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VIRTUAL COMMUNITIES AS PLATFORMS FOR PRODUCT DEVELOPMENT: AN INTERPRETIVE CASE STUDY OF CUSTOMER INVOLVEMENT IN ONLINE GAME DEVELOPMENT

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Abstract

Information technology has changed not only the way in which we do business, but also the way in which many products and services are developed. As a structure for communication and interaction, information technology makes it possible to interweave actors such as vendors and customers in organizational processes. This paper explores how interaction in virtual communities can transform the process of product development. It does so on the basis of an interpretive case study conducted at the Swedish computer game developer Daydream Software AB. The focus of the paper is the process in which Daydream involved their customers in the development process of the online game Clusterball™. By using a virtual community as a means to reach the expertise of experienced gamers, Daydream was able to get valuable input in the product development process. In illustrating the way in which the virtual community contributed to the development process of Clusterball™, this study provides empirical support of information technology as a means to transform the process of product development.

Keywords: Virtual communities, customer involvement, product development.

INTRODUCTION

In a global business environment where competition is intense, there are reasons to believe that companies able to design products that are better matched to customer needs and expectations will gain competitive advantage (Ciborra and Patriotta 1996; Shapiro and Varian 1999). However, the ability to customize products requires knowledge about the customers. As recognized by Normann and Ramirez (1993), a key strategic task for companies is to reconfigure traditional roles and relationships within the value-creating system so that actors, such as vendors and customers, can work together in co-producing value. In this way, hidden knowledge and skills of the customers can be revealed and, as a result, products that better correspond to customer expectations can be developed. Instead of regarding the customer as an object and only a consumer of value (Porter 1980), this implies a view of the customer as a subject with knowledge that is of importance in the development of products and services (Normann and Ramirez 1993).

One way of involving customers in product development is utilizing knowledge accumulated in *virtual communities*. It is believed that as digital mediators or intermediaries (Chang et al. 1999), virtual communities offer opportunities that can support continuous interaction between different actors such as vendors and customers.

This paper reports on research conducted at the Swedish computer game developer Daydream Software AB. The specific focus of the paper is how Daydream used a virtual community as an important component in the development and release of the online

game Clusterball™ Building on the idea of a community as a pool of knowledge (Hagel and Armstrong 1997), the philosophy at Daydream was that a community consisting of experienced gamers would be valuable in the development process of the game.

There is considerable research about virtual communities and the impact of such as places for social interaction (Donuth 1999; Jones 1995; Laurel 1993; Markham 1998; Preece 2000; Turkle 1995). This body of research is important in understanding characteristics and perceptions of virtual communities as well as motivation factors and the importance of identity among virtual community members. However, there is still much to be explored in the area of virtual communities and how the expertise of such may be of value in organizational contexts. With this in mind, the attempt by Daydream to use a virtual community as a platform for product development is interesting as it illustrates the potential of virtual communities as places for on-going interaction and cooperation, as well as it represents an attempt to establish an integrated organization with focus on the customer (Raisinghani 2000).

VIRTUAL COMMUNITIES

The conception of virtual communities is often that of a virtual place in which people can meet to socialize, exchange experiences, and enjoy the possibility of establishing relationships without having to expose the physical self. There is a significant body of research conducted on how virtual worlds are conceptualized and understood (Croon Fors and Jakobsson 2000; Markham 1998), on virtual worlds as systems that mediate and moderate human experiences (Turkle 1995), and on how the information technology itself is a prerequisite in that it constitutes the structure within which relations can occur (Heim 1997; Jones 1999; Laurel 1993; Markham 1998; Preece 2000; Turkle 1995). In this respect the concept of virtual communities can be used to describe new forms of social life and the environment in which they take place. There is little doubt that virtual communities play an important role in establishing relationships between people. As recognized by Markham (1998), most people who participate in virtual environments see their interaction as real interaction with real people. This conception is conducive to the view of virtual communities a powerful arena for social interaction and unconditional relations.

However, we are now experiencing a new strand of virtual communities on the Internet. With the growing importance of the Internet for business, the economic value of virtual communities has become perceptible. There are reasons to believe that companies of today are starting to realize the potential of virtual communities as a means to enable and improve customer relationships (Hagel and Armstrong 1997), establish interaction between customers and vendors (Chang et al. 1999), to draw attention to their web sites (Preece 2000), and as an additional function to enhance opportunities for other business models (Timmers 1998). Commercial virtual communities are communities with a transaction-oriented interest where the buying and selling of particular products is of primary interest (Chang et al. 1999). Hence, interaction becomes a prerequisite for the satisfaction of commercial needs.

At Daydream, the intention was to create a *virtual community* as a platform for product development. In contrast to traditional game development in which the customer is only to some extent involved, Daydream wanted to make possible an on-going interaction with the customers by using the virtual community as the organizing structure for interaction. In looking back at the development process and release of the game, there were four phases in which the virtual community proved important. These phases are presented and explored.

RESEARCH DESIGN

Research Method

This study can be described as an interpretive case study (Klein and Myers 1999; Walsham 1995). For the IS researcher interested in understanding information systems in cultural and social contexts, this orientation directs the focus to people's assumptions, beliefs, and desires. In the Daydream case, this meant that the early visions, expectations, and apprehensions held by different actors were of importance as well as the general context of the computer gaming industry. As participant observers, our aim was to get an inside view of the work at Daydream by being temporary members of the field (Van Maanen 1979; Walsham 1995). Given the fact that Daydream is a relatively small company in which formal decisions are rare, there was a need to take part in every-day routines and assignments to capture critical information in informal speech.

The study was conducted between January 2000 and October 2000 and covers the development process of the online game Clusterball. The study can be divided into three phases. First, between January and March, an exploratory study was conducted.

In this phase, we took part in company meetings and discussions in order to get to know the employees, the organization, and the every-day routines at Daydream. We also presented our research interests on virtual communities and digitally mediated relationships and the way in which we could contribute to the context by exploring these specific research questions. Second, between April and September, we conducted an in-depth study in which we were present at the company on a regular basis, resulting in 600 hours of participant observation. During this phase, we took the opportunity to bring people from different departments together in discussions related to our research interests. We also distributed reports that were part of our research so that important issues could be discussed at an early stage. Finally, in October, we conducted a complementary data collection.

Two things guided our choice of research site. First, Daydream represents leading practice in that the company almost exclusively uses information technology such as CRM-technologies, virtual communities, a dynamic advertisement system, and a micro-payment system to handle its customer relations. Second, the research team had very good access to the company, which is an important factor when conducting interpretive research.

Data Sources and Analysis

There are three different kinds of data sources in this study. First, in following the interpretive tradition, data sources such as document review and observational data were used to obtain an understanding of the assumptions and expectations held and enacted by organizational actors at Daydream. Second, in exploring the relationships created in the virtual community, website data such as postings to the virtual forum and data collected and stored in the customer database were used. Finally, the events and meetings the researchers took part in were all documented in daily reports. During the period of the study, the researchers also had e-mail accounts set up at Daydream so that we could communicate with both employees and customers.

CASE BACKGROUND

Daydream Software AB is a Swedish company originating from a company called Sombrero. Sombrero was started in 1993 and the main idea was to sell computer software and to create solutions for the graphics industry. In 1995, the owners of Sombrero joined forces with an art director and a CAD expert in setting up Daydream Software AB. The earlier focus on software development was complemented with web-development of interactive computer games.

Today the company, consisting of 65 employees (as of November 2000), is developing computer games for the PC market. By the year 2000, three products had been released to the market: Safecracker, Traitors Gate, and Clusterball.

With Clusterball, Daydream introduced a new generation of computer games that are *distributed, played, and paid for* over the Internet. In relation to the game, there is a virtual community designed for the gamers. As a virtual meeting-place, the community was regarded valuable as a platform for customer involvement in the product development process.

THE DEVELOPMENT PROCESS OF CLUSTERBALL

Virtual Test Pilots

In December 1999, Daydream made an official announcement that they would put the new game, Clusterball, on the market in the year 2000. The game would be the first game to be distributed, played, and paid for online. Also, features such as a CRM database and a virtual community made the game an interesting prospect both for the company and foreign investors. A press release on the Daydream website stated:

As a first step in introducing Clusterball to the market, a website will be published on December 22. The new website, Clusterball.com, will be the meeting place for all the Clusterball gamers. The goal is to build a "community" for all those who play Clusterball. (Press Release, December 17, 1999)

One of the main ideas was that the virtual community would be used in order to sort out a group of people that would be interested in initial testing of the game. By trying early versions of Clusterball, this group of people would detect technical problems such as configuration problems before the official release of the game. However, the process of starting the tests was delayed and it was not until the early spring of 2000 that this group of people was introduced as "test pilots" of Clusterball.

During May and June 2000, the test pilots had considerable work to do. Early on, it became obvious that there was still much to be adjusted and that the release of the game would have to be delayed in order to meet the requirements of different hardware configurations. On June 17, the first official beta-version of the game could be downloaded from the Clusterball website. The beta-version was available for anybody interested between June 17 and July 3. In this way, Daydream could get comments not only from the 200 test pilots, but from other gamers as well. The Clusterball website stated:

The purpose is primarily to locate configurations that experiences troubles getting Clusterball to run. Please send us feedback on performance and any strange behavior. (Clusterball.com, June 17, 2000)

A press release in the beginning of July announced that the game would be released on July 17 at 2:00 p.m. As a result of rapid feedback from community members, the first error patch was available on July 18—only a day after the game was released to the global market. In this way, many of the most frequent problems were handled even before the majority of customers had suffered from them.

Virtually Spread Rumors

While the game developers were occupied with solving technical problems, developing patches with new features and taking care of the requests put forward by the community, activities were going on at the marketing department. Here, the focus was how to distribute the game to the global market.

The idea was to involve gamers in the promotion of the game. Hence, a group of people known from the virtual community was invited to Daydream in August in order to meet with the designers, play the game, and get an inside view of the company. This event was considered successful by both gamers and developers, and received a great deal of attention in the Clusterball community as well as in forums on related web sites. In this way, the rumor about Clusterball was spread efficiently in the context in which experienced gamers spent time on a regular basis. Also, the members of the community contributed in the distribution of the game by publishing their own Clusterball websites. By individually designing and maintaining websites with content focusing on Clusterball, many of the players voluntarily contributed to the distribution of the game. The appearance of such websites, so called fan sites, started as soon as the game was released and in September 2000 there were already 16 fan sites designed by individual gamers (see, for example, ballsnatchers.com, clusterzone.net, clusterball.quakenexus.nu). To encourage visitors to the Clusterball website to also join the discussions at the fan sites, Daydream often promoted these on the official Clusterball website:

There is a new mini-game out on Ballsnatchers.com...very quick and very fast! Head over to Ballsnatchers.com to grab it! (Team Daydream at Clusterball.com, September 12, 2000)

Owing to the community members and their network of contacts, the rumor about Clusterball was efficiently spread on the Internet and the game was distributed to the gaming community without much effort from Daydream.

Virtual Redesign of Clusterball

As the game was released, the virtual community and its members continued to be of importance. Foremost, the community members were involved in trying out various events that were planned as a way to attract customers. An example would be the first official Clusterball Cup that all community members were invited to join on July 27. In inviting the Clusterball community consisting of mainly experienced gamers, Daydream hoped for suggestions on how to improve it in order to also attract less experienced gamers.

Moreover, the community members were actively involved in the redesign of the game. There were frequent postings in the virtual forum concerning future improvements of the game.

I was sitting around today, thinking of some new play modes for Clusterball. (“Clay” in the Clusterball community, August 28, 2000)

Greatly improve the chat features for multiplayer... (“Shuttlekilla” in the Clusterball community, September 8, 2000)

What would you think of Daydream releasing the source code so we could do some mods... (“BurnOut” in the Clusterball community, August 27, 2000)

To encourage such postings, Daydream officially stated that they were interested in the opinions from the community members. In a posting to the forum on September 4, one of the developers at Daydream Entertainment said:

At Daydream we are constantly listening to what the community wants... (“Lobo” in the Clusterball community, September 4, 2000)

This period also included a second patch to which the community members contributed actively by suggesting what new features to add to improve the game. In this way, the virtual community was used to communicate ideas between developers at Daydream and the gamers during the design process.

Virtual Expression of Opinions

After the release, most of the discussions in the virtual community were focused around technical issues. However, as time went by, discussions of a more personal character occurred. The forum came to be used to reveal personal attitudes and opinions regarding the game. The discussion in the forum on August 18, when the game had been up and running for about a month, illustrates this. Most gamers were excited but there was also the recognition of beginning problems such as few active gamers. In the forum you could read:

It’s a little quiet here, too quiet... (“Zodiak”, August 18, 2000)

As recognized by this gamer, there was a problem in attracting new participants to the game, something that resulted in the same people challenging each other. The gamers paid further attention to this in the forum on August 18;

I’ve been trying to go online to find some good games the past couple of weeks, but the only ones I seem to find are all those champs and superflies...the same people access the site every day. (“Muerte”, August 18, 2000)

What followed in the community was a discussion of how to improve the game in order to attract new gamers. The discussion engaged lots of experienced gamers and together they came up with suggestions such as special tournaments and special tutorials that would help less experienced gamers in getting started.

These discussions were considered important to Daydream for several reasons. First, they identified troublemakers and inappropriate behavior by players. This made it possible for Daydream to respond to upcoming conflicts and solve them at an early stage. Second, the discussions gave a good view of the general atmosphere in the community. The postings revealed current issues that were important to the community at that particular time. Finally, the discussions in the community could help in understanding the activity in the game and what could be done to improve this. In this way, the community was seen as a tool for revealing current issues concerning the gamers and their overall attitude toward the product.

COMMUNITY MEMBERS AS PRODUCT DEVELOPERS

On the basis of the empirical data, this research study suggests that the virtual community was important to Daydream for involving customers in the development process of the online game Clusterball.

First, the virtual community constituted a platform for *product testing*. The opportunity for customers to register brought with it the possibility for Daydream to reach interested gamers at an early stage in the product development process. As in traditional beta testing of software products and in conformity with the open source code development (Raymond 1999), Daydream could benefit from individual volunteers and their willingness to freely share their expertise in contributing to the development process. Bug reports and user feedback were distributed efficiently, and Daydream enjoyed the opportunity of having the tests performed directly by end users in contrast to having test cases designed and run as is common in traditional system development and software engineering methods (Avison and Fitzgerald 1995; Pressman 2000).

To a large extent, the way in which the virtual community was used for testing resembles traditional beta testing of software. However, there are reasons to believe that the use of the community brought with it certain advantages. Foremost, the test process became an open process. As the bug reports were posted directly to the virtual forum, the test pilots could get valuable input from each other during the test process. This made the process not only a two-way participatory activity between the company and the test participants (Greenbaum and Stuedahl 2000), but a many-to-many communication process in which test participants could get input from each other as well as having a continuous dialogue with the developers at Daydream. Moreover, the community-building atmosphere encouraged the test participants to keep engaging in the product even after initial testing. Many of the test pilots are still devoted members of the community. For Daydream, this means that they have customers with substantial knowledge of the product and its development history, which will bring with it the opportunity to build on accumulated customer knowledge in future product development. Finally, the ability to continuously report to the virtual forum extended the test process in time and made it an on-going process, which is rare in systems development where tests are performed during the implementation and review phases of systems development (Avison and Fitzgerald 1995).

Second, the virtual community was used for *product diffusion*. In developing fan sites and by distributing the news about the product to other gaming communities on the Internet, the community members carried out the diffusion of the product in a way that has been traditionally reserved to manufacturers and large-scale distributors (Von Hippel 2001). As a meeting-place within which relations could occur and transmit, the virtual community made possible customer-driven diffusion of the product.

Third, the virtual community was used for *product redesign*. The players had concrete suggestions such as chat rooms, demo recording and playback, music for each venue, and new play modes. Such suggestions were posted to the virtual forum and very early Daydream stated that all postings would be taken into consideration in the development of new patches. The community members freely shared their ideas and posted their suggestions to the community on a continuous basis. Concurring with the open source movement (Feller and Fitzgerald 2000; Raymond 1999), the development process evolved incrementally as new suggestions from users appeared. However, since no source code of Clusterball was available, only limited individual modifications could be made. Nevertheless, what the virtual community admitted was an open and collaborative development environment.

In view of the product development process investigated here, it is important to observe that user involvement in software development is by no means an unknown phenomenon in the IS literature. In fact, this literature reports on several problems in involving users in systems development. As noted in user-centered collaborative approaches such as participatory design (Greenbaum and Kyng 1991), rapid application development (Avison and Fitzgerald 1995), and soft systems methodology (Checkland 1981), one difficulty is to select user representatives that can facilitate in developing a system that matches the work practice of a large user group. Moreover, it has been shown that user involvement can be hard to establish and maintain due to lack of motivation among users. In the Daydream case, the aim of customer participation was not to represent a work practice but instead to refine a product. During the process, the game was used as a frame of reference to which both customers and developers could relate. Furthermore, by inviting all customers to the virtual community, Daydream got input from volunteering customers with varying skills and expertise. In this respect, participation was not imposed but customer-driven and there are reasons to believe that this encouraged both customer motivation and customer initiatives.

Finally, the virtual community was used for *product evaluation*. The possibility to post messages without having to expose the physical self seemed to encourage informal speech between gamers. These discussions gave Daydream a good view of the general conception of the product and what issues that were important to the customers at that particular time. Moreover, the discussions helped in understanding the activity in the game and what could be done to improve this. Often, information about customers is generated at user sites (Von Hippel 2001) or collected using CRM technologies (Kalakota and Robinson 1999). However, a comprehensive view of changing user needs calls for a considerable effort in collecting and analyzing large amounts of data. In addition to customer data obtained by using CRM technologies, the virtual community allowed Daydream to trace changing behaviors and emerging attitudes among customers by participating in the informal discussions in the virtual community. Also, many of the discussions contained information that would have been hard to capture in information requests put forward by using solely a CRM system. As an informal setting for expressing oneself, the virtual community encouraged the customers to voluntarily contribute to product evaluation by expressing their feelings for the product. Moreover, by participating in the virtual forum discussions, Daydream could learn about its customers in a way not easily attained by using traditional customer data collection techniques.

CONCLUSIONS

Looking at the development process of Clusterball, it seems that the virtual community was valuable as a platform for involving customers in the development process. By using the virtual community, Daydream succeeded in establishing a collaborative development environment dominated by interactivity, speed, and continuous feedback from customers.

On the basis of empirical data, there are two implications of virtual communities in product development. First, the use of virtual communities redefines the *structure* of the development process. While the systems development life cycle is often described as a sequential process with a set of pre-defined phases, the virtual community enforced an integrated process with test, design, and evaluation phases going on continuously. Furthermore, there was an increased possibility for customers' initiatives to direct the development process. Instead of specifying user requirements at an early stage of the process, requirements could be collected and implemented during the whole development process.

Second, the use of virtual communities redefines the *customer role* in the development process. Instead of user involvement as a means to represent a work practice, the virtual community aimed at user involvement in direct refinement of the product. In addition to user involvement in the development phases of a system, the virtual community made possible continuous customer involvement when the system was implemented and during its subsequent use.

In this paper, virtual communities have been identified as promising platforms for product development. However, to further understand the characteristics that have been outlined and their implications, further research is needed. First, research on structure redefinition would increase our understanding of the product development process and how this might be transformed by using virtual communities as a means to coordinate an integrated development process with continuous customer involvement. Second, research on customer role redefinition would increase our understanding of how to manage product-centered virtual communities characterized by customer involvement in both the development process and after product implementation. In exploring these areas, we would broaden the view of virtual communities and their potential as collaborative environments for product development.

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