DISENTANGLING THE ROLE OF ONLINE MOBILE GAME LOYALTY AND INDIVIDUAL CHRONOTYPE ON IN-GAME FEATURES PURCHASE INTENTION

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Abstract: *The number of online mobile gaming users is growing at a rapid pace, and businesses are struggling to cope with this evolution and to develop more effective strategies. In online mobile games, the "in-game purchase" is the most crucial stream of revenue for game developers. Past literature has merely focused on online purchase intention in relation to consumer lifestyle, information risk, experience, behavioral control and subjective norms. The research which delves into in-game purchase intention remains sparse. This study is the pioneer to investigate chronotypes' (evening and morning-type individuals) and online mobile game loyalty impact on in-game purchase intention. The data was collected using survey questionnaire. A sample of 313 students of two Chinese universities was analyzed using SPSS 24.0. The results confirm that evening types have greater online mobile gaming loyalty and high in-game purchase intentions than morning-type individuals, whereas game loyalty has a positive relationship with in-game purchase intention. Furthermore, we discussed paper contributions and insights for managers have been outlined to develop an effective online mobile gaming strategy.*

Keywords: *Chronotype; Online Mobile Games; Loyalty; In-game purchase; China; Purchase intentions*

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Introduction

The world is witnessing a tremendous growing number of online mobile and desktop games users and their behavior is becoming more complex (Rafdinal & Qisthi, 2020). The businesses are looking for new efficient ways to cope with this evolutionary process (Boghe et al., 2020). This study focuses on mobile online gaming as marketers want to switch their consumers to this channel because of its impulsive and portable nature. The online mobile games "OMG" developers use different ways to produce their revenue. The mobile in-game sales (named as whales in the digital field) are the largest source of revenue for businesses. According to Partners (2018) the total revenue for games in China expected to reach $42 billion by 2022. China is also the worlds' largest mobile online gaming market, accounting for 25% of total global revenue (Partners, 2018). There are three categories of OMGs namely, standalone, server base and streaming games discussed by (Mysirlaki & Paraskeva, 2019; Rajala, Rossi, Tuunainen, & Vihinen, 2007) . It is amazing to see that almost 89% of the Google Plays' returns is from OMGs (Google, 2018) . The OMG usually makes the profit through three sources; in-game purchase, paid apps download, and advertising (Baabdullah, 2020; Ramírez-Correa, Rondán-Cataluña, Arenas-Gaitán, Martín-Velicia, & Services, 2019; Ravoniarison & Benito, 2019). Most researchers have targeted consumers' attitude towards mobile advertising (Leppaniemi & Karjaluoto, 2005) and mobile app purchase (Hsu & Lin, 2015) but users' behavior in regard to "in-game

mobile purchase" remains sparse (Baabdullah, 2020; H.-M. Lee, Zhang, & Mehta, 2020), thus this work focuses in this domain solely.

As per Hsiao and Chen (2016) the in-game mobile purchases are different than other online purchase as they are more engaged actions backed by emotion. The higher engagement with game increase the probability of purchase intention (Tobon, Ruiz-Alba, & García-Madariaga, 2020). Generally, an in-game purchase may include; extra coins, energy level booster, unlocking the advanced stages, ammunition etc. Previous work has found different determinants of online purchase few of them are consumer lifestyle, price and security (López, 2020; Nam & Kim, 2020; Tobon et al., 2020) . The in-game purchase has also been explored from a psychological side in term of the impulsive and compulsive behavior of users (Maraz, Griffiths, & Demetrovics, 2016).

The present study however, tends to investigate the chronotypes' (Circadian rhythm) effect on loyalty towards OMGs and mobile online in-game purchase. Moreover, there is a lack of research on online game loyalty and in-game purchase intention (Baabdullah, 2020; Tobon et al., 2020). Circadian typology (chronotype or diurnal preferences), comprise of three different fashions of chronotype (evening, neither and morning). The evening types, have a propensity to sleep late night and in result wake up late in the day; they are more energetic in the evening time (Chark, Lam, & Fong, 2020). Whereas, the morning types use to sleep and wake-up early and likes to complete their tasks in the early after the

sun rise (Chark et al., 2020). Furthermore, engaging with Internet, smartphone, laptops and games is more linked with evening types (Haider, Guijun, Ikram, Anwar, & Systems, 2020). Further, evening type keep devices screens on for the greater time (Kauderer & Randler, 2013).

All these characteristics are associated with individual differences, and chronotype itself is a form of individual difference which have an influence on consumer's behavior (Haider, Zhuang, Hashmi, & Ali, 2019). As in their research, Horzum and Demirhan (2017) confirmed that chronotype effects attitude and usage aim towards Facebook. To the best of authors' knowledge, this work is the pioneer to investigate this important construct in relation to OMGs loyalty and mobile in-game purchase intention. This research aims to contribute in three ways to literature; firstly this study investigates online mobile gaming solely, secondly this paper investigates how personal construct which are determinants of consumer behavior-shape the way user engage in-game purchase behavior, and finally incorporating chronotype in this research will provide deeper understanding of online game users and new perspective for market segmentation. It will also observe whether effect of chronotype translates to the mobile gaming context or not? Hence offering better insights into online mobile game users' behavior.

Literature Review and Hypotheses

The current research draws its' motivation based on previous literature regarding loyalty and individual differences and their impact on purchase intention. Most of the studies focuses on technology acceptance model TAM and theory of planned behavior TPB in order to explain the purchase intention especially in online purchase decision (Akbari, Ardekani, Pino, & Maleksaeidi, 2019; Dooyoung Choi, Johnson, & Consumption, 2019). However, there is still clearly a call for research on how loyalty and personal traits of online mobile gaming users' affect their in-game purchase intention (Boghe et al., 2020). Therefore, extending the previous research agenda by using theory of planned behavior this study tries to unfold this side of consumer behavior. Theory of planned behavior helps to understand why and how people behave in a certain way (Akbari et al., 2019). It identifies the attitude and behavioral intention relationship in order to explain an occurring event. Thus, it is suitable and solid ground for current research work to use this theoretical framework in order to effectively explain how consumers'' loyalty and chronotype affects their in-game purchase intention.

Chronotype and Game Loyalty

Chronotype is comprised of three styles ("morning or larks", neither and evening or Owls") based on sleep and time management. The evening types sleep late and leave the bed late, they tend to be more energetic in evening time whereas morning types are opposite to them (Chark et al., 2020; Sławińska, Stolarski, & Jankowski, 2019). Furthermore, engaging with Internet, smartphone, laptops and games is more linked with evening types (Haider et al., 2019) . In addition, evening type keep devices screens on for the greater time and

spend a larger time to play video games than other (Kauderer & Randler, 2013). Evening type are more internet and mobile addictive than morning personality(Haider et al., 2020) . In their study, Vollmer, Randler, Horzum, and Ayas (2014) proved that evening types have more game addiction than morning types. Furthermore, the addiction to online games can enhance the loyalty of game users which can affect their subsequent behavior (Liao, Huang, Cheng, & Teng, 2020; Teng, 2019) . A number of researches have considered loyalty as an autogenously action (Gu, Oh, & Wang, 2016; Su, Chiang, Lee, & Chang, 2016), and few more researchers treat loyalty as a construct which significantly affects purchase intention, user-generated contents, feedback and some other important behaviors (Ceyhan, 2019; Mainardes, Cardoso, & Research, 2019) . As evening types have more impulsive and addictive behavior whereas morning types have rational and balanced behavior so, it can be hypothesized that,

H1: Evening types have high loyalty towards online mobile games than morning types.

Online Game Loyalty, Chronotype And Online Mobile In-Game Purchase Intention

There are rich pieces of evidence from previous researches (Andreassen et al., 2015; S. Lee, Park, & Bryan Lee, 2016; Weinstein, Maraz, Griffiths, Lejoyeux, & Demetrovics, 2016) that addiction can enhance purchase intention. In addition, prior literature also supports the notion that loyalty leads to favorable purchase intention (Ceyhan, 2019; Mainardes et al.,

2019). However, there is a lack of empirical support in the context of OMGs (Tobon et al., 2020). The evening and morning type's chronotypes have a difference in term of addiction for games, mobile and internet usage, thus it will be interesting to see how it affects in-game purchase intention. The current work examines whether chronotype and loyalty have an effect on the in-game purchase and what kind of relationship exists among them. Loyalty also has been studied in traditional purchase context very often (Ceyhan, 2019; Hwang & Choi, 2020) but there is inadequate proof in the context of online mobile gaming. The chronotype coupled with loyalty can set-up a connection with online in-game purchase intention. As stated before that evening type are more addictive and impulsive and loyalty has a positive correlation with purchase intention, thus it can be stated that,

H2: Evening types have greater in-game purchase intention than morning types in the context of online mobile gaming.

H3: Online mobile game loyalty has linear relationship with online mobile in-game purchase intention.

China is the worlds' largest mobile online gaming market, accounting for 25% of total global revenue. The present paper intends to contribute towards the theoretical literature of chronotype and OMG loyalty in relation to online in-game purchase intention in marketing and online mobile gaming context, thus it will provide new insights for market segmentation. As most of the businesses are struggling to develop an online in-game mobile purchase strategy for mobile gaming consumers, this study will help both academicians and marketers to

understand ever-growing mobile game users.

Research Approach

Participants and Data Gathering

The research sample comprised of students from 2 Chinese universities. Prior studies have found students as a suitable population for online gaming research (Ha, Yoon, & Choi, 2007; Okazaki, 2008). Convenience sampling method was utilized for data collection. It was the reasonable technique in our study setting because respondents were available on university premises. Data were collected during the period of Dec 2017 to Mar 2018. The survey questionnaire was translated into the Chinese language with the help of a Chinese-English linguistic expert and later was distributed to 11 students and 2 professors for their feedback and recommendations. Necessary changes were made accordingly before distribution to the actual sample. Total 501 online questionnaires were distributed via WeChat and 406 were returned and 313 were found appropriate for further analysis. Worth to mention that WeChat is a Chinese multi-purpose social app with active user more than one billion in 2018. It's considered the app for everything because of its wide range of functions and platforms. Besides social connections, it can be used for payments, shopping, and educational purposes and so on. A 5 yuan red packet (gift of money through WeChat transfer) would be given to encourage the respondents to complete the survey. It needs to be noticed that respondents could only submit the questionnaire and receive the coupon from any given IP address once.

Operationalization of Variables

In the first part, respondents were asked about their age, gender, and education level, favorite game category, average time spent on game and number of in-game purchases during last year. The second part comprises the chronotype, OMG loyalty, and intention to purchase online in-game features. These variables were adopted from literature and all of them have reliability as reported in previous studies. To measure the chronotype, the composite scale of Morningness (CSM) was adopted having typology (morning, neither, evening) based on the 10th & 90th percentiles (Önder, Beşoluk, & Horzum, 2013; Smith, Reilly, & Midkiff, 1989). The cut off points for CSM scores in our study were 28 and 39 respectively. While score lower than 28 represents more eveningness and score higher than 39 represents more morningness. The scale for online mobile game loyalty comprised of two items measured using 5-point Likert scale (5"strongly agree" to 1 "strongly disagree") prior used by Dongseong Choi and Kim (2004). Furthermore, online mobile in-game purchase intention was measured with five items by 5-point Likert scale (5"strongly agree" to 1 "strongly disagree") and was adopted from Balakrishnan and Griffiths (2018).

Results

First part was socio demographic related, Table-1 shows that the sample is almost equally divided into male and female respondents. Most of the respondents are undergraduate and masters level students and mostly are under 25 years of age. Large number of game players spent more than 90

minutes an average/day playing online mobile games. Majority users likes to play action and adventure games followed by sports. Furthermore, greater number of users have above 20 in-game purchase/year.

Table 1. Respondents Profile

Gender	Age in years	Education level	Game Category	Average time play/minutes per day	In-game purchases made during last year
Female – 49.2% Male – 50.8%	18-23 – 58.00% 24-29 – 32.99% 30 above – 9.01%	Under graduate – 64.55% Master – 29.94% PhD – 5.51%	Action – 42.20% Adventure– 28.40% Sports– 15.70% Card/Puzzle- 7.30% Racing- 4.8% Strategy- 1.6%	More than 180 min– 13.3% 120-180 min – 31.8% 60-119 min – 42.14% Less than 60 min- 12.76%	Above 20 purchases- 45.5% 10-19 purchases - 35.2% 1-9 purchase- 17.6% None- 1.7%

Cronbach alpha for each item ranged from 0.72 to 0.88 and indicated good internal consistency. To test our hypotheses univariate analysis of variance (ANOVA) and simple linear regression were conducted using SPSS v.24.

It can be seen in Table 2 and 3, that evening types have high online mobile game loyalty (M=3.84, SD=0.55) than the morning types chronotype (M=2.61, SD=0.76) with F>5 and p<0.05 **thus confirming H1**, which implies that evening types have greater online mobile game loyalty than morning types.

Table 2: Descriptive statistics on loyalty towards online mobile games

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Evening	165	3.8467	.55315	.04484	3.6601	4.0232	2.30	5.00
Morning	148	2.6123	.76748	.06417	2.5835	2.6411	1.00	4.30
Total	313	3.4672	.92571	.05293	3.3650	3.3694	1.00	5.00

Table 3: ANOVA results on loyalty towards online mobile games according to chronotypes (evening vs morning)

		Sum of Squares	df	Mean Square	F	Sig.
Loyalty towards online mobile games	Between Groups	119.017	1	119.017	258.941	.000
	Within Groups	144.928	312	.469		
	Total	263.945	313			

In Table-4 and 5, results show that evening types have greater intention to purchase in-game features (M=3.64, SD=0.63) than morning types (M=2.87, SD=0.85) with F>5 and p<0.05 **which supports the H2**.

Table 4: Descriptive statistics on in-game purchase intention

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Evening	165	3.6493	.63412	.05482	3.8489	3.8498	2.00	5.00
Morning	148	2.8758	.85095	.06480	2.9419	3.1396	1.00	5.00
Total	313	3.4859	.84657	.05071	3.4880	3.5837	1.00	5.00

Table 5: ANOVA results on in-game purchase intention according to chronotypes (evening vs morning)

		Sum of Squares	df	Mean Square	F	Sig.
In-game purchase intention	Between Groups	60.110	1	60.110	106.989	.000
	Within Groups	181.088	312	.590		
	Total	241.198	313			

Furthermore, regression analysis (table 6) shows that OMG loyalty has significant and positive relationship with intention towards purchase in-game features (p<0.05 and beta=0.266). **Hence it also supports our H3**.

Table 6: Regression analysis results on OMG loyalty – in-game purchase intention

	R sq.	Adjusted-R	t-value	beta	Sig.
OMG loyalty → in-game purchase intention	0.650	0.634	2.39	0.266	0.018

Finally, this study further investigated that whether gender has any impact on mobile game loyalty and intention to in-game purchase. It was concluded that there was a difference between male and female users with male users having a slightly higher average but still the difference was not significant. Similarly, the impact of age, education and time spent was also found to be insignificant in this study.

Discussion

This study tested three variables (Chronotype, OMG loyalty and in-game purchase intent). The effect of chronotype on OMG and in-game purchase intention was investigated. Furthermore, the relationship between OMG and in-game purchase intention was also explored. Finally, the role of gender, education, and age were also verified.

The key takeaways of the study are; evening type chronotype mobile game users are more loyal and have higher probability to purchase in-game features whereas morning type chronotype users are less loyal and in result shows low willingness to purchase in-game features of online mobile games. Hence, these findings are aligned with most of the previous studies outcomes based on theory of planned behavior predicting the consumer purchase intention. However, insights into chronotypes' effect are novel in nature and offering new avenues for upcoming consumer behavior studies.

Past studies have discussed chronotypes' and addiction to mobile, internet and video games extensively (Bartel, Gradisar, & Williamson, 2015; Kauderer & Randler, 2013). The present work explored the new dimension, namely chronotype and its' effect on in-game purchase intention in the online mobile gaming context. This study showed that chronotypes' has the ability to stimulate the consumers' intention to in-game purchase. Through literature, its' confirmed that evening types are more addictive, have late sleep bedtimes, stay longer on screens and are more impulsive in nature. The nature of mobile portability, availability of continuous internet connection, vulnerability to addictiveness and higher usage frequency of mobile can be the reasons for greater online mobile game loyalty and intention to purchase in-game features among evening types.

Loyalty and purchase intention are the most decisive behaviors of consumers and

marketers and researchers are always up to understand them more deeply. In many researches, it has been proved that loyalty leads to purchase. Therefore, loyalty in the context of online mobile gaming is also vital to understand. Staying up late at night, excessive use of mobile, addiction to video games can be the causes of greater loyalty to online mobile gaming among evening types. Furthermore, impulsive nature and might be the reason for high in-game purchase intentions among night owls. Whereas, morning types are more compulsive, well planner, require more information to make decisions and show less addictive behavior generally (Hogben, Ellis, Archer, & von Schantz, 2007; Nowack & van der Meer, 2013). As morning types have higher control over their behavior and they are less addictive thus it leads them to lower online mobile game loyalty and as they are less impulsive which helps them to make the less in-game purchase. Finally, online game loyalty has a positive impact on in-game purchase intention which is in line with previous researches conducted in traditional loyalty and purchase context.

Insights for Marketers and Researchers

The evening type users stay up late while engaging in mobile use and playing games, this has a serious impact on their health and mental wellbeing. Although, they are more loyal to online mobile games but creating healthy behavior among them can be challenging for businesses. Marketers must focus on this aspect to be successful in the long run. As evening types are addictive and impulsive, marketers must design such marketing signal which can stimulate their

nature and they can act favorably. Providing trial versions and fewer steps to purchase journey can result in the positive response from evening type users. The color and layout of mobile games have a significant impact on consumer behavior, so these should be designed carefully for both morning and evening types to yield favorable response. For health fitness-related app developers, they can target evening types by advertising their apps in online mobile games as evening types face more health-related issues than morning types. The evening types are more addictive to games and mobiles, so addiction creation can be an effective strategy for creating loyalty and purchase intention.

Limitation and Future Directions

This study only considers morning and evening types, future research can also investigate "neither type" chronotypes. While addiction is a powerful attribute for creating loyalty and purchase intention, but it has serious ethical concerns (Yousafzai, Hussain, & Griffiths, 2014), so researchers should investigate this dimension through the eye of corporate social responsibility. The sample was solely comprised of students, further work can be done by analyzing other population samples. It can be really interesting to investigate more precisely that what leads chronotypes to online mobile gaming loyalty and purchase intention. Future research can be done in different cultures to examine the difference as this study was conducted in Chinese consumers' perspective only. What stimulate different chronotypes to write reviews and generate word of mouths about

games can be crucial research for both marketers and academicians.

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