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Real Money Trading in Virtual Worlds

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ABSTRACT

Significant real money is traded into and out of virtual world currencies. Virtual world participating users buy and sell virtual products, virtual goods, virtual properties, virtual services, and other virtual items of interest. As gamers, some trade real money to: buy assets including characters, currencies and other auctioned items. Others buy at virtual auctions, purchase virtual currencies, purchase virtual land, build virtual properties and use virtual facilities. The Theory of Planned Behavior maps a structural equation modelling approach for real money trading (RMT) - suggesting RMT can be behaviorally promoted to participant users in virtual worlds.

Keywords: Real money trading virtual world, planned behavior, attitude, intention, perceived behavioral control, structural model, second life

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INTRODUCTION

Virtual worlds (VWs), virtual communities (VCs) and social networking sites (SNSs) have experienced substantive technological developments, and continual growth, in end-user engagement across the globe (Chung, Nam, & Koo, 2016; Guo & Gong, 2011). This has altered the boundaries, the limits and the scope of virtual social communications (Chung *et al.*, 2016; Wang, Yeh, Chen & Tsydypov, 2016). VWs, VCs and SNSs each provide different, yet dynamic platforms. Each platform supports different social interactions between their communities of online global end-users, and each does so without restrictions of boundaries, borders, time or space (Bell, 2008; Novak, Mladenow & Strauss, 2014).

Different virtual worlds have their own virtual currencies, which they use inside their own virtual world. These in-game real money trades allow the purchase and sale of virtual items or structures. The virtual currency within these games has an actual real money trading (RMT) value (Aichner & Jacob, 2015)

The virtual world economy is now a multibillion-dollar industry. Virtual world currency is used in virtual worlds to buy and sell virtual products, goods, properties, services and other items of interest. This is first enabled when real money is initially traded for virtual currency. Real money trading (RMT) in virtual worlds continues to grow as gaming environments like World-of-Warcraft see gamers buy assets including characters, currencies and items, and as others such as in Second-Life or Entropia-Universe also attend virtual auctions, buy virtual land, build virtual properties and use virtual facilities (Anderson, 1971; Guo & Barnes, 2007).

RMT is also a real world trading activity. Hence RMT has both real and virtual world applications. This creates a dual money trading economy where real money flows from the real world into the virtual world and vice-versa. Such exchanges depend upon how each trading market is configured for its participant users as they chose to interact within their chosen virtual world and its allowed activities. Data from 2011 showed US RMT being in-excess of US\$2.1 per year in 2011 (Nazir & Man Lui, 2017). By 2014 projected data showed Second-Life economy alone reaching US\$3B per year (Nazir & Lui, 2014). In 2016 Reuters.com reports that the company Super Data Research estimates the market for in-game items (virtual goods) could reach a value exceeding US\$46B and to grow compounding at 6% per annum. In 2017 NewZoo.com reported the entire 2016 gaming market as valuing US\$99.6B.

Virtual world money transactions can be (1) developer-to-business (where virtual places are bought and sold to corporations or individuals), (2) developer-to-consumer (where items are exchanged for currency or for game interactions), business-to-business (where companies trade virtually), business-to-consumer (where virtual items are sold for profit), consumer-to-consumer (where Business-to-Business (B2B); Business-to-Customer (B2C); or Customer-to-Customer (C2C) where virtual objects are traded between users) Figure 1 (Cagnina & Poian, 2007; Hendaoui, Limayem & Thompson, 2008; Nazir & Lui, 2014, 2016).

Although the monetary systems in differing virtual worlds are different, virtual currencies include PED (used in Entropia-Universe), linden dollars (used in Second-Life) and gold (used in World-of-Warcraft and EverQuest) are common, and these can be exchanged in various ways for real money.

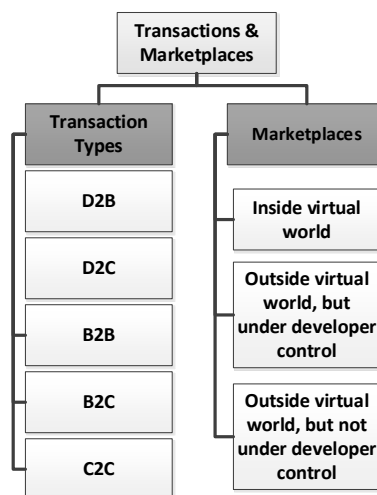


Figure 1: Virtual world economy transactions and market environment classification (Nazir & Lui, 2016)

MOTIVATION FOR RMT STUDY

This study is motivated by the desire to understand if RMT can be predicted by the behavior of its virtual world participant users. Hence a theoretical approach is adopted.

RMT brings currency into and from a virtual world. This suggests a clear awareness of the transaction and its implications is understood by the participant user, and that a coherent behavior occurs through their visible sharing of identity, contributions, and ongoing activities (Nazir & Man Lui, 2017). These behavioral actions fit the ‘Theory of Social Translucence’. The Theory of Social Translucence suggests a clear awareness of RMT and its planned strategies, is likely advanced where a coherent behavior occurs across a virtual world user’s behavioral identity, contributions and ongoing activities.

Understanding RMT participant users’ behavior occurs across a virtual world helps organization to: 1) develop their vision and strategy, 2) knowledge infrastructure, 3) learning process, and 4) building the organizational culture and design. These are four categories out of the suggested six categories of organization strategic (Figure 2) focus areas, used in formulating its knowledge strategy and accompanying policies (Sharma & Bhattacharya, 2013). Therefore, understanding participant RMT users’ behavior is important for business and developer future strategic planning. Finding relevant, and up-to-date information, regarding RMT users’ behavior is beneficial to companies and developers – in order to be maximize effective strategic planning and to make timely effective decisions (Sharma, Foo & Morales-Arroyo, 2008).

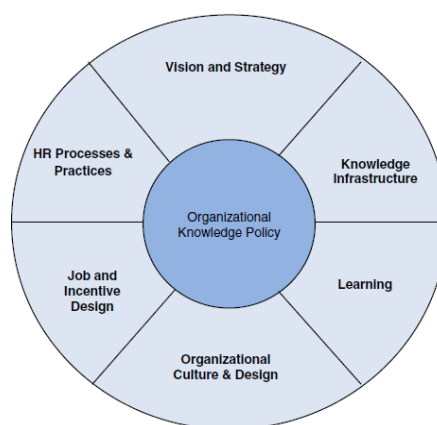


Figure 2: Prescriptive organizational knowledge policy framework (Sharma & Bhattacharya, 2013)

However RMT ties participant users into a monetary exchange between a virtual world action and a real world result. Hence a better theoretical fit for RMT lies within ‘Information Integration Theory’ (Anderson, 1971). Information Integration Theory suggests attitudes form and change as further persuasive information is integrated, mixed, and/or combined by the user, and then weight-scored (or averaged) against its perceived value and as contributors towards affecting user attitude. Information Integration theory – also links with the ‘Theory of Planned Behavior’ (Ajzen, 1991; Zhang & Shrestha, 2010). The Theory of Planned Behavior posits that individual behavior is driven by behavioral intentions. Behavioral intention is a function of: (1) individual attitudes towards the behavior, (2) subjective norm surrounding the behavior, and (3) each individual’s perceptions of the behavior (Ajzen, 1991; Zhang & Shrestha, 2010).

This theory links the participant user attitudes and their subjective norms (Zhang & Shrestha, 2010) through their common beliefs and behaviors. These intentionally drive their overall behavioral (strength-of-belief) within their behaviorally-controlled RMT activities domain. Hence, this study considers whether the Theory of Planned Behavior can predict the participant user's RMT activities in virtual worlds.

Study Considerations

This study recognizes that RMT survey contributors from differing virtual worlds may hold differing views on their RMT. Hence this study's findings are to be treated with a degree of caution. Nevertheless, the English speaking open source community (the only respondent group used in this study) is well versed in using virtual worlds, and also has a solid understanding of different virtual worlds, and of their different RMT requirements.

Study Approach

This Dec 2015-Feb 2016 3-month data capture followed social media requests for global, open-source community virtual world users to complete this RMT study's 5 point Likert scale (strongly disagree to strongly agree) survey. A final usable survey data set of 216 cases was obtained.

After SPSS 24.0 factor reduction (ML, oblim), the construct table (Table 1) is delivered, and data is transferred into AMOS24.0 for structural equation modeling. All constructs offer solid average variance, all item loads bar one remain strong and above 0.7. Construct Means and SD's indicate suitable measurement spreads. Cronbach alpha's (above 0.7) indicate all constructs are suitable. Construct loads and small construct errors are also suitable for structural equation modelling (Ding, Velicer & Harlow, 1995; Fishbein & Ajzen, 1977; Kline, 2011).

Table 1: Measurement constructs for behavioral modelling against RMT

Construct Measures	Item loads	Mean	Standard deviation	Construct Cronbach alpha	Construct load	Construct error	Average variance extracted
ATTITUDE (-ve coded)		2.74	1.08	0.88	1.01	0.14	0.65
RMT in Virtual Worlds is of no benefit to me.	0.70						
Buying virtual items would make me feel like I am cheating my friends.	0.86						
Buying virtual items with real money affects the atmospherics in Virtual Worlds.	0.83						
The sellers of virtual items in Virtual Worlds tend to 'scam' the buyer.	0.83						
SUBJECTIVE NORM		2.87	0.86	0.84	0.79	0.12	0.59
I like to be admired for my Virtual Worlds skills.	0.66						
I like to be admired for my knowledge in Virtual Worlds	0.83						
I like to be admired for having a good Virtual Worlds reputation.	0.83						
I enjoy being admired in Virtual Worlds.	0.74						
PERCIEVED BEHAVIORAL CONTROL (-ve coded)		3.79	0.99	0.88	0.93	0.12	0.65
Buying virtual items gives me a guilty conscience.	0.84						
I think that I would regret buying virtual items.	0.83						
RMT gives some players an unfair advantage.	0.75						
My friends would not play with me if I bought virtual items with real money.	0.79						
INTENTION		2.22	0.81	0.79	0.72	0.14	0.57
Conducting RMT in Virtual Worlds is natural/habitual for me.	0.75						
Buying virtual items and services is habitual for me.	0.83						
Selling virtual items and services is habitual for me.	0.67						
RMT ACTIVITY		3.15	1.28	0.80	1.14	0.34	0.57
I have sold virtual items in Virtual Worlds during the last 12 month period.	0.81						
Last month, I did spend real money buying virtual items from Virtual Worlds participants.	0.74						
Last month, I did earn real money selling virtual items to Virtual Worlds participants.	0.71						

Composite single indicator structural equation modelling provides the Figure 3 RMT activity level structural model. This shows

excellent fit ($\chi^2/df = 20.01/15 = 6.53$; $p < 0.088$; TLI = 0.952; CFI = 0.986; GFI = 0.988; AGFI = 0.941) (Cunningham, 2008; Ding, Velicer & Harlow, 1995; Fishbein & Ajzen, 1977). Although the RMSEA (0.074) is above 0.05 it remains under 0.8 and so is acceptable. In this small data set study, the RMR (0.045) offers a more precise measure than the RMSEA, and the RMR, being under 0.05, indicates an excellent model exists (Ding, Velicer & Harlow, 1995; Fishbein & Ajzen, 1977; Kline, 2011).

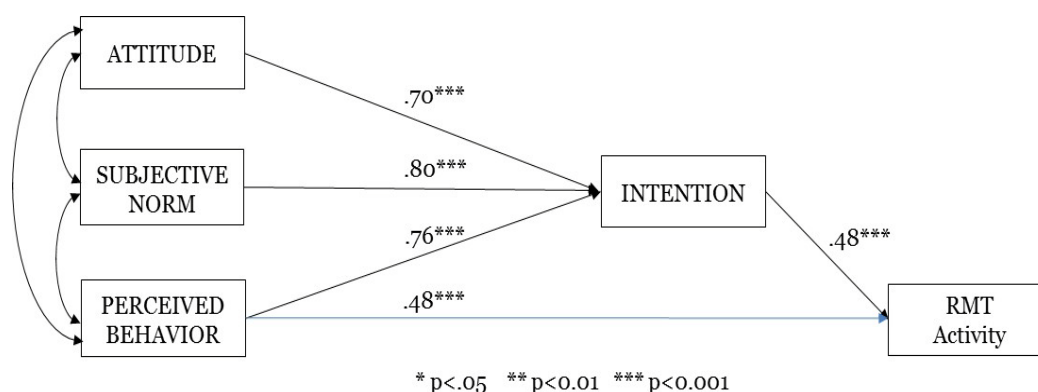


Figure 3 : Structural equation model of behavioral predictors to RMT activity level.

This study model assesses the Theory of Planned Behavior in a virtual world RMT environment. Its structural equation model approach enlists the relative independent and intermediate construct measurement effects as drivers of the dependent RMT activity construct. All paths are very highly significant. The Table 2 standardized total effects offer the respective contributions to RMT activity. This table shows virtual world buying and selling attitudes, the subjective norms around the admiration of virtual world user's skills, and the perceived behavior control gauged through considered thoughtful reasoning all strongly affect the virtual world user's intention to be involved in RMT. Further, these independent and intermediate constructs each significantly affect the real money trading activities of the virtual world user – with perceived behavioral control being the strongest contributor. It also highlights that the perceived behavior control to RMT pathway exists and that it is a significant contributor to RMT activity.

Table 2: Standardized Total Effects for Figure 1

	ATTITUDE	SUBJECTIVE NORM	PERCEIVED BEHAVIOR	INTENTION
INTENTION	0.695	0.805	0.762	0
RMT ACTIVITY	0.334	0.387	0.843	0.48

DISCUSSION

Table 2 lists Figure 1's RMT activity level and intention standardized total effects. All three independent variables are key contributors towards the intermediate construct of intention - indicating all provide substantive effects in driving the virtual world participant user's intentions. Perceived behavior (with both a direct, and indirect pathway to RMT) is by far the strongest influence on RMT activities, followed by intention, and then attitude and subjective norm. Thus, those operating in virtual worlds, and seeking to generate transactions, should focus on driving the behavioral perceptions (such as: virtual purchasing being a feel-good experience; enjoying virtual world purchasing, and friendship-bonding through legitimate virtual world purchasing) as these approaches can likely further an increase an RMT activity within a virtual world.

This regression path model approach engages only a few constructs and elucidates the relative importance of each construct. Data collection was global and random. Hence survey data collection is assumed without random measurement error, and not disguising multi-collinearity effects (Hair *et al.*, 2010; Kline, 2011). This study's research design controls for multi-collinearity effects by grouping its open source software community contributors against their virtual worlds engagement preferences, and by retaining only the survey case data from experienced open source community participant users.

IMPLICATIONS

Theoretical Implications

This RMT study follows virtual world user behavioral patterns, in particular Information Integration Theory, the Theory of Social Translucence, and the Theory of Planned Behavior. This theoretical framework allows the gauging of behavioral activities against the resultant RMT activities of each virtual world user. This presents a pathway to compare RMT activities through an understanding of the behavioral patterns of the virtual world user.

Practical Implications

The study findings demonstrate the strength of Theory of Planned Behavior in predicting RMT participant users' behavior in virtual world platforms. Other studies have successfully utilize Theory of Planned Behavior as a theoretical framework to determine users' behavior toward Internet purchasing, internet banking, and other economic online behaviors (George, 2004; Lin, 2006; Shih & Fang, 2004).

With the increasing number of studies investigating virtual purchasing behavior and RMT activities using Theory of Planned Behavior framework, researchers may now discover the most important antecedents, helping virtual world industry to understand the RMT behavior virtual platforms (George, 2004; Lin, 2006; Shih & Fang, 2004).

Understanding RMT participant user behavior, as confirm in this study, should help business and developers to identify the critical factors to improve and implement successful strategies. These strategies should be able to increase their sales and boost the number of RMT transactions taking place in this dynamic virtual world platform.

FUTURE RESEARCH

The sample used in this study targets three of the most popular virtual worlds (Second Life, World of Warcraft, and Entropia Universe). Analytical results present may therefore have limited generalization. Future research may considered more virtual worlds such as Quest, There, IMVU, etc.

The sample size used in this study (216) representing the three virtual worlds is small. Hence, it is unclear whether these analytical results can be generalized to represent other virtual worlds such as Quest, There, IMVU, etc. Further research may collect more responses to validate this study finding.

Future research could consider other factors in the Theory of Planned Behavior, such as trust, loyalty, and privacy. Including these factors may provide a bigger picture predicting RMT participant user behavior in virtual worlds more accurately. Valid and reliable scales for the proposed constructs need to be developed and adapted in future research.

As intention focuses more on future behavior, while actual participating in RMT activities measures the past behavior, including measurements for both intention to participate in RMT activities and actually participating in RMT activities may further strengthen this study's findings.

CONCLUSION

The theories of Planned Behavior and Social Translucence both map this study's structural equation modelling approach. Real money trading (RMT) is shown to have behavioral connotations. The study suggests RMT can likely be promoted to participant users in virtual worlds using a Theory of Planned Behavior approach - particularly by emphasizing items to a participant user that bring their related behavioral perceptions and intention aspects into strong consideration.

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