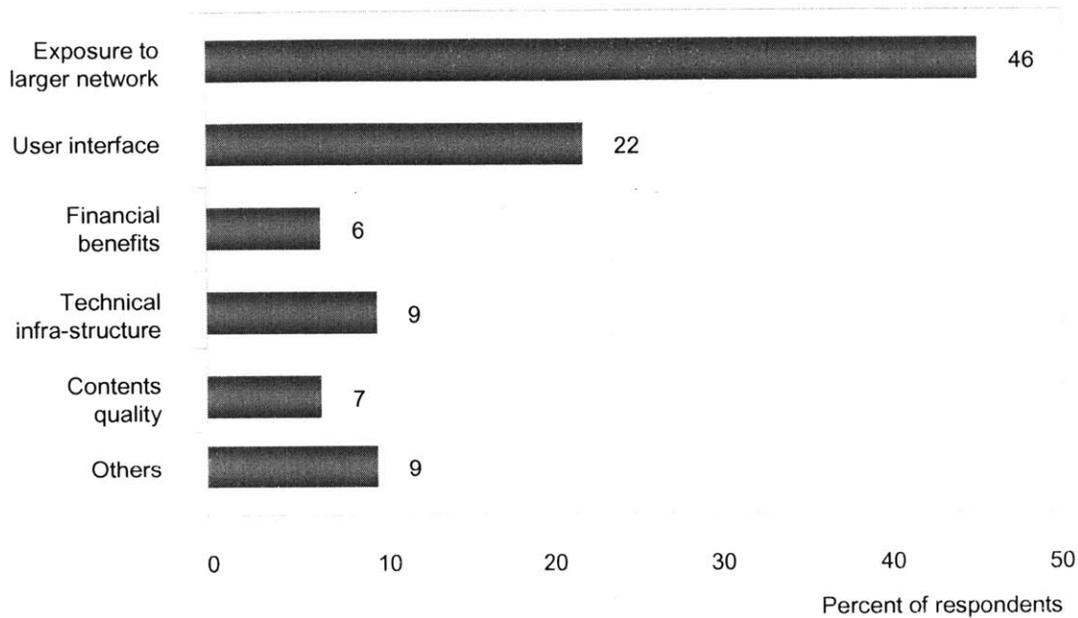


Figure 2.9 Critical motivators for user innovation

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web and the sample size is 54.)

### *Age vs. Activity Type and Motivation*

For further cross analysis, “age” has been carefully chosen as one of the most important variables for the reason that the Internet users are very much differentiated by different age groups. As a result of several cross analyses on age and other noticeable parameters from user innovation type and motivation analysis, in Figure 2.10, it turns out that the most of the lead users who participate in music and movie based user innovations are young generation consisting of people whose age is 13 through 29. This group

constitutes approximately 83% of the total respondents who have participated in one or more music/movie based user innovations.

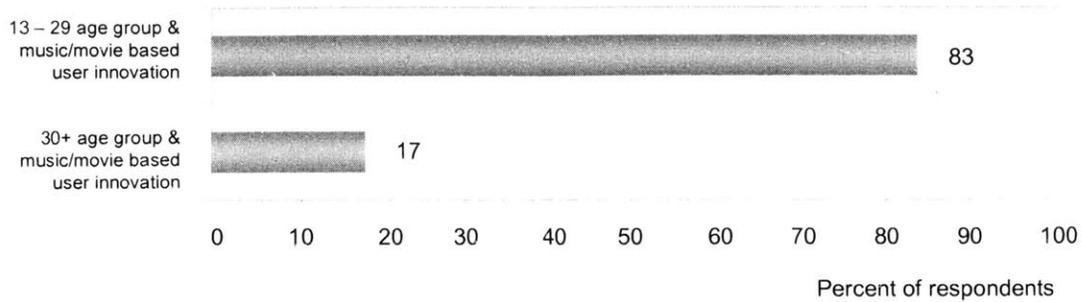


Figure 2.10 Music/movies based user innovations between different age groups

Source: Park, 2007. (The respondents include those have ever participated in a music/movie based user innovation activity on the Web and the sample size is 6.)

Similarly, Figure 2.11 indicates that 73% of lead users who have been participating in knowledge based user innovation activities are older than 30. This means the older generation is more likely to become involved in knowledge based user innovations which are much easier for them to participate in than movie and music based user innovations which change dramatically with time, therefore, requiring deep and broad knowledge of current market trends.

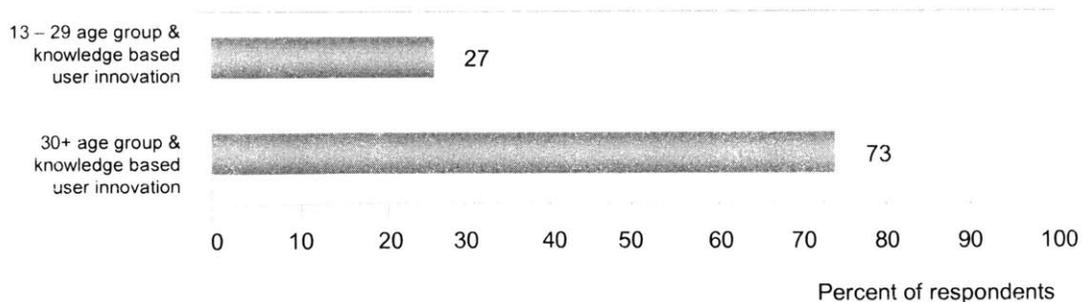


Figure 2.11 Knowledge based user innovations between different age groups

Source: Park, 2007. (The respondents include those have ever participated in a knowledge based user innovation activity on the Web and the sample size is 37.)

Another cross analysis discovers that the trend of having social networking purpose in user innovation activities on the Web does not differ by different age groups. Figure 2.12 indicates that lead users who have participated in one or more user innovations for social networking are equally distributed as young generation group (13-29 age) and old generation group (30+ age).

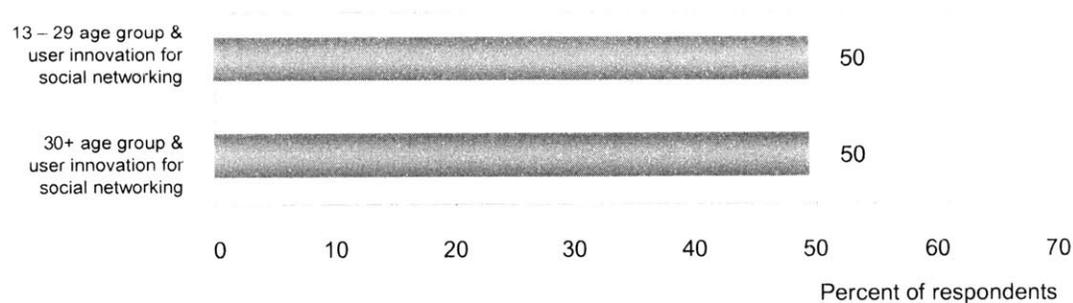


Figure 2.12 User innovations for social networking purpose between different age groups

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web for social networking and the sample size is 18.)

Figure 2.13 indicates that lead users who have joined one or more user innovation activities to contribute to social welfare are primarily over 30 years old. This group of older people comprises 60% of the respondents, but this is hardly significant.

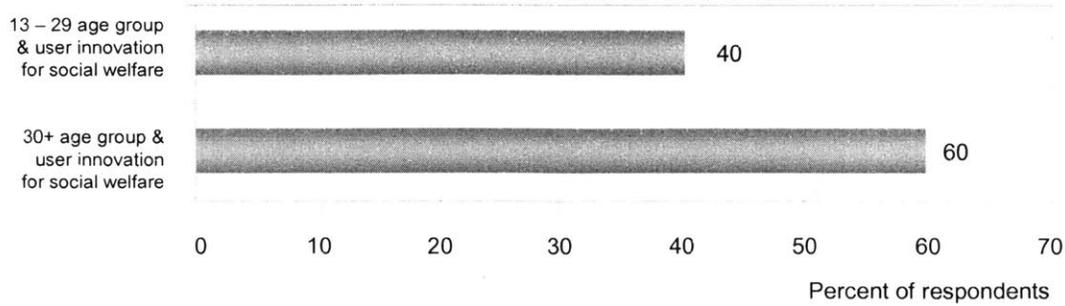


Figure 2.13 User innovations for contribution to social welfare between different age groups

Source: Park, 2007. (The respondents include those have ever participated in a user innovation activity on the Web to contribute to social welfare and the sample size is 15.)

In Figure 2.14, analysis result indicates that, among 36 respondents who answered they have participated in knowledge-based user innovation activities, 61% of them answered that they got to participate in the innovation by online advertisement or web search while rest of them answered they got to that by referral or any other reason (very small portion). However, only 11% of 18 respondents who answered they have participated in non-knowledge-based user innovation activities answered that they got involved with the activities by online advertisement or web search. This indicates that not like traditional pattern of user innovation’s heavy dependency on referral marketing, knowledge-based user innovations are recruited by online advertisement and web search engine.

	Knowledge (text)	Non-knowledge (contents)
Online ad & Web search	61%	11%
Referral & other	39%	89%
Total	100%	100%

Figure 2.14 Distribution of marketing methods enhancing user innovations

Source: Park, 2007. (The respondents include those have ever participated in either a knowledge-based or non-knowledge-based user innovation activity on the Web. And the sample size is 36 and 18, respectively.)

## Chapter 4 Conclusion

Our survey results show several interesting facts on user innovations on the Web in the areas of lead user profile, user innovation activity, and motivations for user innovation.

First, for a lead-user profile, the following facts are discovered from the study. The number of female lead users is higher than that of male lead users recording 61% of the total respondents. But, there is no significant evidence indicating that the probability of participating in user innovation activity on the Web differs by gender. The thirty to forty-five age group is in a dominant position recording 43% of the lead users. Students comprise the dominant profession among the lead users recording 33% of the total respondents being very closely followed by business/administrative professional group which occupies 28% of the total respondents.

Second, for user innovation activity the discovered facts are the following. Most user innovations as on the Web are focused on “knowledge sharing”. Sixty-nine percent of the respondents often have posted text-based knowledge to one or more web community portals. A very small number (11%) of respondents post multi-media contents such as music or movies to websites. Picture and photo sharing, which is somewhat common among internet users, was not attractive to the lead users recording only 15% of the total respondents. The frequency of user innovation activity of most lead users is extremely frequent. Thirty-nine percent of the respondents are involved with user innovation activities several times a day. The highest proportions of most lead users (48%) spend less than 30 minutes for each instance of participation.

Third, for motivation for user innovation, we find following facts. Most lead users have been motivated to participate in one or more innovation activities by reference. (Forty-six percent of the responding lead users started to participate in one or more user innovation activities by reference). Many of the lead users, 61% of the total respondents, have participated in the activities for social networking and social welfare contribution goals. Most lead users think of exposure to a larger network community as the most important factor that would motivate them to more actively participate in user innovative activities on the Web.

Additional facts discovered from our cross-analysis are as follows. The most of the lead users, 83% of people who participate in music and movie based user innovations, are young generation consisting of people whose age is 13 through 29. Seventy-three percent of lead users who have been participating in knowledge based user innovation activities are people whose age is above 30, supporting the assumption that the older generation is more likely to become involved in knowledge based user innovations which are much easier for them to participate in than movie and music based user innovations which are very trendy. The trend of having social networking purpose in user innovation activities on the Web does not differ by different age groups. Lead users who have joined one or more user innovation activities to contribute to social welfare are primarily over 30 years old. This group of older people comprises 60% of the respondents, but this is hardly significant. Final finding from our analysis is that unlike the traditional pattern of user

innovation's heavy dependency on referral marketing, knowledge-based user innovations have a tendency to join through online advertisement and web search engine

The way to apply these findings to business strategies may vary. But overall Internet businesses can focus on the most common motivation across all consumer segments, which is the social-networking capability, to bring a user innovation in their product or service. Not only Internet businesses can leverage the key factor of user innovation, but also they can save their operational cost achieving higher cost-effectiveness by executing marketing across all consumer segments with one standardized advertisement campaign. Many Internet businesses are spending huge amount of budget in personalizing their marketing or advertisement by different consumer segment. However, there exist some findings Internet businesses can utilize in personalizing their marketing. According to our survey, most lead users fall in 13-29 age category actively participate in music/movies-based user innovation activities whereas 30+ age group mostly participates in knowledge-based user innovation. This means that Internet businesses can more utilize music/movies or similar contents possibly in the entertainment category for their marketing if their business is targeting teenagers or young people whose age are under 29. Meanwhile, they may want to use knowledge-based contents for marketing if they want to bring in relatively old people whose age are over 30 to their user innovation activities. In addition, internet businesses trying to bring a knowledge-based user innovation might increase their marketing effectiveness by heavily using online advertisement and web search engine as their core marketing channel.

To conclude, user innovation activities on the Web do not significantly differ between genders, age groups, and professions. One important fact we need to notice is user innovations on the Web are not oriented or initiated from need for financial benefit as similar to other traditional offline user innovation activities, instead, mostly from social networking goal. As long as social networking activities are common on the Web, the number of user innovations is expected to continue and grow contributing to the human society. By effectively applying these findings to their business strategy, internet businesses can more effectively bring a user innovation in their businesses.

## Chapter 5 Bibliography

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## Chapter 6 Appendix: Survey Form

### I. Lead User Check-Up

1. Have you ever posted contents to a social-networking (or content-sharing) website (e.g., MySpace.com, Yahoo Answers, YouTube.com, Wikipedia, Del.icio.us, Digg.com, etc.) for the purpose of sharing the contents with others?

Yes  No

### II. Personal Profile

2. What is your gender?

Male  Female

3. How old are you?

13-17  18-22  23-29  30-45  Over 45

4. What is your profession?

None  Student  Software engineer  IT support

Business/administration  Engineering/manufacturing  Academic

Other: ( )

### III. User Innovation Activity Pattern

5. What kind of contents do/did you mostly post to the social-networking (content-sharing) website(s)?

Never posted content  Knowledge (text)  Picture/photo

Music/Videos/movie  Software  Other: ( )

6. How often do/did you post contents to the social-networking (content-sharing) website(s)?

Never posted content  More than once / day  Once / day

Several times (2-5) / week  Once / week  Once / month (or longer time period)

7. How many hours do you usually spend on each contents posting per session?

Never posted content    Less than 30 minutes    30 minutes - 1 hour

1-2 hours    2-3 hours    More than 3 hours

#### IV. Motivation for User Innovation

8. How did you learn about the social-networking (content-sharing) website(s)?

By referral (friend, colleague, family)    Mass media (TV, radio, newspaper)

Online advertisement (banner, email)    Research / online search    Other

9. Why do/did you post contents to the social-networking (content-sharing) website(s)?

Never posted content    Request from referral    Own interest

Financial benefit    Other: (                      )

10. What motivate you to actively participate in posting contents to the sites you frequently visit?

More exposure to public    Financial incentive    More challenging contents

Better infrastructure (Internet speed, data storage capacity

Better user interface    Other: (                      )