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A CRITICAL ANALYSIS OF USING 3-D VIRTUAL WORLD ENVIRONMENTS IN E-COMMERCE STRATEGY

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ABSTRACT

E-commerce has been a rapidly expanding component of many organizations' corporate strategies. As part of this expansion, companies are exploring alternative and more non-traditional approaches for growing sales and expanding brand awareness. Commensurate with the growth in e-commerce is the rapid growth of the computer gaming industry. This contribution of this paper is the synthesis of the union of a specific type of computer game environment-the metaverse and how it is being employed by organizations as part of their e-commerce strategies. The authors look critically at both the potential advantages and drawbacks of this union as well as articulate the role of corporate IT in managing this ambitious union.

Keywords: Metaverse, 3-D virtual games, E-commerce, Corporate strategy, Information technology (IT)

INTRODUCTION

Recent world economic events have made the context of corporate strategy more critical than it has ever been. The stakes are higher (insolvency), the financial markets are fragile, the technology is rapidly changing and the propensity `for risk taking has undergone a reassessment in corporate boardrooms. This paper first looks at e-commerce models used by businesses, presents a taxonomy of virtual world activity and then discusses the main driving forces that have made virtual world activities so enticing to millions of people worldwide. At present, we are at the emerging stage as e-commerce strategies are beginning to be deployed in the dynamic environment of 3-D virtual worlds.

To comprehend the impact on corporate e-commerce strategy, one must first understand the following forces that converge on this exciting and dynamic arena: current e-commerce business models employed by organizations, existing and planned IT directions, the major industry players, the core issues involved and how organizations have implemented 3-D virtual world technologies.

CURRENT E-COMMERCE MODELS

There has been a surfeit of research on the kinds of e-commerce business models that can be employed by organizations [19,8,4]. Table 1 presents a nice summary of these approaches by Turban.

Online direct marketing	Electronic tendering systems	Name your own price	Find the best price	Affiliate marketing
Viral marketing	Group purchasing	Online auctions	Product and service customization	Electronic market places & exchanges
Information brokers(intermediaries)	Bartering	Deep discounting	Membership	Value-chain integrators
Value-chain service providers	Supply chain improvers	Social networks, communities & blogging	Direct sale by manufacturers	Negotiation

Table 1. Typical EC Models Taxonomy by Turban

Clearly, an organization can choose to engage in more than one business model and might combine one or more of these into its e-commerce strategy. However , when the realm of virtual worlds is introduced into the equation, a whole new level of magnitude of complexity is experienced. In order to understand this phenomenon, it is necessary to discuss how virtual world technologies are organized. Susan Kish has created a very useful framework to describe these virtual constructs that are available today. Table 2 illustrates her taxonomy. [12]

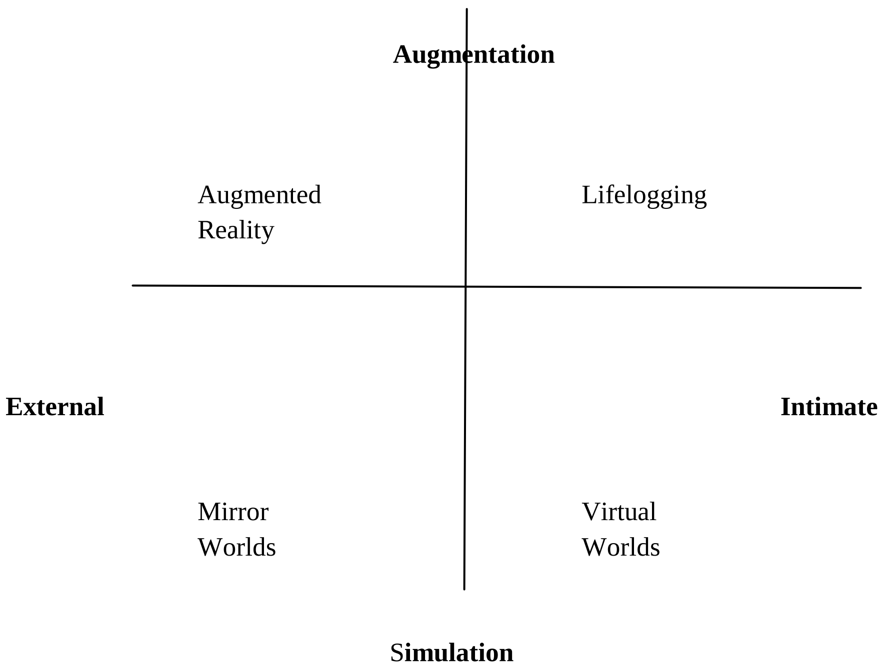
Type of Online Virtual World	Definition	Example
MMORPG	Massive multiplayer online role playing games	EverQuest World of Warcraft
MMOLEs	Massively multi-learner online learning environments	Qwaq
Metaverse	Social interaction environment	Second Life

Table 2. Kish's Taxonomy of Virtual World's

Although, the term computer game is used, it is important to understand that there are many different implementations. Most games have players and a specified objective that serves as a measure of effectiveness or goal to be achieved. Others, such as the metaverse category, as exemplified by Second Life, create a boundless environment where "players" create their own world and define what it is they want to "gain" from it. Therefore, any organization that would utilize this platform for an e-commerce initiative, must determine what its specific goals would be when they create a presence in this type of virtual world. Is it to sell, inform or just create brand awareness whose benefits will be reaped in the real world environment outside of the game context?

Virtual world environments have been characterized as being in the genre of a "wild west" mindset much the same as were the early days in the Internet. So any corporation wanting to establish a presence might incur the wrath of those inhabitants that resent any form or commercialization of their worlds. Clearly, organizations must have a clear plan of how they will enter and thrive in these new arenas of commerce. To help one better understand the difficulty of choosing a 3-D virtual world strategy for e-commerce initiatives, Figure 1 depicts several visions of the future that might be explored. The vertical axis is labeled "augmentation" and "simulation" and the horizontal axis is labeled "external" and "intimate".

Each quadrant, therefore, represents a focus of activity for the type of 3-D world experience. If an organization has decided that it will use blogs to support its e-commerce initiatives it might choose to populate the northeast quadrant, whereas if it chooses to set up a virtual world business to enhance its real world activities , it will populate the southeast quadrant. Karl Kapp, an authority on the convergence of learning, has stated the following ; "The drivers for using virtual worlds in the enterprise are compelling. After all, humans are used to working, socializing, and living in an actual 3D world."[12]



Augmented Reality: An enhancement of the physical world for the individual
Lifelogging: The recording and reporting of the states and histories of objects and people
Virtual Worlds: An augmentation of the economic and social life of physical communities
Mirror Worlds: Reflections of the physical world

Figure 1. Visions of the Future (Source: Metaverse Road Map)

CONFLUENCE OF FORCES

Millennial Generation

It has been documented in numerous sources that today's young generation of workers are demanding a different work environment from employers. One that is fundamentally more technologically based. One that uses technology embedded in the enterprise's DNA and not added on as an after-thought.. This is a MySpace, Facebook, Twitter, LinkedIn generation of bloggers who find navigating in cyberspace as a given in their universe. They grew up playing computer games of all varieties and are not resistant on an a priori basis to a gaming milieu. This group has developed a dependency on the use of social networks in their everyday lives. Together with their iPhones ,mp3 players and Blackberries they have established a fundamental linkage between the physical and cyber in almost every dimension of their existence. Reaching these individuals and their successors is a challenge for any organization engaged in e-commerce.

Web 2.0 Technologies

A veritable revolution has swept the IT and business communities. The ubiquitous nature of the Internet has driven a transformation in the thinking of so-called users of technology. Table 3 summarizes the major characteristics of the Web 2.0 environment. [11]

The ability to tap into the collective intelligence of users
Making data available in new or never-intended ways (mashups)

Presence of lightweight programming techniques and tools so anyone can develop
Everything is in a perpetual beta state allowing rapid prototyping
Networks serve as platforms allowing browser to dominate applications
Users own data on the site and exercise control over it
An architecture of participation and digital democracy that encourages adding value
Major emphasis on social networks
Rich interactive, user-friendly interfaces

Table 3. Typical Characteristics of Web 2.0

Web 2.0 has brought the level of user interaction to prominence and has provided the foundation for other processes to combine to drive the potential for the use of 3D virtual world s for e-commerce.

Powerful Gaming Computers

With advances in technology and the demands of very powerful computer games, there has been a commensurate race to provide larger processors, more powerful video cards and better overall graphics capabilities. A we move from a 2-D world to a 3-D world, the opportunity for aligning virtual worlds and e-commerce emerges with even greater potential. With the growth of broadband network connections, the environment becomes even more conducive to this marriage. Colin Parris, IBM VP of Virtual World Deployment, stated "The 3-D Internet is a transformational opportunity that will change many industry processes, gather new revenue streams, and increase productivity and brand opportunity."[3]

Social Networks

Turban identified four factors of online communities that are significant factors that retailers in e-commerce should consider. They are as follows:
- Consumers can be a source of feedback that can lead to innovation
- Word-of-mouth (viral marketing) is free advertising for brand awareness
- Increased website traffic
- Increased sales due to harnessing consumer preferences. [19]

To underscore the power of social networking via video games, the following quotation is offered: "Videogame console makers want you to do more than just play online-they want you to live there, in souped-up virtual worlds that aim to make consoles the center of your entertainment life."[6]

As we assess the convergence of all of these forces on the e-commerce marketplace is there anyone who has the right answer as to whether existing ways of doing business are still relevant for the future? Consider the following two perspectives on this question. Christian Parrino in responding to a very insightful article by Tom Novak of the Center for Internet Retailing at MIT wrote the following: 'It is amazing how in the history of new mediums, companies continue to make the same mistake-trying to replicate the business model of the previous medium." [10] Essentially, he is asking are the existing business models appropriate for today's world? Another comment raises another issue. "As virtual worlds become a mainstay of the online experience and the lines between the real and virtual worlds begin to blur, enterprises will most likely have to follow users down the path and determine how best to set up shop and flourish virtually. [12]

MAJOR PLAYERS IN THE 3-D VIRTUAL WORLD

In his novel ,Snow Crash, written in 1992, Neal Stephenson coined the term "metaverse". Metaverse has become the generic name for the virtual worlds of today. There have been several organizations that have created virtual world environments. Interestingly, not everyone has followed the same path. Some cater to the youth market and create a virtual world targeted to that constituency. Others set up their business to support existing virtual worlds. Some are focused on creating internal virtual worlds while others open it up to the entire universe.

In a *Wall Street Journal* article on virtual world entrepreneurs, Alter cites the following: "Entropia

Universe boasts 722,000 players...On a typical day, Second Life players spend $1.5 million on virtual clothes, jewelry, homes, cars and real estate. There are roughly 1.2 million active players." [1]. According to an article by Tadros, the five most prominent virtual worlds are Habbo Hotel (10.4 million visitors as of November ,2008 of which 90% were 13-18 years of age), IMVU, Stardoll (children), Neopets(children) ,There Inc (innovative auction system) and Second Life. [17, 18] Second Life which is the largest virtual world environment and has had the most aggressive e-commerce presence, is financially backed by some of the IT industry's heavyweights. Some of these backers are as follows: Mitch Kapor (Lotus 1-2-3 fame), Pierre Omidyar (eBay founder), Jeff Bezos (Amazon) and Ray Ozzie(Microsoft Chief Technology and Lotus notes developer). Clearly, these gentlemen have made a major investment in the development of a virtual world environment and its potential for the future. There have been scores of articles written about the rise and fall of Second Life and it is not always easy to separate the hype from the reality. Nevertheless, Second Life still boasts a significant presence of companies inhabiting real estate inworld. Some companies have reduced their presence while others like IBM have teamed up with Linden Labs the creators of Second Life to expand their presence and to explore creative ways to use the 3-D environment for their business goals.

Other vendors that have provided software for virtual world implementation also include the following: Forterra Systems, Qwaq, Unisfair, Vivox and Icarus Studio. The need for avatars has also sparked an industry. You can have custom made avatars from Sitepal. Crazytalk allows you to create avatars to your liking. These avatars can be used on web sites and can handle FAQs from potential or existing customers.[16] Gartner Media estimates that by 2011, 80% of Internet users worldwide will have an avatar. [1]

HOW ORGANIZATION'S USE 3-D VIRTUAL WORLD LIKE SECOND LIFE FOR E_COMMERCE

In Second Life, the medium of exchange is a currency defined as lindens. It has a bona fide exchange rate with the dollar so funds can be moved between real dollars/euros and lindens. All businesses in Second Life use lindens. Entrepreneurs set up retail stores, develop land, provide consulting services to all in-world customers. Others like IBM, Apple, Nissan, and others create virtual world presences to reach the new generation of potential customers. For the most part, these well-known business use the virtual world to entice future customers by entertaining them with very captivating experiential activities. Examples of this are by showing products attractively, giving "hands on" demonstrations, or allowing people to experience an animated program featuring new products.

Due to the limitations of conducting business in lindens, companies must use the virtual world as a "hook" to bring the consumer back into the real world for the actual purchase of products or services. So as of now, the e-commerce dimension is restricted to offering promotions and providing customer-oriented information.

Online consumers can defy traditional real world limitations in the3-D virtual world. Some examples are that they can fly from place to place and not be limited by walking so they can see more displays than in real life. They can be teleported to anywhere in the virtual world so that they can be in Paris, Rome, Buenos Aires, Moscow in seconds. A true global marketplace is available. Through translation programs, a consumer is able to "speak" in over forty languages to people all over the world. Consumers, via their avatars (the persona that they take on in Second Life) can try on clothing and try out various products at no cost before they make a purchase.

There is unlimited potential in the manner in which organizations tap into the potential of 3-D virtual world technology to achieve their e-commerce strategies.

IT DEPARTMENT'S ROLE IN 3-D WORLD CORPORATE IMPLEMENTATIONS

Anytime a new technology explodes on the scene, the corporate IT department must make a critical assessment of its impact on the organization. There are implications for security, privacy, intellectual property, bandwidth, employee access, hardware requirements, user education, and make or buy and update policy. With 3-D virtual world and its link to e-commerce strategy implementation there is no difference. Pratt has identified several factors that have to be addressed.

-Access- Some IT departments have blocked access to virtual world sites. Clearly, if virtual worlds become a viable adjunct to an e-commerce strategy, this obstacle must be removed.
-Public or Private?-Should it be inside or outside the corporate firewall?
- Hardware Requirements-Do the corporate desktops have the firepower? Virtual world applications require a powerful media applications computer with a modern video card.
- Security-Should ports be open to the virtual world?
- User Education-Climbing the steep learning curve. Consumers must have an avatar for each inworld application. At some point, a "universal" avatar will be available that can function across several platforms.
-Proprietary Information-Virtual world conversations can leak corporate information to outsiders. There must be guidelines established regarding the transmission of information from employees to the consumer.
-Build or Buy?-Who creates the virtual world presence? Do you contract out to a consultant or develop the skill set internally? An entire field of consulting has been created by entrepreneurs who are able to either build or aggregate corporate storefronts and/or commercial buildings.
-Updates-The rate of updates often exceed traditional revision cycles for other application. Who will be responsible for the update of the software client and maintenance of the site inworld?[14]

None of these decisions are easy in the case of 3-D world implementations. Recall that the millennial generation has skills and expectations that are greater than those of previous generations. The learning curve will be less formidable for them than for older workers not weaned on a gaming culture. Issues of propriety information and security can be addressed via education of the workforce. There are consulting firms set up to do virtual builds for corporate clients so there is not always a great need for in-house programming or scripting expertise.

The IT department is in a constant debate over thin or fat clients on the desktop. 3-D virtual worlds argue for high end firepower at the client level. Clearly, that does not mean that all end users require this capability. Corporations are debating the implications of employee access to social networking sites during work hours. The presence of 3-D virtual worlds further adds fuel to the fire. As these capabilities are used increasingly for collaboration within organizations, the separation between real and virtual worlds becomes increasingly murkier. Using avatars in a virtual environment can replace on site face-to-face meetings in a way that is more personal than videoconferencing or web- casting in use today.

At the present time, there are no insurmountable technical challenges for the implementation of 3-D virtual world environments for use in e-commerce corporate strategies. The customer can gather information in the virtual world, ask questions and be given answers, comparison shop and do research. When it comes time to pay, do a credit check and execute the order, they must travel to the real world and leave the virtual world. Is this adequate? Most companies that implemented a 3-D virtual world presence are satisfied with this arrangement. Direct web links can be provided to make the transition seamless from the virtual to the real world. If the corporation's purpose is for brand equity enhancement then it becomes a non-issue. Clients can print coupons inworld and use them in real world stores to further advance the linkages between the two worlds. Obviously, the trick is to explore creative ways to use the new 3-D virtual world to enhance the revenue stream to corporations. But this becomes an integral component of a corporation's overall e-commerce strategy.

CONCLUSIONS

There is no disputing the fact that business organizations are using 3-D virtual worlds to support their e-commerce strategy initiatives. When pressed for demonstrable proof of an ROI, there is little to no evidence in the literature. That does not mean that corporations do not see multiple advantages from having a presence in this environment. IBM is sold on its potential and has a multimillion dollar initiative in virtual world technology. [7]The Disney corporation has invested in this market and cites brand awareness benefits. Some have started with incorrect expectations and have been disappointed. Some view it as R&D for a new technology and they do not want to be left behind. Still others are experimenting with it as a potential tool to bond customers to their brand. To date , there are some philosophical issues that have to be addressed by providers on virtual world environments. For example, most are like Second Life in that they are "walled gardens", i.e. the environment is not open source.[20] Here is an example that captures the concern of some in the IT world, "Open-source virtual worlds should operate more like the web with each organization providing the horsepower it needs, and standards would allow your inventory to travel with you from site to site-then this technology will live up to its promise and potential. [2]

The potential for the use of 3-D virtual worlds is only limited by the imaginations of developers of applications. The computer scientist, Jaron Lanier, commenting about Second Life stated "this is the first time we can observe a large user community in a virtual world that the users are able to shape and reformulate." [9] Perhaps, new business models need to be invented and implemented in order to exploit this new world. Almost 100 educational institutions have implemented a 3-D virtual world presence in Second Life alone. These institutions are not only doing so in order to enhance revenue from student tuition but also to explore new avenues of social networking for their constituents at all levels of the institution. At the present time it is indeed the "wild west" but like the Internet it has enormous potential for organizations in the future if they can find a way to harness its potential.

FUTURE ISSUES

Critics of 3-D virtual world technologies and its use for e-commerce strategy abound. The nature of their criticisms range from the verifiable observation that many existing virtual world implementations do not draw a sufficient amount of traffic [Rose] to justify the investment to those that argue that "playing" by a diffused population has no benefits to companies' goal to enhance revenues. Regarding the former argument, if you take the WWW as an example , there are literally billions of web pages in existence but only 10 sites are responsible for 40% of page views. So is the web deserted? Is "traffic" at a virtual world corporate site a proper metric to use? These are important questions that must be answered before any final determination can be made. Regarding the latter argument, the following perspective is posited by Jainschigg in a comment "businesses interested in engaging deeply with customers can't in my view NOT look at Second Life as a platform and community." [10] Also, Reichental,the chief technology person at PWC consulting ,stated the following " I hope that virtual worlds can be used for recruiting, innovation, business modeling and training.'[9] That is certainly an ambitious goal for a 3-D virtual world environment for an organization.

There are still issues of ethics and management of employee activities that must be addressed by any implementation of this technology. Regarding the former, recent cases have identified issues of the use of intellectual property within virtual worlds. "In a small study conducted by several lawyers, of 10 randomly selected virtual stores in Second Life, seven sold knock-off goods that exhibited obvious trademark infringements."[8] Once again, the apparent "wild west" nature of this environment is being tested in the courts as disputes within world and between providers and customers emerge. Another interesting issue surfaced as a result of a governmental agency and its employees providing information to an inworld community. A spokesperson for the state of Missouri issued the following comment relating to inworld activities; “Any employee conducting business for the state in a virtual community must have explicit authorization from management."[5]

In conclusion, perhaps the most significant observation on the assessment of the appropriateness of 3-D virtual world initiatives in an e-commerce environment was captured in a quote from Christian Parrino : "What is the right level of convergence between the virtual and real worlds?" [10, 13] One fact is certain, the growth of 3-D virtual worlds has been remarkable. Businesses wanting to develop a multidimensional approach to e-commerce should take a serious look at how virtual worlds fit into their current and future strategies.

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