

OPPORTUNITIES AND CHALLENGES FOR REAL MONEY TRADING IN VIRTUAL WORLD

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ABSTRACT

The consumption of virtual goods in social virtual world is a multibillion-dollar industry. People are willing to pay real money for many different virtual goods and services, including virtual homes and virtual land. With the rapid growth of Real Money Trading (RMT) in social virtual world, it is important to understand the opportunities and challenges faced by both the consumers and the sellers within the RMT virtual world economy. By presenting some selected key events of RMT of two different types of virtual world environment, we highlight the opportunities and challenges emerging from RMT.

Keywords: Virtual world, second life, real money transaction, virtual goods, virtual property, entropia universe.

INTRODUCTION

Virtual world (VW) is an avatar-based 3D platform, in which real-world users are represented by avatars, virtual selves which can engage in different activities, and with the surrounding virtual objects and avatars of other users. An "Avatar" - in the context of the virtual worlds - is a graphical representation of the user, in a three dimensional (3d) form, through which that user can interact with the surrounding objects and with other user's avatars [6]–[8]. Avatars can exchange instant messages, virtual objects, and virtual money. They may also communicate through voice conversation. The trading of virtual world currency, items and service with virtual currency of virtual world - which can be converted to real money - is referred as Real Money Trading (RMT) or Real Cash Economy (RCE).

The previous decade has shown a massive growth of virtual world users and related economic activities. For example, Second Life (SL), one of the most popular Social Virtual Worlds (SVW), has recorded an increase in proportion from 64 acres in 2003 to 448,000 acres in 2014. The population has also increased, from 2 million residents in 2006 to more than 36 million residents in 2014 [1], [2]. In 2014, there were over 1 million active users of SL, with over 1.2 million transactions each day for virtual goods. By June of 2014, the total transactions among users for virtual goods with the SL economy was \$3.2 billion (USD), which is more than the total amount of the annual trade of the combined Virtual worlds in 2008. Alongside this, there were more than 2.1 million user created virtual goods for sale in 2014, compared to only 28,000 virtual goods in 2004 [2]. These in-world virtual economies - even though they take place with avatars inside virtual world with virtual currency - have actual, real-world financial outcomes. Virtual currencies, such as Linden Dollar (L\$) used in SL, can be converted into real money in \$USD and vice versa via LindeX. LindeX is a currency exchange market managed by Linden Lab. Linden conversion can be done both in-world by interacting with virtual objects like virtual ATM, or via an external website with online payment methods such as credit card, Paypal, and bank transfer. There are also over 20 other authorized resellers of Linden Dollar, allowing users to convert Linden Dollars with different real world currencies.

Similarly, game oriented virtual worlds, such as Entropia Universe, have also experienced significant growth in the last decade. These game oriented virtual worlds are platforms on which users can play Massive Multiplayer Online (MMO's) games with RCE. Project Entropia Dollars (PED) is the virtual currency of Entropia Universe. Players can earn PED by performing different activities, such as collecting virtual fruit and stone in the game, or by selling skills that can be obtained in the game to other players. Using virtual items and tools in the game to perform different game activities will cause the virtual items and tools to decay and lose value, hence players will have to buy additional items and tools to continue the game. Players can deposit PED to their Entropia account via credit card and payment, and they can also withdraw PED (convert to real money) to their bank account. Unlike Linden Dollar of SL, PED is exchanged as a fixed rate of 10 PED to 1 \$USD. With the Planet Partner concept, Entropia Universe allows Planet Partner to make use of the Entropia Universe Planet Development Kit (EUPDK) to develop their own planet within the Entropia. The major planets include Planet Calypso, Rocktopia, Next Island, Planet Arkadia, and Planet Cryene. The economics of these virtual planets have substantial real financial outcome and the sales of some of these virtual planets were at world record prices for virtual property sold. In 2010, the Gross Domestic Product (GDP) of Entropia Universe was about 428 million USD. In 2014, the Planet Arkadia became the world's first million dollar virtual property [3].

It has been reported that RMT has generated over \$2.1 billion in USA alone in 2011, with a total world-wide market of about \$15 billions in 2012. With the RMT and RCE in virtual worlds, users can buy and sell virtual goods and services as well as real products and services. It is not only real world companies that are attracted to seek commercial opportunities in the RMT market in virtual world; individual entrepreneurs have also been drawn to this new market. Anshe Chung and Aimee Weber managed to generate over one million USD of wealth from RMT [4]. Moreover, innovative forms of business and economics activities were also used by developers of virtual world. For instance, Planet Calypso and Play Arkadia offered land deeds to their players to invest in the RCE of the virtual planet and share the revenue [3]. Activities such as "gold farming", collecting virtual gold, virtual items, virtual currency and skills in virtual worlds to trade for real money has emerged as a market within the world. It is estimated that around 400,000 people are employed in gold farming [5].

With these increases of the RMT market and related business activities, as well as the changing landscape of RMT, this study aims to explore RMT and their impacts in several areas. Using the examples of Second Life and Entropia Universe, as representatives of different types of virtual worlds, we will discuss the revenue models, opportunities and challenges for RMT virtual world economies. Selected key milestones and successful cases of RMT in Second Life and Entropia Universe will be reviewed. Issues related to taxations, virtual property ownership, privacy and technological issues associate with RMT in virtual world will be discussed. Future research questions that need to be addressed will be presented.

The paper is organized as follows: We will first review the background, history, and development of RMT. Then, we will review selected successful cases of RMT. Then, we will present the practical issues and challenges of RMT followed by the discussion of future research opportunities related to RMT in virtual world.

BACKGROUND

Virtual World

Virtual world (VW) is an avatar-based 3D platform with users represented by avatars which engage in different activities and which interact with the surrounding environment of virtual objects and avatars. Examples of popular virtual worlds include Second Life (SL), Entropia Universe, EverQuest, Final Fantasy, World Of Warcraft (WOW), etc.

Virtual worlds can be categorized dependent on various criteria. [9] provides a simple classification of virtual world into “scripted virtual world” and “unscripted virtual world”, based on whether or not users need to follow a specific pattern of the game (scripted virtual world) or whether they have the freedom to not follow any patterns of behaviors (unscripted virtual world). [10] also defined five prominent classes of virtual worlds, namely: education-focused; theme-based; community-specific; children-focused; and self-determined. Education focused virtual worlds are designed to provide the user with training in specific areas, such as procedure skills development and language learning. Theme-based virtual worlds are designed to promote specific types of content. Community-specific virtual worlds are designed for members within a particular country or geographical region with adoption of the local language and local aesthetics. Children-focused virtual worlds are designed particularly for child users, for purposes of education, socialization, and gaming. Self-determined virtual worlds, also referred to as open virtual worlds, have a variety of motivations and objectives for participants and utilize diverse profit models.

[7] have provided a more detailed categorization based on two main factors: 1) limitations of content creation and 2) orientation (purpose), in order to define four main types of virtual worlds (as shown in Figure 1). These categories are: static game world (game oriented environment with limited content creation); dynamic game worlds (game oriented environment with unlimited content creation); static social worlds (social oriented environment with limited content creation); and dynamic social worlds (social oriented environment with unlimited content creation).

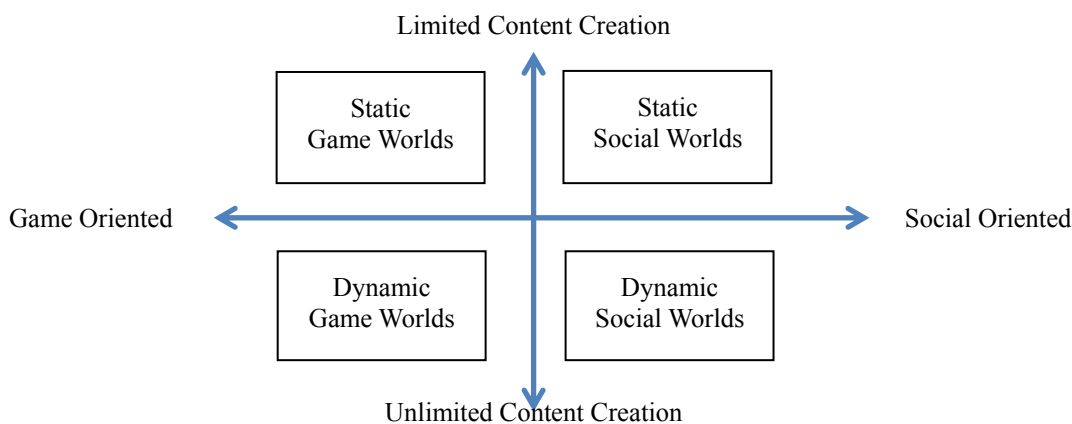


Figure 1. A categorization of virtual worlds [7]

Real Money Trading and Real Cash Economy

While most people look at virtual worlds as primarily fantasy or gaming worlds, there are a lot of virtual worlds with significant RMT occurring directly inside the virtual world, which also has financial outcomes in the real world [4]. Examples of the growing virtual worlds RMT is Second Life and Entropia Universe. The growth, over the course of the previous decade, of RMT related to these two virtual worlds has attracted the attention of the governments and legislation authorities, leading them to consider and discuss whether earnings from RMT should be considered as a taxable source of income [4], [9].

Milestones of Real Money Trading

In order to illustrate the history and development of RMT in virtual worlds, the key milestones in the development of RMT as

they are present in two select virtual worlds - Second Life and Entropia Universe - will be described. These two virtual worlds are also different in kind, as discussed above, and so they will allow for an illustration of RMT in different arenas. Second Life represents a dynamic social world which is unscripted. Entropia Universe represents dynamic game worlds which users have some specific objectives (missions) and activities to follow. These two select virtual worlds both have their own virtual currency and RCE. A list of key RMT milestones in Second Life and Entropia Universe is presented below. The RMT milestones below is a selective but not exhaustive list of all RMT activities in these two virtual worlds. These milestones are selected to illustrate different forms of RMT in these two virtual worlds.

Key RMT milestones in Second Life

Virtual world with RMT or RCE allows users to earn, spend, withdraw, and deposit virtual currency. In Second Life, residents can earn Linden Dollars by selling virtual goods and services in-world, on Second Life marketplace and on other virtual object exchanges. Virtual object creation and scripting functions in Second Life enables residents to design and create virtual objects with diverse functions. Linden Dollars can also be earned by working for virtual jobs, playing games, participating in competitions in-world, investing in companies listed on Capital Exchange, or by completing surveys and other web offers outside Second Life. Residents can spend Linden Dollars to buy virtual goods, such as virtual fashions, virtual home, virtual pets and virtual vehicles. Residents can also rent virtual real estate with Linden Dollars. Linden Dollars can be spent for virtual services, for instance, to do virtual skydiving.

Table 1. Selected List of Key RMT milestones in Second Life

Timeline	RMT milestones	RMT Characteristics / Phenomena
Dec 2003	Linden Dollar was introduced	Introduction of virtual currency
Oct 2005	LindeX currency exchange for Linden Dollar was introduced	Free market exchange rate of virtual currency
Dec 2006	Anshe Chung was reported to be the first real-life millionaire due to RMT in Second Life	Entrepreneurship in RMT for sustainable real world outcomes
Mar 2007	Kevin Alderman sold the virtual city of Amsterdam for \$50,000 USD	
Dec 2007	Cao Fei sold a virtual art world called RMB city for \$100,000 USD for 2 years access rights to the art world	
Jan 2008	Second Life had closed in-world virtual bank GinKo Financial	Crimes and Fraud related to RMT
July 2008	AnsheX a virtual goods exchanges has become available	Business related to RMT
Jan 2009	Second Life Marketplace was launched	Marketplace for virtual goods and services
Nov 2011	Capital Exchange provides stock exchange simulation game where users buy and sell shares with Linden Dollars	Investment in virtual business virtual currency
Nov 2013	Linden Lab launched Authorized Reseller program with 5 Linden exchanges companies to sell Linden Dollars.	More flexibility to exchange virtual currency with other real world currency
Jun 2014	Over 50 private estate management companies provide rent/sell service of private estate land of Second Life	Marketing of RMT activities and appearance of related business outside Second Life

In March 2002, the first resident joined Second Life, in late 2003 Linden Lab introduced Linden Dollars in Second Life, which was the first step in the creation of a Real Cash Economy in Second Life. In Oct 2005, LindeX - a currency exchange service of Linden Dollars - was introduced by Linden Lab. Second Life residents can buy Linden Dollars with \$USD and vice versa. The exchange rate of Linden Dollars is based on the demand and supply of the currency.

In 2006, it is reported that Anshe Chung (a Second Life resident whose real name is Ailin Graef, and who lives in Frankfurt) become the first Second Life millionaire. Anshe has accrued over one million USD of net worth in RMT inside Second Life. She accumulated this wealth over a period of two and a half years, with an initial investment of \$9.95 USD for opening a premium account in Second Life [11]. Her wealth was gained from the purchase of virtual land in Second Life, and the creation of resorts, houses, beaches, and virtual buildings to sell or to rent to other Second Life residents. Similar entrepreneurship from several Second Life residents has also resulted in substantial RMT. For instance, the virtual city of Amsterdam was sold for \$50,000 USD by Kevin Alderman, and the virtual art world called RMB city created by Cao Fei was sold for \$100,000 USD to collectors, providing 2 years access rights to the art world.

In Jan 2008, several virtual banks were created in Second Life, which provide services similar to those of banks in real world. These banks provided attractive interest rates to Second Life residents who deposit their Linden Dollars there. One of the virtual banks, GinKo Financial, collapsed, and with it lost all of the investments of the avatars who had deposited there. Second Life banned this virtual bank and all other banking related virtual objects in Second Life. The Second Life terms of service prohibit any virtual entity to provide interests or similar type of direct return on investment - unless the entity has an applicable

government registration statement or financial institution charter.

Later in 2008, AnsheX, - which is a web portal to provide virtual goods exchanges for virtual items in Second Life - was launched. In November 2011, Capital Exchange, a virtual stock exchange, was launched in Second Life. Capital Exchange provides the ability for Second Life residents to buy and sell shares of virtual companies in Second Life. In 2013, Linden Lab launched the Authorized Reseller program for Linden Dollars, with initially fifth party exchanges to resell Linden Dollars to Second Life users in different international currencies and payment methods. Up to now, there is no chartered banks doing banking business inside Second Life. ATMs inside Second Life currently allow the transfer of Linden Dollars between residents and facilitate the purchase of Linden Dollars from Linden Lab or authorized Linden resellers. There are over twenty authorized resellers, but none can purchase Linden Dollars from Second Life users.

As of 2014 there are over 50 different private estate management companies, providing private estate land in Second Life for rent and sale. These private estate management companies vary in size, ranging from individual Second Life residents to real world companies holding dozens of privately owned islands in Second life. Table 1 shows a selected list of key RMT milestones in Second life.

Key RMT milestones in Entropia Universe

Entropia Universe is the world's largest Massive Multiplayer Online Real Cash Economy (MMORCE) game. The virtual currency used in Entropia Universe is Project Entropia Dollars (PED). PED has a fixed conversion rate of 10 PED for \$1 USD. Similar to Second Life, players in Entropia Universe can earn PED in different ways. Players can acquire valuable resources and items by hunting and mining in the Entropia Universe. PED can also be earned by holding land deeds in Entropia Universe. There are also free competitions and events with PED prizes for winners. Players can also complete missions to gain PED and skills. Skills acquired in Entropia Universe can also be sold to other players for earning PED. Players can also sign up with Entropia Partners to complete activities outside Entropia Universe to earn PED. Hunting requires an investment in weapons and armor and mining requires an investment in mining equipment and tools. Using these tools will lead to decay of its life, costing the user PED to maintain or purchase new tools, much as they would in the real world.

Table 2. Selected List of Key RMT milestones in Entropia Universe

Timeline	RMT milestones	RMT Characteristics / Phenomena
Dec 2001	Commercial trial of Project Entropia economy systems	Introduction of virtual currency
Dec 2004	Virtual Treasure Island sold for \$26,500 USD	Entrepreneurship and investment in RMT for sustainable real world outcomes
Oct 2005	Jon Jacobs bought a virtual asteroid for \$100,000 USD	
Dec 2006	3 virtual shopping malls Entropia Universe sold for \$179,688 USD	
May 2007	5 banking licenses issued in Entropia Universe with users paying \$59,000 to \$90,000 USD for each license	Virtual banks and banking services in RCE
Dec 2009	Crystal Palace Space Station sold for \$330,000 USD	Entrepreneurship and investment in RMT for sustainable real world outcomes
Nov 2010	Jon Jacobs sold the Asteroid Space Resort to various Entropia Universe participants for a total of \$635,000 USD.	Significant return of investment in RMT
Nov 2011	Introduction of citizenship and revenues sharing system in Planet Calypso with voting rights for \$100 USD	Collaborative investment and profit sharing in RMT
Dec 2012	Mobile app Virtual Tycoon was launched allowing users to manage RMT of Entropia Universe	External to the virtual world platform for managing RMT of virtual world
May 2013	Players create contest to give away \$10,000 USD to other players	Emergent unscripted RMT activities from players
Oct 2013	A Player earn over \$33,000 USD by bringing down monster in Entropia Universe	Significant return of investment in RMT
Nov 2013	Players invested \$150,000 USD for their own moon in Entropia Universe	Collaborative investment and profit sharing in RMT
Mar 2014	Planet Arkadia became the world's first \$1 million virtual property, by offering 200,000 deeds at \$5 USD each	Collaborative investment and profit sharing in RMT
Jun 2014	Stable Estates available for Auctions	Game developer control of RMT in virtual world

Emerging entrepreneurship and investment interests are evidenced via various transactions of virtual property in Entropia Universe, at world's record prices. For examples, in 2004, the virtual treasure island was sold for \$26,500 USD to a 22-year-old player, David Storey. Later in 2006, 3 virtual shopping malls also sold at record prices of \$179,688 USD. Also of note is another transaction. Jon Jacobs, an English actor, mortgaged his house in real world to buy a virtual asteroid for about

\$100,000 USD. Jon's investment gave him a half a million USD return when he sold the asteroid for \$635,000 USD.

In 2011, citizenship and revenues sharing systems and Calypso Land Deeds were introduced in Planet Calypso within Entropia Universe. Calypso Land Deed holders receive a share of 50% of the planet gross revenue, payable monthly, and also have the political voting right on the planet. Similarly, the Arkadia Underground Deeds offered by the Planet Arkadia allows holders to share in the revenues of Arkadia Underground and receive dividends on a daily basis. These deeds represent a collaborative investment and profit sharing scheme in RMT. In 2013, a group of Entropia Universe players jointly funded \$150,000 USD to obtain the development and management rights to operate their own moon in Entropia Universe. In 2014, Planet Arkadia, a virtual planet in the Entropia Universe, developed a Singapore-based independent game developer allowing players of the Arkadia Underground game to participate in up to 200,000 deeds for 50 PED each. Players can share the revenues of Arkadia Underground and receive dividends on a daily basis. The selling of 200,000 deeds at this initial price make Planet Arkadia the world first million dollars virtual property [3]. In Jun 2014, Stable Estates were available for auction in various planets in Entropia Universe. The players who own the stable can generate revenue by charging other players in Entropia Universe for services supplied by the stables. These services include hosting and training others players' pets. Better services provided by the stables will help the players' pets to progress faster and perform better in contests and competitions. The Stables will be placed in strategic positions on each planet for auction with starting bids of 20000 PED. Table 2 shows a selected list of key RMT milestones in Entropia Universe.

PRACTICAL OPPORTUNITIES AND CHALLENGES

With the RMT characteristics and phenomena identified in previous section. The related practical issues and challenges are discussed in this section. RMT enables new business opportunities and encourage entrepreneurship both inside virtual world and also outside virtual world.

RMT Opportunities

Entrepreneurship and investment in RMT for sustainable real world outcomes

Dynamic virtual worlds, such as Second Life, allow and encourage RMT by granting participants intellectual property (IP) rights to their self-created virtual assets [9]. Using the built-in tools provided by Second Life, users can create their contents in their virtual world [12], [13]. Several successful entrepreneurs, who have successfully adapted to the RMT, are highlighted in the key milestones in the previous section. Recent study [14] also suggests that virtual world infrastructure can facilitate user innovation and entrepreneurship. The free flow of information and free transfer of digital goods and services provides a trading environment which lowers the difference between the lead and mass users, as well as large brand and individual entrepreneurs.

Collaborative and emergent behaviors in RMT

Communication features, such as instant messaging, voice chatting, groups and memberships in virtual worlds, provide an effective way for users to collect information, communicate, and interact. These are all important aspects and sources of new knowledge and resources to promote innovation and entrepreneurship. Moreover, these information exchanges also facilitate the formation of social networks and communities. Interesting behaviors have also emerged in RMT, where users - not limited to dynamic social virtual worlds but also dynamic social game world - try to organize events and contests within the world.

New forms of business external to the world

It is not only entrepreneurship and new business forms inside virtual world that benefit from this new market; we also observe the indirect impact of RMT through the creation of other associated businesses outside of the virtual world market. A good example of this trend is the virtual real estate management services, that operate both inside and outside of the virtual world. Websites and social media pages are used to present their real estate listings external to the virtual world.

RMT Challenges

Tax and banking legislations of RMT

Taxation of RCE presents legislature with a real challenge. For example, Second Life server is based in the US, and the residents of Second Life are from all over the world. If the government decided to apply the taxation policy in transactions that take place in Second Life there are several complications, and several key questions. For example, should the tax be calculated with the virtual transactions before virtual currency exchanged to real currency? Should the tax policy be applied to the users based on the server location or the user location? What if the tax policy is applied to the server location, so the user will be taxed once in the host country, and once for exchanging for real currency? The imposition of prohibitive taxation on players would likely have a detrimental effect on these burgeoning economies. Therefore, any legislative authority would have to think carefully about the appropriate measures - such as a requirement of game operators to monitor and report taxable activities to the authorities - will dissuade game play and likely result in the collapse of these vibrant new economies [4].

Virtual Property Ownerships

In addition to the purchasing or renting cost for a land or island, virtual world may charge reoccurring monthly fees for virtual real estate. This real estate will exist for only as long as the virtual world continues to exist. The reliability and sustainability of the virtual world platform will affect users incentive to purchase the virtual property in the virtual world. The other issue that

this raises is that, if a participant stops paying the recurring fees, or if he/she not using the virtual world anymore, should the property ownership revoke backto the virtual world operators? In most of the cases the virtual property of virtual avatar is linked to their existencein VWs[4].The issue that arisesfrom thissituation, where a user stop using the virtual world for years, is whether will he/she be able to return all the property, or whether these properties will disappear from his/her account. Another important issue is that some of the participants in virtual worlds have died in the real life, and his virtual wealth still exists in the VW, will his inheritors be able to claim this wealth or convert it from virtual property to real money?

Virtual World Operators Control and Governance

The risk of economic deficit in one of the most flexible virtual worlds, which is Second Life, comes from two different sources. First, if there areno buyers who are interested in buying the Linden Dollars, or if Second Life operator does not allowthe conversion ofthe virtual currency to a real currency. Due tothe continuous growth in Second Life, the demand forLinden Dollars is increasing. However, there is no guarantee that this demand will continue in the future [4]. Second, LindeXhasits daily and monthly limits on the amount that can be changed from LindeXDollar to real currency. These limits are based on different factors, such as the user level in Second Life which can be a company, enterprise, business owner, or individuals. For obvious reasons,companies, enterprises, and business owners have higher limits than individuals [4].

V-BUSINESS RESEARCH OPPORTUNITIES

Although there are various practical issues related to tax and virtual property ownership which are still to be resolved, there are many vital research questions to be investigated, in order to understand the growth and development of the RMT market. Some interesting research questions are listed below.The list is by no means exhaustive, but aims to illustrate some possible future research directions.

Business issues related to RMT

- Who are the buyers and sellersin RMT?
 - What are the characteristics of these buyers and sellers?
 - Are these characteristics of RMT buyers and sellersthe same for different types of virtual goods and services, and in different types of virtual worlds ?
- Why do people interested in RMT?
 - What are the determinants of their purchase intention and behaviors with respect to RMT of virtual goods and services?
 - Are these determinants the RMT intention and behaviors the same for different types of virtual goods and services and in different types of virtual worlds?
 - What are the determinants of sellers behaviors, their innovations and entrepreneurship with respect to RMT of virtual goods and services?
 - Are these determinants the RMT intention and behaviors the same for different types of virtual goods and services and in different types of virtual worlds?
- What are the virtual goods and services being traded in RMT ?
 - What are the characteristicsand attributes of popular virtual goods and services traded?
 - What are the determinants for sellers use to set price for virtual goods and services ?
 - What are the determinants for buyers willing to for virtual goods and services ?
- Who are participating in collaborative RMT in virtual worlds ?
 - What motivate collaborative investments or purchase in RMT?
 - What are the determinants for sellers to set the prices of virtual goods and services ?
 - What are the determinants for values of virtual goods and services involved collaborative RMT investment or purchase ?

Policy and legislation issues relate to RMT

- How should collaborative RMT be managed?
- Should policy or technical solutions to be used to handle the risks and challenges for in trading virtual goods and services ?
 - To what extend can theprinciples of real life legislation and rules related to property ownership be applied in virtual world RMT and virtual property?

CONCLUSIONS

Facing theenormous growth of RMT in virtual world, there are various emerging opportunities and issues.In May 2014 SL announced that “Oculus Rift” is compatible with SL VW[15]. Oculus Rift will overcome some limitations of the computer monitor by giving an immersive 3Dvirtual representation for the VW and with the ability to simulate the head movement for users to look around in the SL. Oculus Rift and other similar devices can be considered as the new technological revolution in VW. Similar advancements in virtual reality technologies will continue to create new RMT landscapes to virtual world. Hence, longitudinal research efforts for the suggested research questions in this study related to RMT in virtual world are required to understand new phenomena created by new RMT market and new experience demandedby virtual world users.

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