Exploring 3D Virtual World Strategies in the Chinese Environment:  
An Institutional-Based View

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Abstract

Although some strategies of virtual worlds (e.g. Second Life) have been proven to be successful for attracting user acceptance in the western world, the effects of these strategies are questionable in the Chinese environment. When western model based virtual worlds plan business operations in China, they may face challenges such as government policy, law and cultural barriers. From the institutional-based view, this study provides a theoretical framework to explain 3D virtual world strategies in Mainland China, and employs the case study method to explore how the four strategies of virtual worlds (i.e. technology solution, business model, game model and virtual world culture) impact on determinants of user acceptance behavior in the Chinese environment. Two 3D virtual worlds, Second Life (western model based virtual world) and HiPiHi (Chinese local virtual world), are chosen as the cases in this study.

1. Introduction

As an important Internet business market with more than 210 million Internet population\(^1\), China is getting into virtual worlds. Considering the over half a billion registered users of virtual communities and the popularity of 3D online games, it is believed that there will be even more Chinese users adopting virtual worlds. Several virtual worlds, such as Second Life, have announced their business plans in China. For example, Second Life is creating advertising boards and a virtual community for Chinese users and companies. However, even with the well laid out plan, Second Life has not yet met with success in the Chinese Market. One report from QianJia shows that Chinese companies express weak interest in conducting business via this new platform\(^2\). The most critical reason is that few Chinese users are actually adopting Second Life for communication and real business. For example, in 2006, Shenzhen Development Bank (SDB) tried to open a “virtual bank” in Second Life, but they gave up after 2 months, claiming that no one really accessed their virtual bank during this period. Based on the report from QianJia, by the end of July 2007 there were only 4,500 Chinese users very active in Second Life, accounting for 0.92% of avatar count. Most Chinese users registered their accounts in Second Life but rarely accessed them. The results further show that Second Life has not replicated its successful model in western countries in the Chinese market. Thus, the questions of what will attract the acceptance of Chinese users to join the emerging technology, and what will increase corporate attention to virtual worlds in the Chinese Market?

Some comparisons of major players in the Internet business in China suggest that the platforms based on the “western model” would not easily succeed in China, although some local competitors eventually would. For example, in the Chinese C2C market, eBay-China was defeated by a local competitor-TaoBao in 2006 [16]. In China, the external environment and user habits are vastly different compared to those of western counties. Chinese user adoption of virtual worlds is also influenced by their special environmental factors. As a western model based virtual world planning business operations in China, Second Life may also face challenges in: 1) Government policy: The Chinese government has not accepted virtual currency exchanges. This policy may reduce the usefulness of the “currency exchange system” of Second Life; 2)

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\(^1\) China Internet Network Information Center, December 2007, http://www.cnnic.cn  
Hardware environment: The network environment in most places in China does not support the high speed network requirements of Second Life; 3) Cultural barriers: The lack of awareness of culture differences between western users and Chinese users may lead to the high failure rate of foreign Internet businesses in China. Obviously, foreign virtual worlds should adopt innovative strategies to impact on user acceptance behavior in China.

In contrast to the “western model” of Second Life, Chinese local virtual worlds have developed some innovative solutions to suit the Chinese environments. In this regard, Second Life can learn from the role model of these major local competitors. An extremely well known Chinese virtual world is HiPiHi (www.hipihi.com), a Beijing-based 3D Virtual World founded in 2005. Currently with 40,000 registered users, HiPiHi is the biggest virtual world in China, focusing on the market of Chinese young people. It has provided some rather innovative strategies to suit the Chinese Internet environments and user culture, and received some very positive responses from users [1].

HiPiHi has received attention and recognition from world famous enterprises, such as P&G, which have provided 3D advertising through the platform of HiPiHi. In November 2007, Intel-China became the first IT enterprise inhabitant in HiPiHi, and established an “Intel island” for initiating usage experience of their products 3. However, it is not at all clear which strategies of Second Life and HiPiHi are superior, and how these different strategies impact on user acceptance in the Chinese environment. To fill this gap, this paper presents an explorative study to compare the different IT strategies between HiPiHi and Second Life, investigating the following research questions: 1) Which strategies differ in Second Life and HiPiHi? 2) How do these different strategies impact on user acceptance behavior in China? 3) Are there any other important strategies on which the two virtual worlds have not yet focused that should be promoted?

2. Research Framework

This study employs the case study method to investigate how the four strategies of virtual worlds (technology solution, business model, game model and virtual world culture) impact on four determinants of user acceptance behavior (perceived of ease of use, perceived usefulness, perceived enjoyment and subject norms) in the Chinese environment. Second Life and HiPiHi are chosen in order to compare their strategies and possible impacts on user behavior. The theoretical framework of comparison is illustrated in Figure 1.

2.1 Definition of Virtual World

There are many synonyms for virtual world, such as “Multi User Virtual Environment” [6], “Web 3.D” [2], and “3D World” [23]. In this study, we define virtual world as a computer-based simulated environment intended for its users to inhabit and interact via avatars. Virtual worlds are not just online 3D games, as there are no levels, no scores and there is no “game over.” They exist in real time where individuals communicate, cooperate and collaborate with one other, as in the real world. It can be assumed that the behavior of the users is very similar to real world behavior. Thus, in virtual worlds users can build a business, establish a social club, marry a partner, and use virtual money to purchase property.

2.2 Determinants of User Acceptance of Virtual World

In this study, we focus on Chinese users’ acceptance of virtual worlds. We first incorporate core constructs of the Technology Acceptance Model (TAM) as our

guiding theory. TAM has two core constructs influencing users’ technology acceptance behavior: perceived usefulness (PU) and perceived ease of use (PEOU) [4]. As the best known theory in information systems, TAM has been used extensively for understanding user acceptance of different information technology, e.g., groupware acceptance [14], online games adoption [9], enterprise systems adoption [10], and mobile games acceptance [7].

Despite the extensive uses of TAM, researchers recently suggest that the two dimensions are too narrow and shine light on only a part of technology acceptance and use. Further, they believe that more factors from other aspects (such as emotional reactions and social factors) should be included to explain acceptance more consistently and comprehensively [12, 22]. Thus, some new factors have been proposed to better explain the acceptance of IT applications. For example, Venkatesh et al. [25] who proposed TAM2 include, a new factor with subject norms (SN), which is the degree of individual perceptions of external pressures when performing the behavior. TAM2 is widely adopted in studies of social network software. In the online entertainment field, some researchers have also proposed “perceived enjoyment” (PEN) of playing as the intrinsic motivation of user acceptance [7, 9]. Based on the definition of virtual worlds, it provides a virtual society in which people can work and play. It has the characteristics of social network software and online entertainment. Thus, we propose our general model of user acceptance of virtual worlds with four dimensions and develop measures for each dimension.

**Perceived Ease of Use (PEOU):** PEOU is “the extent to which a person believes that using a particular technology will enhance job performance” [4]. The following three measures are factors affecting levels of PEOU based on literature [4]. PEOU is measured by the extent to which these factors are present or not.

| Skillfulness | Whether it is easy for users to become skillful as using Second Life (or HiPiHi). |
| Quickness    | Whether it is quick for users to learn to use Second Life (or HiPiHi) to interact. |
| Learning     | Whether learning to use Second Life (or HiPiHi) is easy for users. |

**Perceived Usefulness (PU):** PU is “the degree to which a person believes that using the system will be free from effort” [4]. The following measures are factors affecting levels of PU based on the literature [4]. PU is measured by the extent to which these factors are present or not.

| Efficiency | Whether users enhance work efficiency by using Second Life (or HiPiHi). For example, |
| Effectiveness | Whether users could reduce cost by doing business via the platform. |

**Perceived Enjoyment (PEN):** PEN is the extent to which the activity in question is perceived to be enjoyable, apart from any performance consequences or utilitarian considerations [11]. The following three measures are factors affecting levels of PEN based on the literature [26]. PEN is measured by the extent to which these factors are present or not.

| Enjoyable  | Whether users find using Second Life (or HiPiHi) to be enjoyable. |
| Pleasant   | Whether the actual process of using Second Life (or HiPiHi) is pleasant. |
| Fun        | Whether users have fun using Second Life (or HiPiHi). |

**Subject Norms (SN):** SN is the degree of individual perception of external pressure that one should perform the behavior [25]. The following two measures are factors affecting levels of SN based on the literature [25]. SN is measured by the extent to which these factors are present or not.

| Influencing People | Whether people who influence user behavior believe they can use Second Life (or HiPiHi). |
| Important People   | Whether people who are important to users think that they can use Second Life (or HiPiHi). |

### 2.3 Strategies of Virtual World Impact on User Acceptance

Based on the previous description, user acceptance is determined by perceptions of whether the virtual world vendors provide sufficient encouragement, guidance, and incentives for using virtual world platforms. Several strategies can be promoted by virtual worlds to gain user acceptance. In this paper, we study the strategies of virtual world vendors from the perspective of customer relationship management (CRM). CRM is seen as an effective way of designing business strategies, and has been proven to help firms to gain and maintain more customers [3]. CRM theory contends that the optimal long-term strategy for firms is to build strong relationships with target customers through creation of customer value.

CRM processes can be divided into three stages: 1) initiation stage: the objective is to acquire customers; 2) maintenance stage: the objective is to regain customers by maintaining good relationships with them; 3) termination stage: the objective is to
economize unprofitable customers [20]. Since the Chinese virtual world market is growing rapidly and is still far from mature, vendors’ main concern is how to initiate and maintain customer relationships. Therefore, this paper focuses on the first two CRM stages.

In the initiation stage, virtual world companies choose different strategies to attract first-time users and win back dissatisfied customers. In this stage, CRM strategies can be categorized from three perspectives: 1) technology solution: how to develop a technology approach to support customer behavior; 2) business strategy: how to create value for customers; 3) customer strategy: how to examine the existing customer characteristics (e.g., individualism or collectivism) and meet customers’ requirement [17]. From these perspectives, the innovative strategies of Second Life can be categorized as three types: 1) creating a new 3D technology platform to support virtual communication (technology solution), 2) providing a “Linden dollar exchange system” (business model); and 3) promoting innovative “free creation” game model (game model). It has been demonstrated that these three strategies have successfully attracted users in the western world [13].

In the maintenance stage, virtual world companies choose strategies to regain customers by maintaining good relationships with them. In this stage, the culture of virtual worlds should be proactively promoted to encourage good communication. The virtual world culture (VWC) strategy includes several sub-strategies, such as developing social rules or promoting the spirit of virtual worlds. Although evidence is sparse, it is expected that proactive virtual world culture will impact on user acceptance. Thus, based on the framework of CRM, we compare four types of strategies of virtual worlds as following:

**Technology Solution (TS):** The TS strategy is how Second Life (or HiPiHi) develops its technology approach and solutions to suit the Chinese network or hardware environment. There are four sub-strategies of TS:

<table>
<thead>
<tr>
<th>Interface</th>
<th>The approach which users adopt to play and communicate with others.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>The network requirement to run the game smoothly.</td>
</tr>
<tr>
<td>User Hardware</td>
<td>The hardware (e.g., CPU) requirements of user to run the game.</td>
</tr>
<tr>
<td>Server Requirement</td>
<td>The number of servers required to support one million on-line users at the same time.</td>
</tr>
</tbody>
</table>

**Business Model (BM):** The BM strategy is how Second Life (or HiPiHi) supports virtual business in the game. There are at least two sub-strategies of BM:

| Virtual Property Policy | How Second Life (or HiPiHi) protects virtual property. |
| Exchange System | How users exchange their virtual currencies in the game. |

**Game Model (GM):** The GM strategy is how to support users to work and play in Second Life (or HiPiHi). There are three sub-strategies of GM:

| Social Network | How the game promotes social networks among the users. |
| Creation Model | How much complexity is required for users to create virtual products. |
| Task Orientation | How much freedom is given for users playing in the game. |

**Virtual World Culture (VWC):** VWC strategy is how Second Life (or HiPiHi) promotes virtual culture in the game to suit the Chinese environment and users’ personal values. There are at least two sub-strategies of VWC:

| Virtual Society Rules | How Second Life (or HiPiHi) develops its social rules. |
| Extent of Virtuality | How Second Life (or HiPiHi) promotes the spirit of virtual worlds. What is the extent of virtuality in the platform? Is it for pure entertainment or mixed with work? |

2.4 Institutional environment in China

Although strategies of Second Life have been proven to be successful for attracting user acceptance in the western world, the effects of these strategies are questionable in the Chinese environment. Unlike developed countries, China is an emerging market with some special environments. When virtual worlds conduct business in China, the strategies need to be adapted to the Chinese environment.

From the institution-based view, strategies of firms from different countries differ for different institutional environments [18]. At the national level, the institutional environment can be defined as formal with informal constrains that structure human interaction [15]. Any strategic choice that firms make is inherently affected by the formal and informal constraints. The formal environment consists of politics, law, and society (e.g., ethical norms) [21]. The informal environment is related to national culture [19]. Technology environment is another formal constraint which influences the strategic choice of firms. We propose three types of environments that may affect the strategic choice of virtual worlds: government policy, Chinese culture and technology environment.

3. Research Approach
3.1 Data Coding Process
In our comparison analysis, we use the form of matrices to present the information systematically to the reader, and enable the identification of coding procedures to reduce the information of categories [24]. The stage of the coding process is shown as following:

- Text recorded from observation and logs
- Text divided into segments of information
- Segments coded
- Codes refined
- Codes collapsed into themes

For ease of recording the comparison results, we designed a coding scheme to guide the coding process, as illustrated in Table 1. The comparison results are displayed in matrices and charts.

### Table 1. Classification for Coding

<table>
<thead>
<tr>
<th>Construct</th>
<th>Code</th>
<th>Measure</th>
<th>Sub-Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived Ease of Use</td>
<td>PEOU</td>
<td>Skillfulness</td>
<td>PEOU-SKI-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quickness</td>
<td>PEOU-QUI-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learning</td>
<td>PEOU-LEA-XX</td>
</tr>
<tr>
<td>2. Perceived Usefulness</td>
<td>PU</td>
<td>Effectiveness</td>
<td>PU-EFE-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Efficiency</td>
<td>PU-EFI-XX</td>
</tr>
<tr>
<td>3. Perceived Enjoyment</td>
<td>PEN</td>
<td>Enjoyable</td>
<td>PEN-ENJ-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pleasant</td>
<td>PEN-PLE-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fun</td>
<td>PEN-FUN-XX</td>
</tr>
<tr>
<td>4. Subject Norms</td>
<td>SN</td>
<td>Influencing People</td>
<td>SN-INP-XX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Important People</td>
<td>SN-IMP-XX</td>
</tr>
</tbody>
</table>

XX=Related Strategies (Technology Solution, Business Model, Game Model and Virtual World Culture)

#### 3.2 Data Collection

Data collection lasted from September 2007 to May 2008. We used third-party search engines (e.g., Google.com) to collect related documentation. For the first-round of information search, we used 20 Chinese key words: such as, “Chinese virtual world” “Second Life”, “HiPiHi”, “Hui Xu” (the name of the CEO of HiPiHi), and “Xinhua Lu” (the name of the CIO of HiPiHi). For the second-round search, we combined these key words to narrow the search scope. In the end, we found 380 useful web pages, including news, third-party reports and magazine articles.

The comparison was supported by secondary data collected from a variety of sources: 1) direct observations in Second Life and HiPiHi; 2) Records of user comments from two well known online forums of Second Life (www.d2life.net) and HiPiHi (forums.hipihi.com); 3) Linden research white paper [13]; and 4) reports from third party research groups regarding Chinese virtual world markets (e.g., blog.zhaoke.com). Two researchers independently analyzed web logs and summarized the evidence using the coding scheme.

### 4. Case Analysis

#### 4.1 Technology Solution (TS)

##### 4.1.1 Interface

**Second Life:**

The interface is important in human computer interaction with which one can operate avatars, create new buildings and communicate with others. Based on comments from online forums regarding interface, there are two core considerations about the interface of Second Life: language and complexity. First, the interface of Second Life can be difficult for Chinese users to learn. With the possibility of multi-language versions of interface, Second Life has developed a Chinese version of interface which can be downloaded from the website. However, the mixed version with different languages can cause problems for users. For example, in the version of “Secondlife1.13.3.x”, there are many Japanese words in the Chinese interface. These bugs negatively impact on Chinese users’ understanding of functions. Second, Second Life has at least 10 categories with 5-6 functions in each category. Without Chinese language guidelines, the complex interface may lead to difficulties for Chinese users to become skillful, that is, it takes several hours to become skillful. One user in “d2life” complained: “I downloaded Second Life and accessed it; however I find there are too many windows in the interface. I don’t know how to use some basic functions to let my avatars run”.

**HiPiHi:**

Contrary to the complex interface of Second Life, HiPiHi’s interface is easier to learn and use. First, HiPiHi only has two languages: Chinese and English. The HiPiHi support team provides a Chinese version of guidelines to new users in order to learn to use the functions more easily. Also, HiPiHi reduces the number of categories on the interface to help beginners to become skillful more quickly. Based on observation, the simple style of interface may save users time, and enhance the perception of ease of use.

##### 4.1.2 Network

**Second Life:**

Another challenge of Second Life in China is network speed. Both Second Life and HiPiHi are 3D virtual worlds that require high speed network to
support running the game smoothly. One attractive function of Second Life is its voice chatting system, which can support users chatting with each other. Second Life believes that the system will bring rich media to users to communicate more quickly. However, based on the technology report of Linden Lab, the lowest requirement of network speed is 300Kbps to run Second Life. The increased network speed in the USA to 2Mbps supports using Second Life for quick communication. However, the normal network environment in Mainland China does not support Second Life very well. First, the average network speed in Mainland China of 512Kbps does not support the higher application of Second Life, such as virtual conference. Second, the network in Mainland China is divided into two parts which belong to different companies: Telecom and CNC Net. The bottleneck between these two networks can lead to decreased communication between users in different networks. In this network environment, there may be reduced use of the voice chatting system due to low voice quality.

HiPiHi:
HiPiHi provides the technology solution for the special Chinese network environment. Based on the report of internal tests, the average network requirements for running HiPiHi is only 100Kbps, which can be supported in most parts of China. Considering the lower speed of communication between the two networks, HiPiHi provides two groups of servers in different networks. If users complain about low speed, they can help users to change their virtual land to other networks. Although HiPiHi can only support chatting by text which may reduce the quickness for users to interact, HiPiHi has announced its plan to develop a voice chatting system in the near future. This innovative technology solution for the Chinese network environment may enhance the user communication more quickly in the long run.

4.1.3 User Hardware
Both Second Life and HiPiHi have high requirements of hardware, especially for the CPU, memory and Video Card. Compared to some web 2.0 applications (e.g., MSN, weblog), virtual worlds definitely cost users more for hardware investment. Based on online forums, some Chinese users complain about this high cost of hardware.

4.1.4 Server Requirement

Second Life:
According to the Fittkau & Maass’ report, the bottleneck of Second Life development requires a higher technology solution for servers than the current where one server supports only 64 acres of virtual land. At the end of November 2006, Second Life had provided more than 3,000 servers to support millions of online users in 800 square kilometers (about two-thirds of Hong Kong). If Second Life wants to increase the number of users in Mainland China, it has to apply more servers. The increased costs will lead to the higher prices for service (e.g., virtual lands) to Chinese users.

HiPiHi:
As the newly launched virtual world, HiPiHi has advantages in technology solutions. The advanced technology solution for servers had reduced the cost of servers and user costs. At the end of December 2007, HiPiHi had no more than 100 servers to support online users and still had the potential ability to support many more users. Based on observation, the cost of servers distributed to each user was acceptable by users. The results of the comparison are summarized in Table 2. For example, “(PEOU-LEA)-” under “Second Life” indicates that the “Interface” strategy of Second Life may have a negative impact on the dimension “learning (QUI)” of user “perceived ease of use(PEOU)” in the Chinese environment.

4.2 Business Model (BM)
4.2.1 Virtual Property Policy
One characteristic of virtual worlds is that users can freely create intellectual products. Both Second Life and HiPiHi have provided policies to ensure users to have full rights to the intellectual property of their virtual product. Thus, users have another way of enhancing their properties. Based on several reports of virtual worlds, e.g. [27], the rights of virtual property

<table>
<thead>
<tr>
<th>Technology Solution (TS)</th>
<th>Second Life</th>
<th>HiPiHi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>(PEOU-LEA)- (PEOU-LEA)+</td>
<td>(PEOU-LEA)- (PEOU-LEA)+</td>
</tr>
<tr>
<td></td>
<td>(PEOU-SKI)- (PEOU-SKI)+</td>
<td>(PEOU-SKI)- (PEOU-SKI)+</td>
</tr>
<tr>
<td>Network</td>
<td>(PEOU-QUI)- (PEOU-QUI)+</td>
<td>(PEOU-QUI)- (PEOU-QUI)+</td>
</tr>
<tr>
<td>User Hardware</td>
<td>(PU-EFI)- (PU-EFI)+</td>
<td>(PU-EFI)- (PU-EFI)+</td>
</tr>
<tr>
<td>Server Requirement</td>
<td>(PU-EFI)- (PU-EFI)+</td>
<td>(PU-EFI)- (PU-EFI)+</td>
</tr>
</tbody>
</table>

Table 2. Comparison Results of TS Impact

4 Linden Lab Research, http://www.secondlife.com/whatis

4.2.2 Exchange System
Second Life:
Can virtual properties be exchanged for real money? The most attractive selling point of Second Life is its “exchange system” between virtual currency (Linden dollar) and real money (e.g., US dollars). In USA, 20 Linden dollars can be legally exchanged for 1 US dollar through the exchange system in Second Life. This exchange system ensures that the users can work, conduct business and earn real money through this new platform. For example, Anshe Chung became the first real millionaire in Second Life. She registered a company in Second Life (http://www.anshechung.com). In this virtual world she buys virtual land, designs buildings and sells them for higher prices.

The legend of Anshe Chung has received global attention. More and more people register in Second Life with the dream of becoming the second Anshe Chung. However, the same business model may not be copied in Mainland China due to the government policy. The application of Second Life in China faces the challenge that its exchange system is illegal in China. The Chinese finance market has not fully opened and the central government is concerned that the free exchange of virtual currency may destroy the real finance market in Mainland China. Recently, the central government provided formal notice forbidding the exchange between virtual currency and real money. This is a challenge to Second Life since it is difficult to attract people to use this platform without opportunities to earn real money.

HiPiHi:
As the local competitor more familiar with Chinese policy, HiPiHi’s business model offers solutions. The management team of HiPiHi designed a more flexible business model to fit the Chinese policy. Although HiPiHi does not promote illegal exchanges between virtual currency and RMB (the Chinese currency), it does provide point cards of small denominations. Users can legally exchange virtual properties with lower prices for these point cards. Further, HiPiHi cooperates with some C2C platforms (e.g., Paypal and TaoBao) to support exchanges with higher prices in the next stage. Finally, with the release of the government’s policy, HiPiHi will establish an exchange system as in Second Life to freely support exchange. This flexible business model has step by step support for the user requirements of conducting business in different stages. The comparison results are summarized in Table 3.

<table>
<thead>
<tr>
<th>Business Model (BM)</th>
<th>Exchange System (PU-EFE)</th>
<th>Second Life HiPiHi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Property Policy</td>
<td>(PU-EFE)+</td>
<td>(PU-EFE)+</td>
</tr>
</tbody>
</table>

4.3 Game Model (GM)
4.3.1 Social Network
Second Life:
From 2003 to 2007, it took Second Life over four years to establish its society. Currently, millions of people operate in Second Life. Although most inhabitants are separated by distance, they can “teleport” to different places when they want to join in a conference and communicate with others. However, the society of Chinese people tends to adapt slowly to this “separated living” style. Based on Hofstede’s cultural dimensions, Chinese people are more collectivistic, while western people are more individualistic [8]. Many Chinese users complain that the first place where they lived was desolate as there were no other Chinese people online. Even if there is a “Chinese Town” in Second Life; it may be rare for people to visit it if there are no valuable social events in it.

HiPiHi:
In contrast to the separated life style of Second Life, HiPiHi promotes a “centralized society.” It opens up living regions step by step. At first, people live together in a small region, and then as the population grows, HiPiHi opens up more regions. In this way, people can establish their social network and interact with others more efficiently. Based on observation, from September to December 2007, the society in HiPiHi increased rapidly. For example, inhabitants held several social functions. It is believed that the “centralized” model may help the society of Chinese users to gain critical mass.

4.3.2 Creation Model
Second Life:
Second Life promotes “free creation.” Linden Lab developed four creation systems: 3D product design, figure design, land edit, and higher language coding system-LSL (Linden Script Language). With the LSL, users can design the most amazing things imaginable. Thus, some people call Second Life a “dream land” where people can enjoy a different life. Users can find new figures every time they access it. However, it requires longer time to learn to use LSL. Especially for Chinese people who cannot read English materials, it is more difficult for them to use LSL to design 3D products.
HiPiHi:
HiPiHi has more focus on easy creation. It provides essential modules and colors which are easy to learn and in which to become skillful. Users can learn to use it to create their buildings, figures and clothes very easily and quickly. However, as the population increases, more and more similar buildings and figures exist in HiPiHi. Sometimes, people with the same face or the same clothes appear or they can be talking at the same time. Given this confusion, the potential challenge of HiPiHi is that it may not hold people’s interest in the long run. Ensuring that the personalities of users remain the important issue in the development of HiPiHi remains a challenge.

4.3.3 Task Orientation
Second Life:
In Second Life, users’ early engagement leads to more and more user registrations since it promotes free creation and individualism. Thus, there are few guidelines and tasks to teach new users how to work and play in this world. However, in China, the fact is that “requirements” lead to creation. As the report of QianJia2 indicates, many companies have established virtual stores in Second Life and then encourage people to visit them. Most Chinese users register in Second Life for advertising. However, when they access the virtual world, they lose their way and do not know what they should do next. Thus the common complain that shopping in the virtual stores of Second Life is inefficient.

HiPiHi:
HiPiHi, to some extent, adopts the successful experience of some 3D online games (e.g., World of Warcraft) which provide detailed guidelines for use. When new users arrive there is NPC to provide guidelines to play. HiPiHi also cooperates with companies to provide tasks for users. For example, users may be given a task of visiting an Intel virtual store to see several advertisements, after which they will be paid with point cards. In the first stage of HiPiHi, providing tasks to train users can help them to obtain real benefits and enhance their efficiency to use the platform. The comparison results are summarized in Table 4.

Table 4. Comparison Results of GM Impact

<table>
<thead>
<tr>
<th>Game Model (GM)</th>
<th>Social Network</th>
<th>Creation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(PU-EFI)-</td>
<td>(PEOU-LEA)-</td>
</tr>
<tr>
<td></td>
<td>(PU-EFI)+</td>
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<td></td>
<td>(PEN)-</td>
<td>(PEOU-SKI)-</td>
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<tr>
<td></td>
<td>(PEN)+</td>
<td>(PEOU-SKI)+</td>
</tr>
</tbody>
</table>

4.4 Virtual World Culture (VWC)
4.4.1 Virtual Society Rules
Second Life:
In Second Life, the society mores are somewhat loose. Nowadays, the top two industries in Second Life are gambling and sex with millions of users spending a lot of time in these areas. However, these two industries are illegal in Mainland China. If Second Life (China) does not provide some rules to limit Chinese users to visit these two industries, it may be prohibited by the government. Moreover, the parents who have direct influence on young users may view Second Life as a risqué game and forbid access to their children.

HiPiHi:
HiPiHi is now inviting users and experts in different fields to help them design codes of conduct. For example, in HiPiHi, users are encouraged to use polite words. These rules can help HiPiHi obtain respect from the government.

4.4.2 Extent of Virtuality
Inhabitants in Second Life establish their own culture, e.g., special language in communication. However, the social culture of Second Life (China) and HiPiHi is now differentiated. We have observed that both platforms emphasize business application in the Chinese market, but not entertainment. It is too early to observe the cultural differences and how culture impacts user behavior. The comparison results are summarized in Table 5.

Table 5. Comparison Results of VWC Impact

<table>
<thead>
<tr>
<th>Virtual World Culture(VWC)</th>
<th>Second Life</th>
<th>HiPiHi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Society Rules</td>
<td>(SN-INP)-</td>
<td>(SN-IMP)-</td>
</tr>
<tr>
<td>Extent of Virtuality</td>
<td>N/E</td>
<td>N/E</td>
</tr>
</tbody>
</table>

Note: N/E is non significant findings from comparison

5. Discussion
There are several reasons why Second Life is so successful in the world. It is believed that Second Life has at least 3 characteristics: 1) convergence of social networking and content creation, 2) immersive networked 3D environment, and 3) inclusion of elementary economic principles [5]. According to the CEO of Linden Lab, the success of Second Life is due to the fact that it offers a set of capabilities or strategies which 1) provide different ways superior to the real world, 2) provide tools that enable people to create
new things, and 3) allow residents to own intellectual property rights of their creations and to sell them. At first glance, HiPiHi appears very similar to Second Life, such as the 3D graphics interface. However, it is believed that HiPiHi is not just a copycat of Second Life. The virtual world is not just a 3D environment, but a complicated social system including the property policy, financial policy, social culture, etc. As a virtual world born in China, the developers hope that HiPiHi will suit the Chinese environment and embrace Chinese culture.

Unlike the “western model” of Second Life, HiPiHi claims that it focuses on the “eastern model” of user behavior and provides strategies accordingly. For example, HiPiHi management team is very experienced in the Chinese market, and claims that the “business models similar to those employed by 2D sites can also be applied in 3D” [1]. The income of HiPiHi users includes: selling land, advertising boards, and a range of branded products incorporated within the world; however, users must share part of their income with HiPiHi. At the same time, the market is taking HiPiHi seriously. In the test period, they had been approached by the marketing departments of many foreign and Chinese companies looking to become involved. From August 2007 to December 2007, the company closed investments involving companies and individuals from the United States, Japan and Singapore for almost US$10 million, and there may be further rounds in the future.

Are there some differences in the strategies of HiPiHi and Second Life? Which strategies actually enable Chinese users to accept Virtual Worlds? And, which Virtual World will succeed in the long run in the Chinese market? In section 5, we compared the different strategies between these two cases, and investigated how these strategies impact on Chinese user acceptance of Virtual Worlds. The comparison of different strategies is illustrated in Table 6.

Table 6. Different Strategies between Second Life and HiPiHi

<table>
<thead>
<tr>
<th>Technology Solution (TS)</th>
<th>Second Life</th>
<th>HiPiHi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Complex Functions</td>
<td>2. Simple Functions</td>
<td></td>
</tr>
<tr>
<td>3. Higher Requirement of network speed and number of servers</td>
<td>3. Low requirement of network speed and servers</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Model (BM)</th>
<th>Second Life</th>
<th>HiPiHi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Virtual Currency Exchange System</td>
<td>1. More flexible exchanging strategy</td>
<td></td>
</tr>
</tbody>
</table>

In technology solution, Second Life may face some problems in its application in China. First, the complex interface may reduce the Chinese users’ perception of ease of use. Second, its high requirements of hardware and servers may increase the cost of Chinese users who adopt this platform. The most serious problem is that the Chinese network speed cannot support Second Life smoothly. Considering these bottlenecks, Second Life (China) may learn from HiPiHi which has applied some innovation technology solutions to solve these problems.

With respect to the business model, Second Life needs to consider the impact of the Chinese government forbidding the exchange between virtual currency and RMB. With this policy environment, there may be a reduced users’ perception of usefulness on this platform without a legal exchange system unless HiPiHi provides a better way by providing a flexible business model where users use point cards and adopt a third party C2C platform to exchange their virtual properties.

In the Game model, Second Life promotes “individualism” and “free creation,” while HiPiHi encourages “collectivism” and “task orientation.” Based on the observation, the impact of the two strategies on user acceptance is like “double-edge swords”. First, the high freedom of the creation system of Second Life enhances the users’ enjoyment, while the rare guidelines may reduce the efficiency of using this platform for work and play. Second, the simple systems and task orientation of HiPiHi ensure the efficiency of users, but a too simple creation system may reduce users’ interest in the long run. In the Chinese environment, the game model should be adapted to better balance the “efficiency” and “freedom.”

In the virtual world culture, the strategies of both virtual worlds are currently ambiguous. In fact, the greatest challenge to the Chinese virtual world is how to promote a culture to fit the Chinese local culture. Another case regarding the success of Habbo (a 2D virtual world) may give us some enlightenment. Compared to 3D virtual worlds, Habbo has many disadvantages, for example, users cannot create tools freely. However, it was very popular in 2007. One of the factors to success is that Habbo emphasizes the virtuality and entertainment, but focuses on business...
application immediately. The spirit of Habbo fits the local culture of China. At least at this time, most Chinese people would like to access virtual space for "pure entertainment" and try to separate work and play significantly.

There are many more studies that should be conducted to investigate the relationship between the virtual world culture and Chinese local environment, for example, how to define the 3D virtual world spirit to better fit Chinese culture. Despite some significant findings from observation, the limitation of this study is that it lacks empirical evidence, because the two virtual worlds have conducted business in China for only a short time. As the development of 3D virtual worlds in China continues, empirical studies should be applied, and a more rigorous model of user acceptance of virtual worlds in China should be integrated.

6. Conclusion

In this research, we compared different strategies between Second Life and HiPiHi to investigate how these strategies potentially impact on user acceptance behavior, and sought to find which strategies would better suit the Chinese environment. Based on the reviews and comparison, there are three bottlenecks of Second Life in China: 1) High requirement of network speed, 2) illegal exchange system, and 3) game model without task orientation. As the local virtual world, HiPiHi may have a good approach to solving these problems. However, HiPiHi also faces bottlenecks, such as a too simple creation system reducing users' interest in the long run. At the current phase, both platforms have similar problems in that their society culture and spirit are ambiguous. The clear definition of local culture, such as how to balance "virtuality" and "reality", should receive more attention from Chinese virtual worlds.

References: