Factors Influencing Users' Word-of-Mouth Intention Regarding Mobile Apps : An Empirical Study

Yao Chen*, Yu-Fei Shang**

Abstract

Purpose - This paper aims to identify factors that influence the users' word-of-mouth intention (WOMI) regarding mobile apps, focussing on the impacts of technology acceptance model (TAM) and social network theory.
Research design, data and methodology - Based on TAM, this study integrates social network theory into the research model. The 317 sets of data collected in a survey were tested against the model using SmartPLS.
Results - Our findings suggest the following: 1) Personal innovativeness positively influences perceived usefulness (PU), perceived ease of use (PEU) and perceived enjoyment (PE); 2) PEU affects PU and PE; 3) Both PU and Satisfaction are directly correlated with WOMI. Although PEU and PE has no direct impact on WOMI, they may indirectly affect WOMI via Satisfaction, as PU, PEU and PE all positively influence satisfaction; 4) Network density and network centrality both play a mediating role in the relation between PEU and WOMI. Referral Reward Program have a positive moderating effect on the relation between PU and WOMI.
Conclusions - The findings of this study illustrate the traits of Apps that can promote users' WOMI, as well as the characteristics of people who are more likely to participate in the word-of-mouth process. The findings provide a theoretical basis for app developers to make word-of-mouth a marketing strategy.

Keywords: Word-of-Mouth Intention, TAM, Customer Satisfaction, Social Network Theory, Personal Innovativeness.

JEL Classifications: B31, M31, M39, O33.

1. Introduction

With the widespread of smart phones, human society rapidly enters the era of the mobile internet. Therefore, Apps installed in mobile phones witnesses a booming development and play a significant role in the internet economy. An App with great influence, to a certain degree, can contribute to the formation of a "unicorn (a startup company valued at over $1 billion.)" in internet era, which further shows the profound influence of Apps. However, in one Apps store, there are countless Apps available to the customers. Thus, how can a new App rapidly and efficiently gain users becomes a topic puzzling most enterprises and scholars. Especially, the cost of customer acquisition (traffic cost) tends to become higher

and higher under the background of increasingly full mobile penetration rate. According to the study by QuestMoblie (2017), monthly mobile devices in China grew very slowly from January to September 2017: from only 1.027 billion to 1.064 billion. The year-on-year growth rate also showed a decreasing trend month by month.

On the other hand, for customers, the development of mobile network multiplies the channels to acquire information and the cost is relatively lower. Thereupon, it gives rise to the increase of redundant information and the decline of the credibility of advertisement. Under that situation, word-of-mouth has become a widely used and effective marketing method for enterprises (Trusov, Bucklin, & Pauwels, 2009). When a customer wants to know more about a certain kind of product or service, he or she may adopt the suggestions given by others as the basis to make decisions. These suggestions are the so-called word-of-mouth. It's the most economical and efficient method for an app to gain a firm foothold in the market by using word of mouth. Nevertheless, an important prerequisite to obtain

---

 * First Author, Ph.D Candidate, Dept. of Business Administration, Inha University, Incheon, Korea. E-mail: bestchenyao@outlook.com
** Corresponding Author, Assistant Professor, College of Economics and Management, East China University of Technology, NanChang, China. E-mail: yufeishang@outlook.com

word-of-mouth marketing successfully is to know users' motivation of positive word-of-mouth and accurately grasp the user's psychology. However, in reality, many satisfactory customers don't deliver positive word-of-mouth as expected by the enterprise while the enterprise can do nothing with the customer's silence. Biyalogorsky, Gerstner, and Libai (2001) pointed out that the customer would only deliver good word-of-mouth when their satisfactory exceeded a certain degree reaching the "delight point". But it's hard to decide and set the "delight point" in practice.

In recent years, studies on mobile Apps have sprung up. Hsiao, Chang, and Tang (2016) integrated customer satisfaction degree and habit into study model to discuss the factors influencing the customer's continual using intentions. With technology acceptance model as the basis, Verkasalo, López-Nicolás, Molina-Castillo, and Bouwman (2010) availed the external elements like behavior control and social norms to study the factors motivating the using intention of mobile Apps. Similarly, based on technology acceptance model(TAM), Choi and Totten (2012) discussed the influence of cultural difference between the U.S.A and Korea on customer's receiving behavior of mobile TV. From the perspective of brand awareness, customer engagement and brand commitment, Kim (2011) discussed the relationship between student's using of hotel apps and brand commitment.

In the mobile Apps, game Apps occupy part of the market, and there are so many researches specifically for the game Apps. Ha, Yoon, and Choi (2007) showed in the research that perceptual entertainment is a key factor in the adoption of mobile games by users. In addition, according to Van der Heijden (2004), mobile games can be regarded as a hedonic technology because individuals use mobile games for experiential and hedonic values rather than for instrumental and utilitarian values. So it is necessary to study the difference between game Apps and non-game Apps for game Apps have significant differences with other Apps in characteristic.

The existing studies mainly focus on using intention, factors for the success of mobile Apps, and using loyalty. However, few studies relate to triggering factors of word-of-mouth, an important way to efficiently spread mobile Apps. This article aims to discuss the traits of non-game Apps that will motivate users to make positive word-of-mouth, the characteristics of users who are more likely to participate in the word-of-mouth process, and the effect of referral reward program on word-of-mouth intention.

2. Theoretical Background

2.1. Technology acceptance model（TAM）

The concept of technology acceptance model was put forward by Davis in 1989. This theory holds that when faced with a new technology, a customer may make decisions based on two factors, perceived usefulness and perceived ease of use. Perceived usefulness refers that a customer's subjective perceptions of the degree to which a certain system can improve his or her working performance (Davis, 1989). Perceived ease of use refers that a customer's subjective perceptions of the degree to which him or her doesn't have to endeavor (Davis, 1989). Afterwards, in 1992, Davis used theory of motivation to discuss people's behavior to accept science and technology. Therein, external motivation refers that one performs a certain work for the work is thought to offer extra valuable gains, i.e., it has nothing to do with the work itself. Intrinsic motivation refers that one performs a certain work due to the interests in the work without motivated by external force. Davis, Bagozzi, and Warshaw (1992) believed that perceived usefulness was one of the forms of external motivation and put forward that perceived enjoyment was one of the forms of intrinsic motivation. Meanwhile, he also defined perceived enjoyment as the happiness degree perceived by a customer during the activity, using computer, itself.

With the extensive application of technology acceptance model, more and more scholars made deeper and further studies on technology acceptance model under different technological background. Moon and Kim (2001) held the points that the original technology acceptance model was not enough to interpret emerging technology, World-Wide-Web. The upgraded technology acceptance model is more capable to explain it for perceived enjoyment, intrinsic motivation, is integrated. Lu, Yao, and Yu (2005) extended technology acceptance model by integrating the variables like social influence and personal innovativeness to study the wireless network service on mobile phone. The study indicated that social influence and personal innovativeness had significant positive effect on perceived usefulness, perceived ease of use, and perceived enjoyment. However, no obvious effect was shown on the behavior intention. In order to discuss the factors influencing the customer's intention to use GPS equipment, Chen and Chen (2011), with technology acceptance model as the study frame, further claimed personal innovativeness, besides perceived enjoyment, as the factors adjusting behavior intention. The study showed that perceived usefulness, perceived ease of use, and perceived enjoyment had significant effect on using attitude. In addition, personal innovativeness could ease the relationship between attitude and behavior. Kim, Kwon, and Moon (2014) applied technology acceptance model to SNS to study the important factors influencing word-of-mouth intention. The study showed that perceived usefulness and perceived enjoyment influenced SNS users' word-of-mouth intention while perceived ease of use had no influence on that.

2.2. Personal innovativeness

The concept of personal innovativeness is developed from the concept of innovation diffusion theory put forward by

Rogers (1995). Rogers (1995) defined Innovation as an idea, practice, or object which is perceived as new by an individual or other unit of adoption.

In the concept of innovation diffusion theory, Rogers adopts the time that the individual needs to accept innovation as the norm to classify innovation adopters into five groups of people including innovators, early adopters, early majority, late majority, and laggards. It's also pointed out that innovators are always brave and adventurous and they are keen on new thoughts and ideas, thus, they are easier and more willing to accept innovation and adopt innovative products. Based on innovation diffusion theory, Agarwal and Prasad (1998) defined personal innovativeness in the field of information technology as the personal willingness to try information technology. Personal innovativeness was helpful to recognize those who would adopt information technology innovation earlier than others. Jashapara and Ta (2006) believed that personal innovativeness was the stable personal characteristics that were not easy to change under the influence of time and environment. It was also pointed out that persons with personal innovativeness were more likely to be first to adopt new technology products and personal innovativeness was one of the important factors influencing the behaviors of adopting new IT products. Kou and Yen (2009) held the points that personal innovativeness was one of the important factors influencing the behaviors of adopting new technologies and defined personal innovativeness as the personal willingness to adopt innovative technology. Lin and Liu (2013) defined innovativeness as the user's willingness to adopt any innovative things and recognized effectiveness of personal innovativeness as the external variable of technology acceptance model.

2.3. Customer satisfaction and word-of-mouth(WOM)

In recent years, the concept of customer relationship management in the industry has received considerable attention, and customer satisfaction is one of the most representative indicators. In terms of business management, customer satisfaction is extremely important, because customers satisfied with the business will repeatedly carry out consumer behavior, which brings word-of-mouth effect, and thus attract more new customers to consume(Liu & Mei, 2011). The concept of customer satisfaction was first introduced into marketing by Cardozo in 1965. He considered customer satisfaction as a state of mind, as a result of a combination of feelings of perceived inconsistency with those of a customer before buying, and pointed out customer satisfaction can increase the chances of customers' repurchase (Oliver, 1980). Then the concept of customer satisfaction gradually emerged in related researches. Oliver (1981) pointed out that customer satisfaction was the emotional response through a particular exchange and came from the degree of surprise consumers got in the purchasing experience. Yeung, Ging, and Ennew (2002) put forward that customer satisfaction could be viewed as an identification of customers' expectations and was almost conceptualized as a threshold for customer's satisfaction with service. Kotler (2002) came up with that customer satisfaction was the degree of pleasure or disappointment felt by individuals. The degree was determined by consumers' perception of product quality and individual's expectations of the products. Liu and Mei (2011) remarked that customer satisfaction was the degree of discrepancy between customer's experience of consumption and their original expectations of products or services. The smaller the difference was, the higher the satisfaction; and the greater the difference was, the lower the satisfaction was.

Word-of-mouth occurring among consumers is often defined as an informal exchange of characteristics of a business or products (Westbrook, 1987). As the mobile internet and new media emerge, there are more and more channels for people to access information, but the trustworthiness of the information reduces accordingly, so more and more consumers choose word-of-mouth referrals as the basis of purchase decisions. Half a century ago, Katz and Lazarsfeld showed that word-of-mouth was an important source of information for certain household goods purchases (Godes & Mayzlin, 2004). Kotler (2000) then conducted a survey with 7,000 consumers in seven European countries, of whom 60% said they were affected by their families' and friends' purchase of new products. With the popularity of the Internet, people's way of word-of-mouth communication has also become more diversified. In addition to the traditional word-of-mouth communication (offline) directly with friends and families, online word-of-mouth using mobile phones and computers as media has a broader communication platform and great influence. According to the research report by Roland Berger Strategy Consultants (2010), Internet word-of-mouth not only affects consumers 'purchasing behavior, but also affects every link of it. It has been found that 34.6% of respondents said that they have the purchasing needs triggered by word-of-mouth; 56.3% of respondents said that their brand information was found through word-of-mouth; 58.7% of respondents said they made purchase decisions by reference to word-of-mouth; up to 90% of respondents said they would pay attention to word-of-mouth. Mobile Apps has the inherent advantage of natural online dissemination. Therefore, in this study, the measurement of word-of-mouth has included the online word-of-mouth communication besides the traditional one. Given the importance of word of mouth, there are more and more studies on word-of-mouth and they can mainly be divided into two aspects: one is the reason of word-of-mouth which the mainly analyzes factors that can promote the formation of word of mouth, and the other one is word-of-mouth effect, which consists of the analysis and evaluation of the effect of word-of-mouth. This paper mainly studies the reasons for positive word-of-mouth, and explores

the factors that affect customers' positive word-of-mouth intention.

2.4. Referral Reward Program

With the increase of redundant information and the decline of the credibility of advertisement, word-of-mouth has become a widely used and effective marketing method for enterprises (Trusov et al., 2009). At first, the enterprise's strategy is to try to improve the existing customers' satisfaction degree to enhance the positive word of mouth. However, in reality, many satisfactory customers don't deliver positive word-of-mouth as expected by the enterprise while the enterprise can do nothing with the customers' silence. It's passive to solely rely on the management of existing customers' satisfaction degree to enhance the positive word of mouth. Therefore, some enterprises begin to explore the method to manage word-of-mouth and referral reward program is one of the attempts.

Referral reward program refers to the marketing strategy that the enterprise gives a certain reward to the existing customers to motivate them to recommend the service and product to new customers (Yu, Wang, & Bao, 2011). Due to the characteristics of low cost, strong pertinence, and easy controllability, it has become a widely used marketing strategy for many merchants. With the extensive application of referral reward program, academic world begins to study it in an all-around way. Biyalogorsky et al. (2001) pointed out that referral reward program was not only effective but also high efficient because the enterprise would only pay when the word-of-mouth was transmitted. Ryu and Feick (2007) pointed that by implementing and managing referral reward program, the enterprise could not only gain word-of-mouth to enhance new customer's recognition of the product or service but also improved the loyalty of the existing customers, which was consistent with the core idea of customer relationship management (CRM) and could become an important tool of CRM. Yu et al. (2011) pointed that the influence of the word-of-mouth generated from referral reward program on the receiver's buying intention was generally lower than that of natural word-of-mouth because the receiver might doubt the credibility of the word and they could not accept the recommendation based on reward. Additionally, it was pointed that the strength of relationship between the two sides influenced the effect of the word-of-mouth generated in referral reward program. With the same reward value, intimate relationship might have positive effect on the receiver's buying intention while the loose relationship might have little effect on that. Zhu and Yu (2015), compared with the situation in which no reward offered, the referrer might become more willing to recommending when a certain reward was offered. Compared with the situation in which only the referrer was rewarded, referrer might become more willing to recommending when both the referrer and the recommended

were rewarded.

2.5. Network centrality and network density

Personal network centrality stands as a core concept and reflects how popular individuals are in the social network (Van den Bulte & Wuyts, 2007). Freeman (1978), based on the studies on network centrality, proposed three forms of it: degree centrality, closeness centrality and betweenness centrality; among which, degree centrality is used to measure the degree of individuals' being in the center of the social network. The higher degree centrality of individuals enjoys, the high status and more informal rights they possess. Closeness centrality measures the closeness degree of individuals with other actors in the social network. The shorter distance is synonymous with higher centrality, which means a quick access to relative resources. Betweenness centrality measures individual's ability as a go-between and whether he (she) occupies the intermediary position of interaction between two actors in the network or the key position controlling resource circulation. The more position this go-between occupies, the higher the betweenness is, and the stronger the individuals' ability to control resource circulation.

In social network, members with higher network centrality enjoy more relationships and rights, have more closed and frequent communications with other members and at the meantime, play a significant role in information conveying, in controlling the flow of the information and even of "opinion leader" (Shao, Zhang, & Guo, 2014). With respect to customer's word-of-mouth referrals, opinion leaders are bestowed with absolute advantages in word-of-mouth communication. The information spread by opinion leaders are more easily accepted by other customers with greater influence coefficient on the purchase decisions of other customers (Shao et al., 2014).

Network density serves as a common measurement dimension in social network analysis and it describes the closeness among members' nodes (Scott, 2000). Generally, higher network density means that the whole network and its nodes are able to attract, convey and handle more information. The range of network density reflects that of the communication frequency among members. Members in network with high density have closer interaction with others than those in low density. Thus, they have greater impact on each other and are more reliable to each other (Mao & Gao, 2010). As Parker and Ward (2000) pointed out, in network with high density, members are more likely to interact, communicate and share opinions with each other. Meanwhile, Bao, Xie, and Shen (2003) stated that, individuals with higher network density are more connected with members in social network with higher reliability to each other and a faster speed of information spreading. Shao et al. (2014) noted that, in network with high density, influence

and trust of members on each other promote customers' word-of-mouth referrals.

## 3. Research Model and Method

3.1. Research model

This paper takes Apps (non-game) users as the object of study and explores into factors affecting customers' word-of-mouth intention. It covers four parts: first, the factors influencing customers satisfaction and word-of-mouth are studied in terms of product experience (perceived usefulness, perceived ease of use, perceived enjoyment) based on technology acceptance model; second, to explore whether the user's personal characteristics (personal innovation) can be used as external variables of the technology acceptance model, and whether they will impact perceived usefulness, perceived ease of use and perceived enjoyment; third, from the perspective of social network, it inquires into how network centrality and network density, as moderator variables, affect the word-of-mouth intention; at last, it inquiries into whether the referral reward program affects the user's word-of-mouth. The specific research model is shown in <Figure 1>.

3.2. Research hypotheses

Lewis, Agarwal, and Sambamurthy (2003) put individual factors like self-efficacy and personal innovativeness into the technology acceptance model to investigate reasons that affect the use of information technology and found that personal innovativeness greatly impacted perceived usefulness and perceived ease of use. Based on the technology acceptance model, Yang (2005) explored the behavioral intentions of consumers' using 3G mobile value-added services by adding external variables such as personal innovativeness, knowledge, and age. The findings showed that personal innovativeness could enhance the perceived ease of use of 3G mobile value-added services. Therefore, the following hypotheses are proposed as follow:

<H1> Personal innovativeness positively influences perceived usefulness of mobile Apps.
<H2> Personal innovativeness positively influences perceived ease of use of mobile Apps.
<H3> Personal innovativeness positively influences perceived enjoyment of mobile Apps.

Moon and Kim (2001), to enable the technology acceptance model to explain new users' acceptance and use of emerging IT such as the World Wide Web, extended the technology acceptance model by incorporating perceived
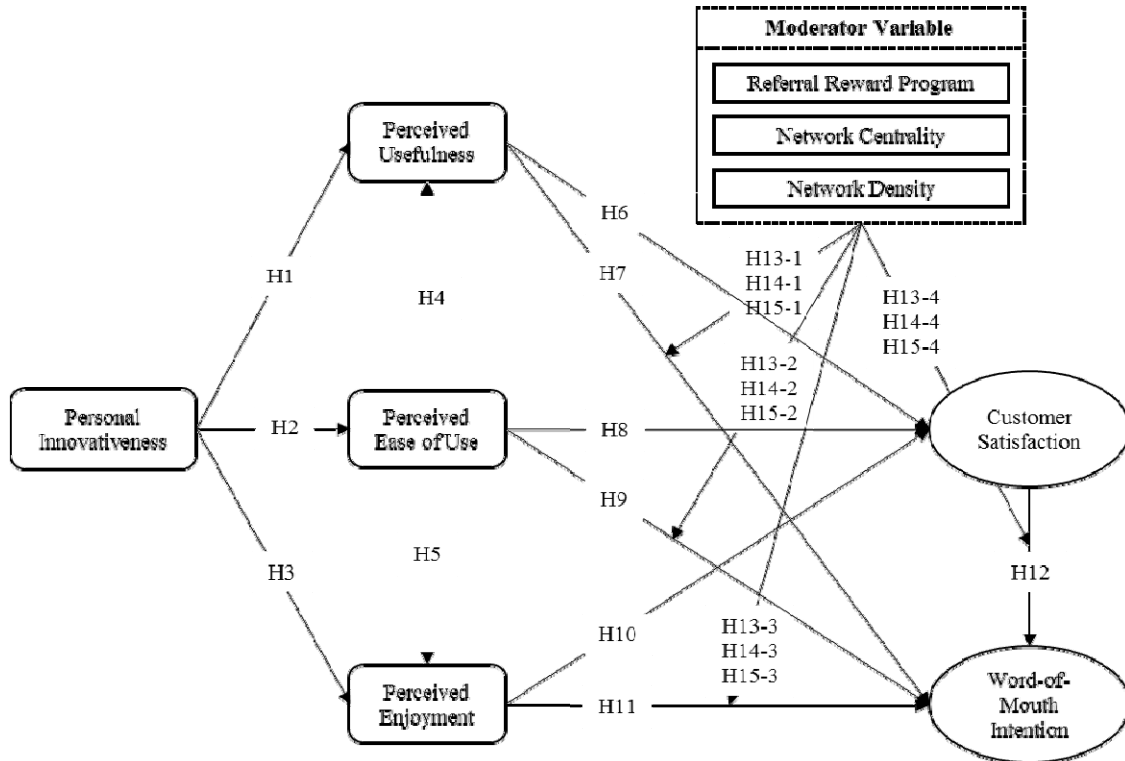
<Figure 1> Research Model

enjoyment, the intrinsic motivation. Findings showed that the expanded technology acceptance model was more capable of interpreting, and that perceived ease of use had a positive effect on perceived usefulness and perceived enjoyment. As such, the following hypotheses are proposed as follow:

　<H4> Perceived ease of use positively influences perceived usefulness of mobile Apps.
　<H5> Perceived ease of use positively influences perceived enjoyment of mobile Apps.

Via the technology acceptance model, ZHU and GUO (2016) analyzed the impact of mobile government website quality on customer satisfaction and their continuous usage. The results reflected that both perceived usefulness and perceived ease of use had a significant impact on user satisfaction. Based on the technology acceptance model, Joo (2017) analyzed the impact of the system of ticket purchase platform on customer satisfaction and their behavioral intention and found that both perceived usefulness and perceived ease of use had a notable impact on customers satisfaction. Kim et al. (2014) applied the technology acceptance model to the SNS to explore the important factors that affect the word-of-mouth intention, and found that perceived usefulness and perceived enjoyment had an impact on SNS users' word-of-mouth while perceived ease of use had no effect on word-of-mouth intention. As such, the following hypotheses are proposed as follow:

　<H6> Perceived usefulness positively influences customer satisfaction of mobile Apps.
　<H7> Perceived usefulness positively influences word-of-mouth intention of mobile Apps.
　<H8> Perceived ease of use positively influences customer satisfaction of mobile Apps.
　<H9> Perceived ease of use positively influences word-of-mouth intention of mobile Apps.
　<H10> Perceived enjoyment positively influences customer satisfaction of mobile Apps.
　<H11> Perceived enjoyment positively influences word-of-mouth intention of mobile Apps.

Swan and Oliver (1989) studied consumers' after-sales communications and found that retailers could not directly control word-of-mouth and that measures used to ensure customer satisfaction and fair treatment had a positive effect on word-of-mouth. Anderson (1998) studied the relationship between customer satisfaction and word-of-mouth and the results showed that customer satisfaction was an important antecedent variable of word-of-mouth intention. Based on the O2O business model, Shang et al. (2017) analyzed the impact of experiential value on customer satisfaction and online word-of-mouth, and found that customer satisfaction had a significant positive impact on online word-of-mouth. Against this backdrop, the following hypotheses are put forward as follow:

　<H12> Customer satisfaction positively influences word-of-mouth intention of mobile Apps.

Ryu and Feick (2007) experimented with the referral reward program and found that rewards increased the likelihood of referrals (positive word-of-mouth) compared to not providing rewards. Zhu and Yu (2015) studied the impact of incentive quota, allocation plan and intensity of relationship on the referral intention in referral reward program. The study found that the moneylender's recommendation preference was higher when the reward was offered, and that the stronger the intention of positive word-of-mouth intention. Against this backdrop, the following hypotheses are listed as follow:

　<H13-1> With the referral reward program, the positive relationship between perceived usefulness and word-of-mouth intention will be strengthened of mobile Apps.
　<H13-2> With the referral reward program, the positive relationship between perceived ease of use and word-of-mouth intention will be strengthened of mobile Apps.
　<H13-3> With the referral reward program, the positive relationship between perceived enjoyment and word-of-mouth intention will be strengthened of mobile Apps.
　<H13-4> With the referral reward program, the positive relationship between customer satisfaction and word-of-mouth intention will be strengthened of mobile Apps.

Yang and Zhang (2009) held that members who occupied the center of the network tended to act as the "opinion leader" in their groups and had a marked influence on the groups. This led other members to be more receptive to the information provided by the members of the center, and in order to maintain their position as "opinion leaders," the members of the center were willing to initiate frequent communications with other members (Shao et al., 2014). Shao et al. (2014) also noticed that in the aspect of customers' word-of-mouth referrals, word-of-mouth of opinion leaders clearly occupied an absolute superiority. The information delivered by opinion leaders was more easily accepted by other customers with a relative great influential coefficient on other customers' purchase decisions. As a result, the following hypotheses are proposed as follow:

　<H14-1> The greater the level of network centrality, the stronger is the positive relationship between perceived usefulness and word-of-mouth intention of mobile Apps.
　<H14-2> The greater the level of network centrality, the stronger is the positive relationship between perceived ease of use and word-of-mouth

intention of mobile Apps.

<H14-3> The greater the level of network centrality, the stronger is the positive relationship between perceived enjoyment and word-of-mouth intention of mobile Apps.

<H14-4> The greater the level of network centrality, the stronger is the positive relationship between customer satisfaction and word-of-mouth intention of mobile Apps.

Parker and Ward (2000) argued that the higher the possibility of interaction among members in higher-density social networks, the more opportunities for communication and sharing. Bao et al. (2003) also pointed out that the higher the individual's network density was, the closer its social network members were to each other, the higher the trust was, and the faster the information was spread. On this occasion, the following hypotheses are proposed as follow:

<H15-1> The greater the level of network density, the stronger is the positive relationship between perceived usefulness and word-of-mouth intention of mobile Apps.

<H15-2> The greater the level of network density, the

stronger is the positive relationship between perceived ease of use and word-of-mouth intention of mobile Apps.

<H15-3> The greater the level of network density, the stronger is the positive relationship between perceived enjoyment and word-of-mouth intention of mobile Apps.

<H15-4> The greater the level of network density, the stronger is the positive relationship between customer satisfaction and word-of-mouth intention of mobile Apps.

3.3. Measurement

All of the questionnaires in this study include 9 parts: personal innovativeness, perceived usefulness, perceived ease of use, perceived enjoyment, referral reward program, customer satisfaction, word-of-mouth intention, network centrality and network density with a total of 38 questions. In measuring the scale, on top of RRP, Likert's 5-point scoring method is applied, which ranges from [absolutely disagree] to [totally agree], each with a score of 1 to 5. The specific information of each questionnaire is listed as <Table 1>.

<Table 1> Measurement of the Variables

Constructs		Items	Sources
Personal Innovativeness	PI1	I am curious about various things.	Lewis et al. (2003) Lu et al. (2005) Kuo & Yen (2009)
	PI2	If I heard about a new thing, I would look for ways to experiment with it.	
	PI3	I think it is very interesting to try new things.	
	PI4	Around me, I am usually the first to try out new things.	
	PI5	Overall, I like to experiment with new things.	
Perceived Usefulness	PU1	This App is helpful to me.	Teo & Lai (1999) Moon & Kim (2001) Cyr et al. (2006) Kim et al. (2014) Hsiao et al. (2016)
	PU2	Using this App can increase the efficiency of my life and work.	
	PU3	Using this App can help me accomplish tasks more easily.	
	PU4	Overall, this App is useful to me.	
Perceived Ease of Use	PEU1	Learning to use this App is easy for me.	
	PEU2	Learning to use this App does not take a long time for me.	
	PEU3	It is easy to remember how to use this App.	
	PEU4	It is easy for me to be skilled in using this App.	
	PEU5	Using this App does not require a lot of mental effort.	
	PEU6	Overall, this App is easy to use.	
Perceived Enjoyment	PE1	The process of using this App was enjoyment.	
	PE2	Using this App is pleasurable.	
	PE3	I find using this App to be interesting.	
	PE4	Use this App to make my life more colorful.	
	PE5	When using this App, I do not realize the time elapsed.	
	PE6	Overall, this App makes me feel very enjoyment.	
Customer Satisfaction	CS1	My experience of using this App has been satisfactory.	Hsiao et al. (2016) Shang et al. (2017)
	CS2	I think I made the correct decision in using this App.	
	CS3	My opinions on this App are positive.	
	CS4	I am satisfied with this App.	
Word-of-Mouth Intention	WOMI1	I will recommend this App to others.	Kim et al. (2014) Shang et al. (2017)
	WOMI2	I will tell others about the benefits of using this App.	
	WOMI3	If other people have similar needs, I will introduce him to use this App.	
	WOMI4	I will recommend this App on the Internet (via WeChat moments, Weibo, QQ zone etc.).	
Network Centrality	NC1	I maintain direct contact most people in my social network.	Antia & Frazier (2001) Shao et al. (2014)
	NC2	I can acquire information from other people quickly.	
	NC3	Other members of my social network often contact others through me.	
	NC4	I have a high influence in my social network.	
	NC5	I am in the position of "opinion leader" in my social network.	
Network Density	ND1	I'm familiar with the members of my social network.	
	ND2	Members in my social network are familiar with me.	
	ND3	I often communicate with members of my social network.	

4. Empirical Analysis and Hypothesis Test

4.1. Data collection

We collected data by conducting a web-based survey on wjx.cn. The survey lasted from August 5 to September 7, 2017. A total of 335 questionnaires have been collected from mobile apps users of China, of which 335 valid ones remained after 18 invalid responses were discarded. <Table 2> shows the demographic profile of all respondents.

As for the gender distribution of the investigation sample, male takes up 40.4% and female takes up 59.6% showing that the percentage of female is higher than that of male. As for age structure, respondent whose age is 20-39 years old makes up the largest proportion (80.1%) showing that most of the study objects are young people, which is consistent with the main users of Apps. Respondent with bachelor's or junior college degree makes up 62.8% and those with master's or higher degree make up 25.9%, which shows that most of the study objects have received higher education. From the perspective of monthly income, the percentage of those whose income is 3000-5000 yuan is higher than 50%. In general, the samples selected are consistent with the distribution intervals of the actual Apps users showing the reliability of the collected samples.

4.2. Reliability and Validity

In order to ensure that the construct and data are suitable for further structural equation model, the reliability

and validity of the measurement model were estimated before estimating the structural model. We examined the reliability and validity of the measurement model by using the PLS Algorithm.

Cronbach's α coefficient was used to measure the reliability of each construct. As shown in <Table 3>, Reliability coefficient of each constructs is more than 0.7, which indicates the measurement model has a good internal consistency. The validity of measurement model was estimated by convergent validity and discriminant validity. Convergent validity is mainly assessed by composite reliability (CR), average variance extracted (AVE) and factor loading of variables. Generally, only when the CR value is above 0.7 (Nunnally & Bernstein, 1978), the AVE value is above 0.5 (Fornel & Larcker, 1981) and factor loading of variables are all above 0.7 (Bagozzi, Yi, & Phillips, 1991), the convergence validity can be rated as good. Discriminant validity can be seen as adequate, specifically, if the diagonal values (the square root of AVE) for all constructs is greater than the inter-construct correlations (Fornell & Larcker, 1981).

As a result of the factor loading, the factor loading of WOMI4 is below 0.7. As shown in <Table 3>, all factor loading values are above 0.7 after deleting WOMI4. In addition, the CR of all constructs are above 0.7, and the AVE value are above 0.5. This indicates that each construct exhibits strong internal reliability and convergent validity. As shown in <Table 4>, each diagonal value (the square root of AVE) exceeds the inter-construct correlation, and thus the measurement model also has strong discriminant validity.

<Table 2> Demographic Profile of All Respondents

Characteristics		Frequency (N)	Percentage (%)
Gender	Male	128	40.4
	Female	189	59.6
Age	Under 20 years	9	2.8
	20~29 years	138	43.5
	30~39 years	116	36.6
	40~49 years	44	13.9
	50~59 years	9	2.8
	More than 59 years	1	0.3
Education	Under High School	4	1.3
	High School	32	10.1
	College	199	62.8
	Above College Degree	82	25.9
Monthly Income	Less than 1500 RMB	27	8.5
	1500-3000 RMB	47	14.8
	3000-5000 RMB	116	36.6
	5000-10000 RMB	74	23.3
	More than 10000 RMB	53	16.7
Occupation	Students	43	13.6
	Employees	116	36.6
	Self-employed	36	11.4
	Teachers	10	3.2
	Government Official	28	8.8
	Professional	45	14.2
	Others	39	12.3

<Table 3> Convergent Validity Analysis

Constructs	Items	Factor Loading	Cronbach's Alpha	CR	AVE
Personal Innovativeness (PI)	PI1	0.869	0.933	0.949	0.789
	PI2	0.889			
	PI3	0.908			
	PI4	0.876			
	PI5	0.899			
Perceived Usefulness (PU)	PU1	0.878	0.897	0.928	0.763
	PU2	0.875			
	PU3	0.833			
	PU4	0.907			
Perceived Ease of Use (PEU)	PEU1	0.887	0.953	0.962	0.810
	PEU2	0.881			
	PEU3	0.914			
	PEU4	0.921			
	PEU5	0.883			
	PEU6	0.914			
Perceived Enjoyment (PE)	PE1	0.863	0.942	0.954	0.776
	PE2	0.877			
	PE3	0.910			
	PE4	0.875			
	PE5	0.853			
	PE6	0.907			
Customer Satisfaction (CS)	CS1	0.919	0.939	0.956	0.846
	CS2	0.908			
	CS3	0.917			
	CS4	0.936			
Word-of-Mouth Intention (WOMI)	WOMI1	0.929	0.911	0.944	0.849
	WOMI2	0.914			
	WOMI3	0.920			
Network Centrality (NC)	PNC1	0.811	0.883	0.913	0.679
	PNC2	0.815			
	PNC3	0.850			
	PNC4	0.836			
	PNC5	0.805			
Network Density (ND)	PND1	0.927	0.900	0.938	0.833
	PND2	0.909			
	PND3	0.903			

<Table 4> Discriminant Validity Analysis

Constructs	PI	PU	PEU	PE	CS	WOMI	PNC	PND
PI	**0.888**							
PU	0.401	**0.874**						
PEU	0.363	0.746	**0.900**					
PE	0.533	0.467	0.529	**0.881**				
CS	0.518	0.686	0.709	0.663	**0.920**			
WOMI	0.530	0.624	0.582	0.571	0.786	**0.921**		
NC	0.706	0.362	0.293	0.449	0.428	0.515	**0.824**	
ND	0.562	0.268	0.243	0.399	0.345	0.437	0.788	**0.913**

4.3. Structural model test

4.3.1. Basic model test

In this study, Bootstrapping in SmartPLS is first used to test the basic model except for moderator variable. The testing result is shown in <Table 5> and <Figure 2> below.

At first, the path coefficient of personal innovativeness towards perceived usefulness, perceived ease of use, and perceived enjoyment is 0.15, 0.363, and 0.393 respectively and the relevant T value is 3.023, 5.769, and 8.281 respectively. It shows that there are significant positive correlations among perceived usefulness, perceived ease of use, and perceived enjoyment and the assumptions <H1>, <H2>, and <H3> are all true.

Second, the path coefficient of perceived usefulness towards perceived ease of use and perceived enjoyment is 0.692 and 0.386 respectively and the relevant T value is 13.1 and 6.768 respectively. It shows that perceived usefulness has significant positive effect on perceived ease of use and perceived enjoyment and the assumptions <H4> and <H5> are all true.

Then, the path coefficient of perceived usefulness towards customer satisfaction and word-of-mouth intention is 0.293 and 0.187 respectively and the relevant T value is 4.682 and 3.076 respectively. It shows that perceived usefulness has significant positive effect on customer satisfaction and
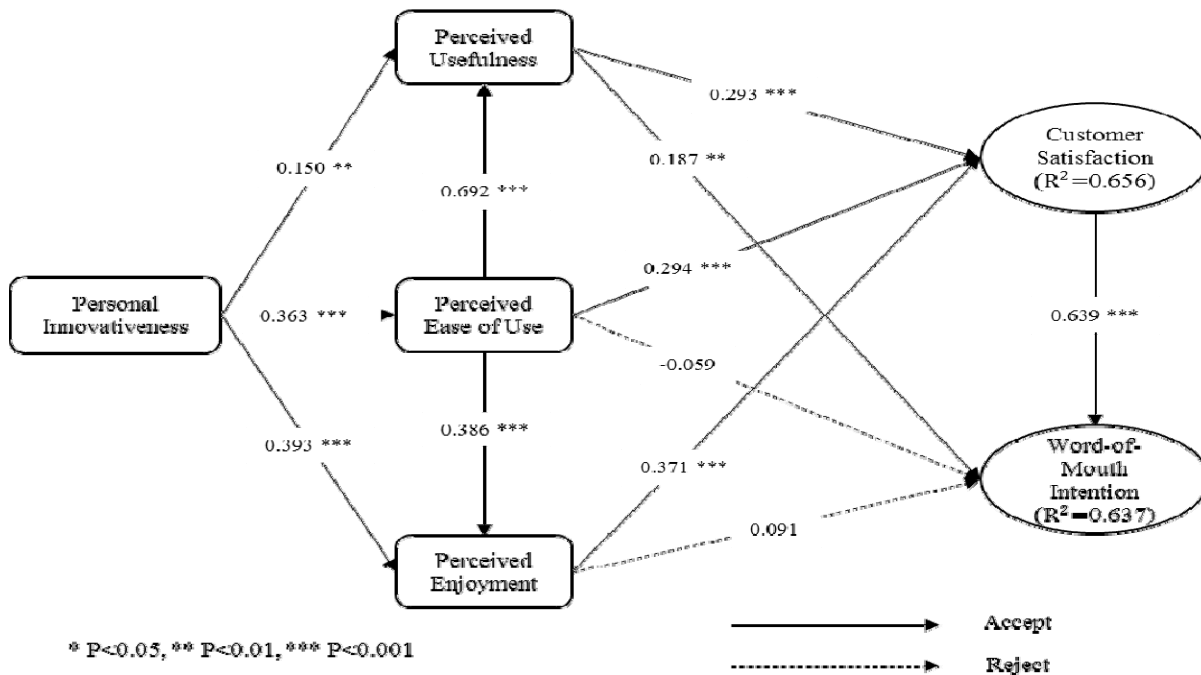
word-of-mouth intention and the assumptions <H6> and <H7> are all true. The path coefficient of perceived ease of use towards customer satisfaction and word-of-mouth intention is 0.294 and –0.059 respectively and the relevant T value is 4.604 and 0.796 respectively. It shows that perceived ease of use has significant positive effect on customer satisfaction but not on word-of-mouth intention and the assumption H8 is true while <H9> is not true. The path coefficient of perceived enjoyment towards customer satisfaction and word-of-mouth intention is 0.371 and 0.091 respectively and the relevant T value is 7.965 and 1.362 respectively. It shows that perceived enjoyment has significant positive effect on customer satisfaction but the positive effect on mouth intention is not obvious. Thus, assumption <H10> is true while <H11> is not true.

Lastly, the path coefficient of customer satisfaction to WOM intention is 0.639 and T value is 8.264. It means <H12> is significant, or, customer satisfaction has significant positive influence on satisfaction.

Chin (1998) suggested that the explanatory power is considered moderate, if R-square is approximately around 0.33 respectively. The overall explanatory power has an R² of satisfaction for 65.6%, R² of word-of-mouth intention for 63.7%. In general, it indicates relatively good explanatory power of the proposed model.

<Table 5> Result of Path Analysis (Except for Moderator Variables)

	Hypothesis	β	T	P	Result
H1	Personal Innovativeness(PI) -> Perceived Usefulness(PU)	0.150	3.023	0.003	Accept
H2	Personal Innovativeness(PI)-> Perceived Ease of Use(PEU)	0.363	5.769	0.000	Accept
H3	Personal Innovativeness(PI) -> Perceived Enjoyment(PE)	0.393	8.281	0.000	Accept
H4	Perceived Ease of Use(PEU) -> Perceived Usefulness(PU)	0.692	13.100	0.000	Accept
H5	Perceived Ease of Use(PEU) -> Perceived Enjoyment(PE)	0.386	6.768	0.000	Accept
H6	Perceived Usefulness(PU) -> Customer Satisfaction(CS)	0.293	4.682	0.000	Accept
H7	Perceived Usefulness(PU) -> Word-of-Mouth Intention(WOMI)	0.187	3.076	0.002	Accept
H8	Perceived Ease of Use(PEU)-> Customer Satisfaction(CS)	0.294	4.604	0.000	Accept
H9	Perceived Ease of Use(PEU)-> Word-of-Mouth Intention(WOMI)	-0.059	0.796	0.426	Reject
H10	Perceived Enjoyment(PE)-> Customer Satisfaction(CS)	0.371	7.965	0.000	Accept
H11	Perceived Enjoyment(PE) -> Word-of-Mouth Intention(WOMI)	0.091	1.362	0.173	Reject
H12	Customer Satisfaction(CS)-> Word-of-Mouth Intention(WOMI)	0.639	8.264	0.000	Accept

<Figure 2> Result of Structural Model (Except for Moderator Variables)

<Table 6> Referral Reward Program Moderating Effect Analysis

Hypothesis		GROUP_YES			GROUP_NO			GROUP_YES - GROUP_NO			Result
		β	T	P	β	T	P	β-diff	T	P	
H13-1	PU -> WOMI	0.307	3.910	0.000	-0.012	0.148	0.882	0.319	2.857	0.005	Accept
H13-2	PEU-> WOMI	-0.050	0.711	0.477	0.090	0.636	0.525	0.140	0.884	0.377	Reject
H13-3	PE -> WOMI	0.073	0.978	0.328	0.130	1.007	0.314	0.057	0.382	0.703	Reject
H13-4	CS -> WOMI	0.561	5.748	0.000	0.619	5.392	0.000	0.058	0.386	0.700	Reject

4.3.2. Moderator effect test

In this study, referral reward program, network centrality and network density are set as moderator variables. Referral reward program is set as categorical variable, thus, Multi-Group Analysis in SmartPLS is adopted to analyze its moderator effect. Before the analysis, data grouping is made for the 317 collected valid questionnaires. Those with referral reward program is categorized to GROUP_YES (157 in total) while those without referral reward program is categorized to GROUP_NO (160 in total). Concrete study result is shown in <Table 6>. Referral reward program has positive moderator effect (β-diff=0.319 , T=2.857 , P=0.005) on the relationship between perceived usefulness and word-of-mouth intention, thus, assumption <H13-1> is true. Referral reward program has no positive moderator effect on the relationship among perceived ease of use, perceived enjoyment and word-of-mouth intention, thus, assumptions <H13-2>, <H13-3> and <H13-4> are not true.

In order to test the moderator effect of network centrality and network density on perceived usefulness, perceived ease of use, perceived enjoyment and customer satisfaction respectively. Under the situation that both moderator variable (network centrality and network density) and independent variable are continuous variables, in this study, Product Indicator Method and three models are used to analyze the data collected. Model 1 tests the effect of independent variables (perceived usefulness, perceived ease of use, perceived enjoyment and customer satisfaction) and moderator variables (network centrality and network density) on dependent variable (word-of-mouth intention). Based on Model 1, Model 2 adds the interaction effect between independent variables and moderator variables (network centrality). Based on Model 1, Model 3 adds the interaction effect between independent variables and moderator variables (network density). The concrete analysis result is shown in <Table 7>.

As shown in <Table 7>, in the three models, both perceived usefulness and customer satisfaction have significant effect on word-of-mouth intention. In the moderator effect test of network centrality, only the product term of perceived ease of use and network centrality have significant

<Table 7> Network Centrality and Network Density Moderating Effect Analysis

	Word-of-Mouth Intention(WOMI)									Hypothesis	Result
	Model 1			Model 2			Model 3				
Variables	β	T	P	β	T	P	β	T	P		
PU	0.155	2.778	0.006	0.124	2.266	0.024	0.138	2.492	0.013		
PEU	-0.030	0.429	0.668	-0.003	0.050	0.960	-0.009	0.139	0.889		
PE	0.025	0.377	0.707	0.024	0.372	0.710	0.006	0.100	0.920		
CS	0.599	8.026	0.000	0.590	8.303	0.000	0.582	8.256	0.000		
NC	0.141	1.988	0.047	0.137	2.082	0.037	0.160	2.344	0.019		
ND	0.075	1.148	0.251	0.107	1.569	0.117	0.101	1.478	0.140		
PUxNC				-0.148	1.586	0.113				H14-1	Reject
PEUxNC				0.321	2.375	0.018				H14-2	Accept
PExNC				-0.110	0.971	0.331				H14-3	Reject
CSxNC				-0.124	0.896	0.370				H14-4	Reject
PUxND							-0.099	1.322	0.186	H15-1	Reject
PEUxND							0.216	2.011	0.044	H15-2	Accept
PExND							-0.123	1.066	0.287	H15-3	Reject
CSxND							-0.098	0.726	0.468	H15-4	Reject
	0.669			0.686			0.683				
△				0.017			0.014				

effect (β=0.321, T=2.375 and P=0.018) on word-of-mouth intention showing that the interaction term between perceived ease of use and network centrality have significant effect on word-of-mouth intention. Integrating with study result of Model 1, network centrality can positively and significantly adjust the relationship between perceived ease of use and word-of-mouth intention, thus, assumption <H14-2> is true. In addition, the product term of network centrality, perceived usefulness, perceived enjoyment and customer satisfaction have no obvious effect on word-of-mouth intention, thus, <H14-1>, <H14-3> and <H14-4> are all not true.

In the moderator effect test of network density, the product term of perceived ease of use and network density significantly influences (β=0.216, T=2.011 and P=0.044) word-of-mouth intention. It shows that the interaction term of network density significantly and positively adjusts the relationship between perceived ease of use and word-of-mouth intention, thus, assumption <H15-2> is true. Besides, the product term of network density with perceived usefulness, perceived enjoyment and customer satisfaction shows no obvious influence on word-of-mouth intention, thus, assumptions <H15-1>, <H15-3>, and <H15-4> are all not true.

5. Conclusion

5.1. Summary and Implications

In this paper, non-game Apps user is selected as the study object. With technology acceptance model as the study basis, the external variable, personal innovativeness, is added to discuss the factors influencing customer satisfaction and word-of-mouth intention. In addition, referral reward program, network centrality, and network density are selected as moderator variables to discuss the degree to which they influence word-of-mouth intention. After processing the study result, the following conclusions and enlightenment are made.

First of all, personal innovativeness has positive influence on perceived usefulness, perceived ease of use, and perceived enjoyment, especially on perceived ease of use and perceived enjoyment. This result is consistent with the results obtained in the studies made by Lewis et al. (2003), Parveen et al. (2009), and Lin and Liu (2013). Individuals with innovativeness are always the first to use the product and service with new science and technology and they are also more likely to accept and try new things. Therefore, they are easily to understand and proficient in using new Apps. Through unceasing trying, individuals with innovativeness tend to have a comprehensive understanding of all of the functions and design intentions to experience more much usefulness and enhance the perceived enjoyment during the process of exploration and reaping benefits. As for the Apps development enterprises, they shall involve the group of people with innovativeness into the product development, experiencing the products and give feedback about the products during the development and test process. Through being involved in the whole development process, they can realize their close

connections with the product and maintain the higher satisfaction degree of the product. What's more, people with innovativeness are always regarded as an innovator in their circle, thus, the enterprise can make use of this advantage to motivate them to promote Apps in their social circle (word-of-mouth).

Second, perceived ease of use has positive influence on perceived usefulness and perceived enjoyment, which is consistent with the study result made by Moon and Kim (2001) through extending the technology acceptance model. Perceived usefulness, perceived ease of use and perceived enjoyment all have influence on customer satisfaction which is consistent with the study results obtained by ZHU and GUO (2016) as well as Joo (2017). Once the users of a new App feel the usefulness, ease of use and enjoyment, customer satisfaction escalates as well, which will generate positive influence. It indicates that the design of Apps shall seek to make the interaction process between the customer and Apps simple and practical to save the customer's time and improve efficiency. In particular, ease of use not only positively influences customer satisfaction but also influences the customer's feeling of usefulness and enjoyment. Due to the complexity, an App with abundant interests may hinder most users from further try and use. Therefore, enough attention shall be given to the ease of use. Among the three factors, perceived enjoyment has the largest influence on customer satisfaction showing that during the designing process, enough attention shall be given not only to the user's convenience and usefulness but also to the user's interests and enjoyment as well. With the increase of the categories of Apps, user's expectation of Apps is likely to become higher. Besides the basic functions (perceived usefulness and perceived ease of use), enjoyment is the key to realize product differentiation.

Third, as for the influence of perceived usefulness, perceived ease of use and perceived enjoyment on word-of-mouth intention, only perceived usefulness has positive influence on word-of-mouth intention while perceived ease of use and perceived enjoyment has no significant influence on it. Additionally, customer satisfaction has positive and significant influence on word-of-mouth intention. This result shows that for a non-game App, excellent function and performance is the key to motivate customer's word-of-mouth intention. App users tend to tell other users the functions of the App to help others and transmit their goodwill through word-of-mouth. Additionally, customer satisfaction has positive and significant influence on word-of-mouth intention, which shows that which shows that perceived ease of use and perceived enjoyment indirectly affect word-of-mouth intention via customer satisfaction.

Fourth, in the moderator effect test of referral reward program, only perceived usefulness and its product term have influence on word-of-mouth intention. It shows that the positive influence of perceived usefulness on word-of-mouth intention will be enhanced when there is referral reward

program. After the user experiences the usefulness of a certain App, the intention to recommend may be enhanced under the motivation of referral reward program. According to the study on referral reward program made by Wirtz, Orsingher, Chew, and Tambyah (2003), recommender's much attention is paid to the acceptor's view on his recommendation action and the recommender always tends to feel that he or she is transmitting goodness to reduce the anxiety generated by recommendation action motivated by referral reward program. As for the developer, the usefulness of the App shall be taken into consideration when the App is promoted through referral reward program.

Fifth, in the moderator effect test of the characteristics of personal social network, the product term of perceived ease of use and network density has obvious influence on word-of-mouth intention while the other product terms have no obvious influence on it. Without the moderator effect test of the characteristics of personal social network, perceived ease of use has no obvious influence on word-of-mouth intention, which shows that individuals with high network centrality and network density have higher word-of-mouth intention. Users with network centrality always play a of opinion leader in his or her circle, therefore, they have larger influence in the circle. Compared with average customers, opinion leader is more likely to share their satisfactory or dissatisfactory feelings of a product or service. In addition, in general, in high density social network, members are willing to share their consumption experience and have higher recommendation intention because of the smooth and frequent flow of information resources. Therefore, when a new App enters the market, during the marketing process, much attention shall be paid to these groups to make an effective word-of-mouth marketing plan for these groups (high network centrality and network density).

5.2. Limitations and Future Research

First of all, for the convenience of the study, study scope of Apps is confined to non-game Apps and non-game Apps consists of different categories. For different kinds of non-game Apps, the factors influencing word-of-mouth intention varies as well. The future studies might be more valuable if the classification of Apps is more refining to compare the difference of the factors influencing word-of-mouth intention of Apps of different sorts.

Second, online word-of-mouth and traditional word-of-mouth are not distinguished in this study. However, based on the nature of Apps on mobile phone, Apps, in nature, is suitable to transmit its word-of-mouth on Internet. In future studies, it's necessary to study online word-of-mouth transmission to perfect the research frame.

References

Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research, 9*(2), 204-215.

Anderson, E. W. (1998). Customer satisfaction and word of mouth. *Journal of service research*, *1*(1), 5-17.

Antia, K. D., & Frazier, G. L. (2001). The severity of contract enforcement in interfirm channel relationships. *Journal of Marketing, 65*(4), 67-81.

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative science quarterly*, 421-458.

Bao, C. H., Xie, X. Z., & Shen, N. (2003). Social network analysis. *Journal of The China Society for Scientific and Technical Information, 22*(3), 365–374.

Biyalogorsky, E., Gerstner, E., & Libai, B. (2001). Customer referral management: Optimal reward programs. *Marketing Science, 20*(1), 82-95.

Chen, C. F., & Chen, P. C. (2011). Applying the TAM to travelers' usage intentions of GPS devices. *Expert Systems with Applications*, *38*(5), 6217-6221.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, *295*(2), 295-336.

Choi, Y. K., & Totten, J. W. (2012). Self-construal's role in mobile TV acceptance: Extension of TAM across cultures. *Journal of Business Research*, *65*(11), 1525-1533.

Cyr, D., Head, M., & Ivanov, A. (2006). Design aesthetics leading to m-loyalty in mobile commerce. *Information & Management*, *43*(8), 950-963.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of applied social psychology*, *22*(14), 1111-1132.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.

Freeman, L. C. (1978). Centrality in social networks conceptual clarification. *Social networks*, *1*(3), 215-239.

Godes, D., & Mayzlin, D. (2004). Using online conversations to study word-of-mouth communication. *Marketing science*, *23*(4), 545-560.

Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, *44*(3), 276-286.

Hsiao, C. H., Chang, J. J., & Tang, K. Y. (2016). Exploring the influential factors in continuance usage of mobile social Apps: Satisfaction, habit, and customer value perspectives. *Telematics and Informatics, 33*(2), 342-355.

Jashapara, A., & Tai, W. C. (2006). Understanding the complexity of human characteristics on e-learning systems: an integrated study of dynamic individual differences on user perceptions of ease of use. *Knowledge Management Research & Practice, 4*(3), 227-239.

Joo, S. (2017). The influence of System Quality of the Platform for Airline tickets using Technical Acceptance Model(TAM) on Customer Satisfaction, Behavioral Intention. *Journal of Tourism Management Research, 21*(5), 293-321.

Kim, D. (2011). Student's use of hotel mobile apps: Their effect on brand loyalty. *Thermal Science, 15*(7), 341-356.

Kim, I. S., Kwon, O. H., & Moon, J. B. (2014). A Study on WOM of SNS Using TAM: Focusing on Moderating Effect of Socioeconomic Environments. *The e-Business Studies, 15*(1), 3-24.

Kotler, P. (2000). *Marketing management: Millennium edition* (10th ed.). New Jersey: Prentice-Hall Inc.

Kotler, P. (2002). *Marketing management* (11th ed.). Englewood Cliffs, NJ: Prentice-Hall International.

Kuo, Y. F., & Yen, S. N. (2009). Towards an understanding of the behavioral intention to use 3g mobile value-added services. *Computers in Human Behavior, 25*(1), 103-110.

Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of influence on beliefs about information technology use: An empirical study of knowledge workers. *MIS quarterly*, *24*(4), 657-678.

Lin, J. Y., & Liu, C. Y. (2013). The Impact of Personal Innovative and Perceived Entertaining on Smartphone Users' Attitudes and Behavioral Intentions. *Bulletin of National Pingtung Institute of Commerce*, *15*, 179-206.

Liu, M. T., & Mei, K. C. (2011). A Study for the relationships between Website's Experience Marketing, Experience Value, Customer Satisfaction Degree and Customer Loyalty. *Taiwan Journal of Marketing Science*, *7*(2), 129-153.

Lu, J., Yao, J. E., & Yu, C. S. (2005). Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *The Journal of Strategic Information Systems*, *14*(3), 245-268.

Mao, Q. H., & Gao, Y. (2010). Know ledge Sharing Promoting Strategy in Virtual Team Based on Social Network Centrality Analysis. *Journal of Intelligence*, *29*(10), 130-133.

Moon, J. W., & Kim, Y. G. (2001). Extending the tam for a world-wide-web context. *Information & Management, 38*(4), 217-230.

Nunnally, J. C., & Bernstein, I. H. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*(4), 460-469.

Oliver, R. L. (1981). Measurement and evaluation of satisfaction process in retail settings. *Journal of Retailing, 57*(3), 25-48.

Parker, C., & Ward, P. (2000). An analysis of role adoptions and scripts during customer-to-customer encounters. *European Journal of Marketing, 34*(3/4), 341-359.

Parveen, F., Abessi, M., & Ainin, S. (2009). Wireless internet-using mobile devices (wimds) in malaysia. *International Journal of Mobile Communications, 7*(5), 580-593.

QuestMoblie (2017). *2017 Fall Report.* Retrieved from November 22, 2017 from http://www.questmobile.com.cn/blog/blog_115.html

Rodgers, E. M. (1995). *Diffusion of innovations.* New York: Free Press.

Roland Berger Strategy Consultants (2010). *Roland Berger Chinese Consumer Report 2010 (collaboration with CIC).* Retrieved November 22, 2017 from https://www.slideshare.net/CIC_China/2010-chinese-consumer-report-by-cic-and-roland-berger

Ryu, G., & Feick, L. (2007). A penny for your thoughts: Referral reward programs and referral likelihood. *Journal of Marketing, 71*(1), 84-94.

Scott, J. (2000). *Social network analysis.* Thousand Oaks, CA: Sage.

Shang, Y. F., Chen, Y., & Kim, H. S. (2017). Effect of Experiential Value on Customer Satisfaction and e-WOM under O2O Commerce. *Journal of Distribution Science, 15*(8), 75-86.

Shao, J. B., Zhang, J. H., & Guo, B. B. (2014). Research on the influencing factors of customer referral behavior based on social network—application in the catering industry. *Journal of High Technology Management Research, 25*(2), 163-171.

Swan, J. E., & Oliver, R. L. (1989). Postpurchase communications by consumers. *Journal of*

Retailing, 65*(4), 516-533.

Teo, T. S., Lim, V. K., & Lai, R. Y. (1999). Intrinsic and extrinsic motivation in Internet usage. *Omega, 27*(1), 25-37.

Trusov, M., Bucklin, R. E., & Pauwels, K. (2009). Effects of word-of-mouth versus traditional marketing: Findings from an internet social networking site. *Journal of Marketing, 73*(5), 90-102.

Van den Bulte, C., & Wuyts, S. (2007). *Social Networks and Marketing*. Cambridge, MA: Marketing Science Institute.

Van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS quarterly*, 695-704.

Verkasalo, H., López-Nicolás, C., Molina-Castillo, F. J., & Bouwman, H. (2010). Analysis of users and non-users of smartphone applications. *Telematics & Informatics, 27*(3), 242-255.

Westbrook, R. A. (1987). Product/consumption-based affective responses and postpurchase processes. *Journal of marketing research*, 258-270.

Wirtz, J., Orsingher, C., Chew, P., & Tambyah, S. K. (2013). The role of metaperception on the effectiveness of referral reward programs. *Journal of Service Research, 16*(1), 82-98.

Yang, K. C. C. (2005). Exploring factors affecting the adoption of mobile commerce in singapore. *Telematics & Informatics, 22*(3), 257-277.

Yang, X. C., & Zhang, X. H. (2003). The application of social network analysis to marketing research. *Contemporary Economy & Management, 31*(6), 25–29.

Yeung, M. C. H., Ging, L. C., & Ennew, C. T. (2002). Customer satisfaction and profitability: A reappraisal of the nature of the relationship. *Journal of Targeting Measurement & Analysis for Marketing, 11*(1), 24-33.

Yu, C. L., Wang, X., & Bao, H. H. (2011). Referral reward programs: The influence of word of mouth on recipients' attitude and purchase intention. *Nankai Business Review, 14*(4), 59-68.

Zhu, D., & Guo, J. (2016). Research on Users' Satisfaction of Mobile Government Based on TAM Model. *Information Science, V34*(7), 141-146.

Zhu, Y. M., & Yu, H. Y. The Influence of Reward Size, Reward Schemes and Tie Strength on Online Referral Likelihood. *Economic Survey, 32*(5), 120-125.