

Factors affecting willingness to adopt paid mobile games

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Biographical notes

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Abstract

Online games these days are in the growing trend. Many games like PUBG have attracted immense users. Although the games are free to download and play, many online game companies can explore the sector of paid mobile games which will a growing industry in the future. On that premise, this research is undertaken to check the factors which will have an impact on purchase intentions of paid mobile games. The study has used the TAM and UTAUT in order to identify which of the following factors like PP, OCC, PM, SE, PI, MI, PIPG. The findings of the research show that OCC, SE and PI have a significant impact on customers intention to purchase paid mobile games. The limitations of the research are that the study was only conducted to a certain set of professionals and students, future research can have a representative sample of the whole population.

Keywords: Technology acceptance model, TAM; Unified theory of acceptance and use of technology, UTAUT; Perceived Price, PP; Online Consumer Conformity, OCC; Personal Motivation, PM; Self-Efficacy, SE; Peer influence, PI; Mass Influence, MI; Purchase intention of paid mobile games, PIPG; Perceived ease of use, PEU; Perceived usefulness, PU.

Introduction

The rising adoption of smartphones and implementation of direct carrier billing have been major catalysts for the Indian mobile gaming market. Over the past few years, the mobile gaming market has witnessed phenomenal growth in India, with more than 400 gaming start-ups, entertaining around 326 Mn mobile

gamers in 2020. The gaming market in India is expected to reach \$1.6 Bn by the end of 2025. The industry has gained momentum due to a jump in smartphone users, courtesy growing young population, rising interest in gaming and evolving ease of use.

According to a report in Zendesk (2020), the growth in mobile gaming over the past few years can be attributed to the rise in smartphone users across the country, increasing Internet usage, growth of the younger generation and consumer interest in gaming. Mobile gamers are estimated to account for 81.5% of total online gamers, with average revenue of \$8.8 per user in 2020. New trends include the launch of live streaming of esports competitions, the emerging popularity of fantasy sports, mobile versions of various PC-based games and more. The paid mobile gaming market in India is expected to boom in the next couple of years due to diverse genres, cloud-based gaming, innovative monetisation and the growing number of mobile gaming start-ups and the technology they have built. India is among the top five markets for mobile gaming in terms of the user base, driven by smartphones and the availability of cheap data. Currently pegged at \$1.2 Bn (Zendesk, 2020), India's mobile gaming market is expected to reach the \$1.6 Bn milestones in 2025. With the ban on Chinese mobile apps, Indian gaming start-ups are aiming for a huge market opportunity to build and scale up. The impact of Covid-19 is seen as a boon for Indian mobile gaming start-ups. During this period, Time spent on gaming apps surged 41%, Mobile game downloads soared in April, reaching a peak of 197 Mn in a single week, a 75% jump compared to the weekly average of the previous quarter, Ludo King, PUBG Mobile, Clash of Clans and Teen Patti–Online Poker was some of the popular products that gained traction Mobile gamers' share increased to more than 89% Games in the arcade, casual and casino categories spiked more than 150% in terms of app usage (January-April 2020).

Top 5 Mobile Games on The Basis of Consumer Spending in 2019 are Players unknown battlegrounds (PUBG), Free fire, Coin Master, Rise of Kingdoms, Last Shelter: Survival. The Major Native Mobile Gaming Publishers/ Developers in India are Gametion, Imuz, Nazara, Ocrto and 99Games. The problem identified in the although the number of users of free mobiles games is increasing, customer's attitude towards paid mobile games needs to be considered for a gaming company to make revenue. In this research paper, we will find the factors that affect the willingness of the users to pay for mobile games. The customers using a mobile game will have many factors that affect their intention to purchase a paid game. This paper aims to identify those factors and to which level these factors affect their willingness to pay for

mobile games in India. The research objective is to find the factors like PP, PM, SE, MI, PI and OCC which are affecting the customer's willingness to pay for the mobile game.

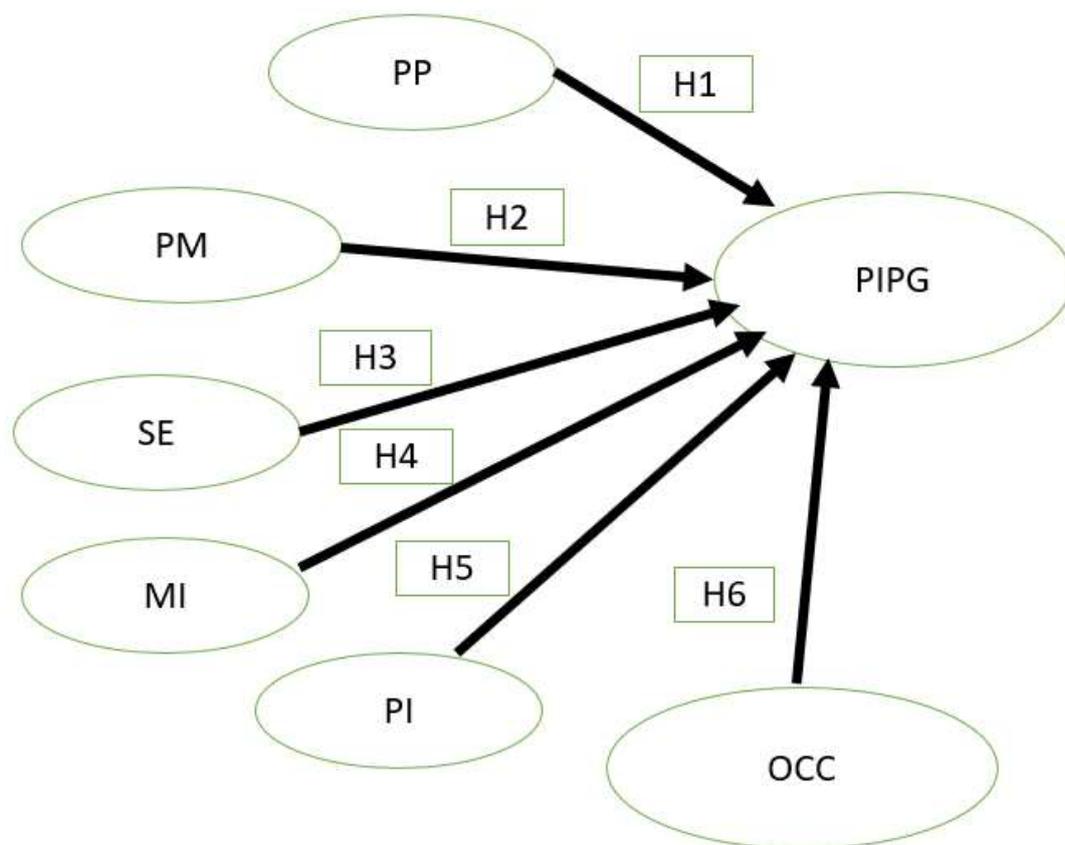
Theoretical Background

TAM is derived from the theory of reasoned action. According to this theory, PU and PEU are the factors determining whether customers adopt new technology. PEU the extent to which the adopted technology is flexible enough, understandable by the customers and easy to use. Whereas PU is the extent to which the adopted technology will improve workflow, productivity, efficiency, reduce time and cost and improve performance. After a period of time, the scholars extended the constructs by adding social influence and cognitive processes. Social influence refers to the image within a group, volunteerism and compliance. The job relevance and the perceived ease of use come under cognitive processes. TAM2 was a term that was coined to propose the stated social influence on the adoption of technology which decreases after a period of time whereas perceived ease of use increases with customer experience. UTAUT is an extended version of TAM, so it includes social influence, performance and effort expectancy which impacts the use of behaviour. Branded apps that offer more ease of use and customer experience offer more success than others. (Wang et al., 2020)

Literature Review

For the literature review the keywords like paid mobile gaming, mobile applications, purchase of mobile apps, mobile games, purchase intention of games, etc. were used. The major databases like Science Direct, Elsevier, Emerald and Springer were accessed to search the relevant literature. The literature analysis method of Rebecca Jen-Hui Wang (2020), JW Kang, Y Namkung (2019) were used to find the research gap. The literature reviews of purchase intention of paid mobile gaming applications are showing in Table I.

Figure I Conceptual model



Perceived price

We are considering the customers perspective on purchasing mobile applications. So cost is a major standpoint for the customers to select the application mainly a mobile gaming application. Perceived price is the customer's perception of the price of the product they buy (Yi-Shun Wang et al, 2018). Customers are generally reluctant on purchasing products that they perceive are of high price. Studies have found that PP can significantly influence customers purchase behaviour. The conceptual model is given in Figure I. Based on the literature, the following hypothesis is proposed,

H1: PP of the game will significantly influence PIPG.

Personal motivation

Intrinsic motivation is considered an enduring issue particularly in the field of psychology as it extends to communication with the economy, and it is said to represent a persona's main source of joy and enjoyment

throughout their life (Lucas M Jen0, et al., 2020). When an individual has a high level of PM, that individual will show more engagement in that particular activity since it would make the individual happy and satisfied. Based on the literature, the following hypothesis is proposed,

H2: PM will significantly influence PIPG.

Self-efficacy

SE is a belief of an individual that one has the ability to succeed in a particular situation. Research has shown that there exists a significant relationship between SE and the attitude of the users towards certain types of Information technology (G Huang, Y Renb., 2020). We can come to a conclusion that the higher the customer's SE, the better their attitude towards purchasing mobile gaming applications. Based on the literature, the following hypothesis is proposed,

H3: SE will positively influence PIPG.

Mass influence

MI can include mass media, the opinion of experts, key leaders and other nonpersonal information who have the power to influence a significant number of people (Zongshui Wang, et al, 2020). In the perspective of games, there are three aspects that it can the mass can influence. MI is the information provided by any anonymous customers who purchased and use the application and in return influence the potential customer to purchase a mobile gaming application. There are strong pieces of evidence from literature which shows that the online consumer reviews (OCR) lead to purchase of mobile gaming application. Purchasers of mobile gaming applications examine each game's rank and popularity to confirm the quality of the game. Based on the literature, the following hypothesis is proposed,

H4: MI will significantly influence PIPG.

Peer influence

PI is exerted by the people important to the purchaser of the paid mobile gaming application whose influence will significantly affect the purchaser to reconsider the decision in purchasing the mobile gaming application. Consumers are very likely to download the apps with reference group such as family, friends, colleagues in order to be in touch, communicate and share information with them. PI refers to "the degree

to which individuals perceive that significant others, such as family and friends, believe they should use a technology” (Ajzen, 1989). The positive word from friends, family or colleague leads to purchase intention of mobile gaming apps. (Chua et al,2018). Based on the literature, the following hypothesis is proposed,

H5: PI will significantly influence PIPG.

Online consumer conformity

“Online community is seen as a group of people who share similar interests and they interact with each other frequently in a virtual environment” (Schneider et al, 2020). The growing world of the internet has made the online community a crucial place where people get influenced. Conformity from the online community means that all the members agree to the product the purchaser is willing to buy. Their acceptance of the product will significantly affect the customer’s decision to purchase the mobile gaming application (Patricia J. Schneider, Stephan Zielke, 2020). Thus, the following hypothesis is proposed:

H6: Online consumer conformity (OCC) will positively influence consumer intention to purchase paid mobile games.

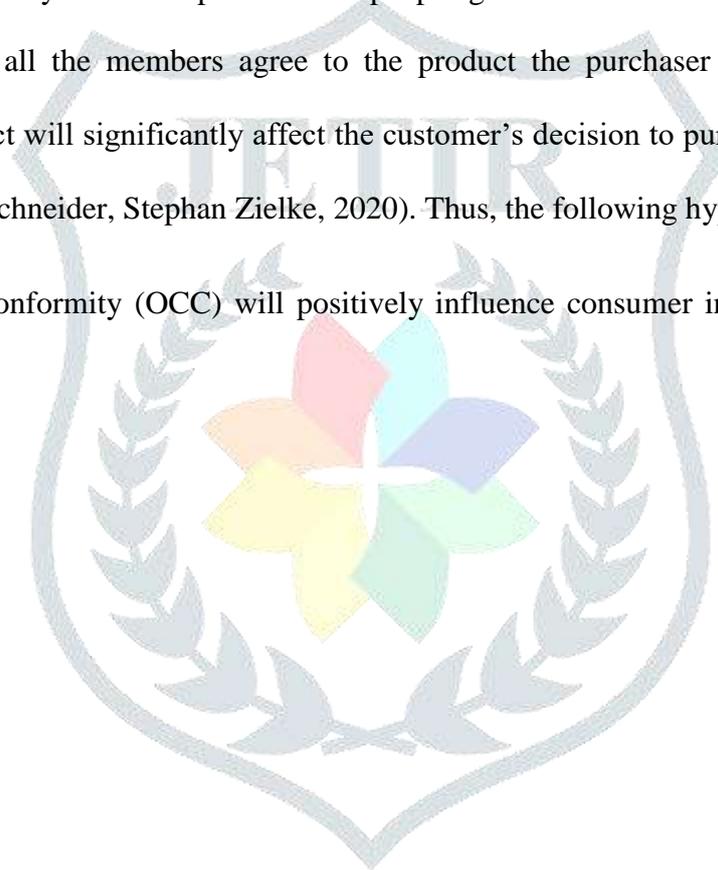


Table I Literature review

Author & Year	Theory	Context	Data collection method, sample size and country	Results	Future research
Ye Feng, Huan Liu, Xizhi Zheng, Yuanqye Feng, Ying Yu, Jin Lin. (2019)	ECT and TAM	Paid Digital Reading Products	Online questionnaires, 238 samples and China	social influence, continuance usage and expectation confirmation is positively related to continuance usage intention	Recommended to study and compare consumers' purchase intentions among different countries
Catherine Han, et al. (2020)	The technology acceptance model (TAM)	The Privacy Behaviors of Free vs. Paid Apps	Online questionnaire, 1503 samples, and USA	The privacy benefits of paying for apps are tenuous at best, and are likely to mislead consumers, making it impossible for them to make informed decisions about their privacy.	Recommended to extend the method to do automatic detection instead of manual inspection.
Makoto Nakayama, Charlie C. Chen and Steven Leon (2018)	TAM	Paid music apps subscription	Online questionnaire, 243 samples and USA	The social influence impacts consumer attitudes purchase intention. On the other hand, continuance intention of paid music streaming is driven by hedonic performance expectancy of consumers, not consumer	Future studies could test the validity of the model with a sample population that included older generations than were present in our sample.
Graeme McLenna, Kofi Osei-Frimpong, Khalid Al-Nabhani, Hannah Marriott (2020)	SEM and TAM	m-commerce mobile applications	cross-sectional survey design, online questions, 474 sample and England	The research outlines the importance of positive attitudes, bigger screen size towards the app resulting in favourable marketing.	Recommended to study the impact of negative customer attitudes on brand image, purchase frequency and
Allison J. Lazard, J. Scott Brennan, Elizabeth Troutman Adams & Brad Love (2020)	TAM	Mobile Health App Adoption	Online questionnaire, 5000 samples and USA	Cues and social presence have positively influenced app trust, perceived usefulness, and intentions to use the app.	loyalty towards the brand. Future work could further distinguish emergent and transcendent social presence such as qualitative interviews or leveraging behavioral data
Catherine Han et al., (2020)	TAM	Paid and free mobile apps comparison	customer expectations survey, 998 online survey and USA.	Paid versions of free apps are not living up to the customer expectations.	Recommended to study the applications which are likely to made paid apps in future.
Aashish Mehra, Justin Paul & Rahul Pratap Singh Kaurav (2020)	TAM and DOL	mobile apps adoption among young adults	Online questionnaire, 789 samples and India	Relative advantage, complexity and compatibility had a positive and significant influence on the intention to using mobile phone applications.	Recommended to study the use of statistical tools, such as the analytical hierarchy process across cross countries.
Radwan Ali, Mike Gallivan, Seema Sangari (2019)	The simple Linear Regression Model	Mobile Apps in the Banking Industry	cross-sectional survey design, 161 samples, and USA	The study showed that most frequently reviewed bank apps had much higher customer ratings	Recommended to study extend this study to other industries like manufacturing and services.
Michael Humhani and Melanie Wiese (2018)	expectation-confirmation model	Mobile payment apps	Convenience sampling - self-administered questionnaire - online South African consumer panel hosted by an international research firm - sample of 426 respondents.	"Drivers" were better predictors of adoption than "inhibitors" while satisfaction emerged as the strongest predictor of continuance intentions.	It is recommended to explore future research avenues across different cultures, in order to increase the momentum in the uptake of mobile payment apps to ensure economic growth in Africa.
Francisco Liebana-Caballitas et al., (2020)	structural equation model	Mobile Payment Adoption in the Age of Digital Transformation	Online questionnaire, 539 samples, and Spain	Convenience positively impacts perceived value and hence the usefulness, which influences the intentions to buy. On the other hand, personal innovation does not positively does not affect perceived usefulness.	Future studies could complete the present research by incorporating the measurement of actual use of the proposed tool, and comparing the results with other mobile payment systems

Methodology

The instruments that have been employed in this study were adapted and modified (refer to Table II) to suit relating to the smartphone gaming applications. Each corresponding item was measured using a five-point Likert scale, with answers ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). We have adapted the instruments to study the customer’s intention to purchase paid games.

Table II Measuring the instrument

Instrument	Adapted and Modified from
OCC	Five Items from Jyh-Jeng Wu et al., 2006
PP	Three Items from Chang and Wildt., 1994
PM	Two Items from Davis et al., 1992
SE	Three Items from Wang et al., 2006
PI	Three Items from Kim et al., 2011
MI	Three Items from Brancheau and Wetherbe., 1990
PIPG	Three Items from Venkatesh et al., 2003

Sampling and Data Collection

The questionnaire was distributed to students and working professionals in Chennai and Bengaluru. The results provided that the measuring instruments are valid. The questionnaires were distributed to smartphone users including working professional and students. The 176 smartphone users responded in which 97 are males and 79 are females, ranging from 21 to 26 years old. The Data was collected in about 3 months December 2020 to March 2021.

Data Analysis

The study made use of IBM SPSS statistics 25 software to analyse the constructs. The reliability and validity test of constructs tests are done to evaluate the responses and linear regression is followed by that.

Table III Cronbach alpha values of the proposed constructs

Constructs	Cronbach's alpha
OCC	0.891
PP	0.72
PM	0.74
SE	0.79
PI	0.842
MI	0.815
PIPG	0.963

Reliability

The reliability test is to identify whether the measuring items are really measuring what it is supposed to measure. The important criteria for reliability analysis are Cronbach alpha values (Nunnally, 1978). From Table III, it can be observed that Cronbach's alpha values of constructs of this study ranging from 0.862–0.963 and were meeting the standards. Thus, all the constructs chosen for the study are found to be reliable.

Hypothesis Testing

The results of linear regression analysis show support for all the other hypotheses except H2 and H4. The Hypotheses H1, H3, H5 are significant at $\rho < 0.05$ level and the H6 is significant at $\rho < 0.01$ level. The factors SE ($\beta = 0.364$, $\rho = < 0.05$), PI ($\beta = 0.271$, $\rho = < 0.05$), OCC ($\beta =$

Table IV Path Coefficient

Path	Hypothesis	Beta	t	P value	Sig.	Sig.
PP →PIPG	H1	-0.166	-2.004	<0.05	S	0.049
PM →PIPG	H2	-0.116	-0.987	>0.05	NS	0.327
SE →PIPG	H3	0.364	2.730	<0.05	S	0.008

MI → PIPG	H4	-0.057	-0.544	>0.05	NS	0.588
PI → PIPG	H5	0.271	2.628	<0.05	S	0.011
OCC → PIPG	H6	0.533	5.460	<0.01	S	0.000

Figure II Research Model

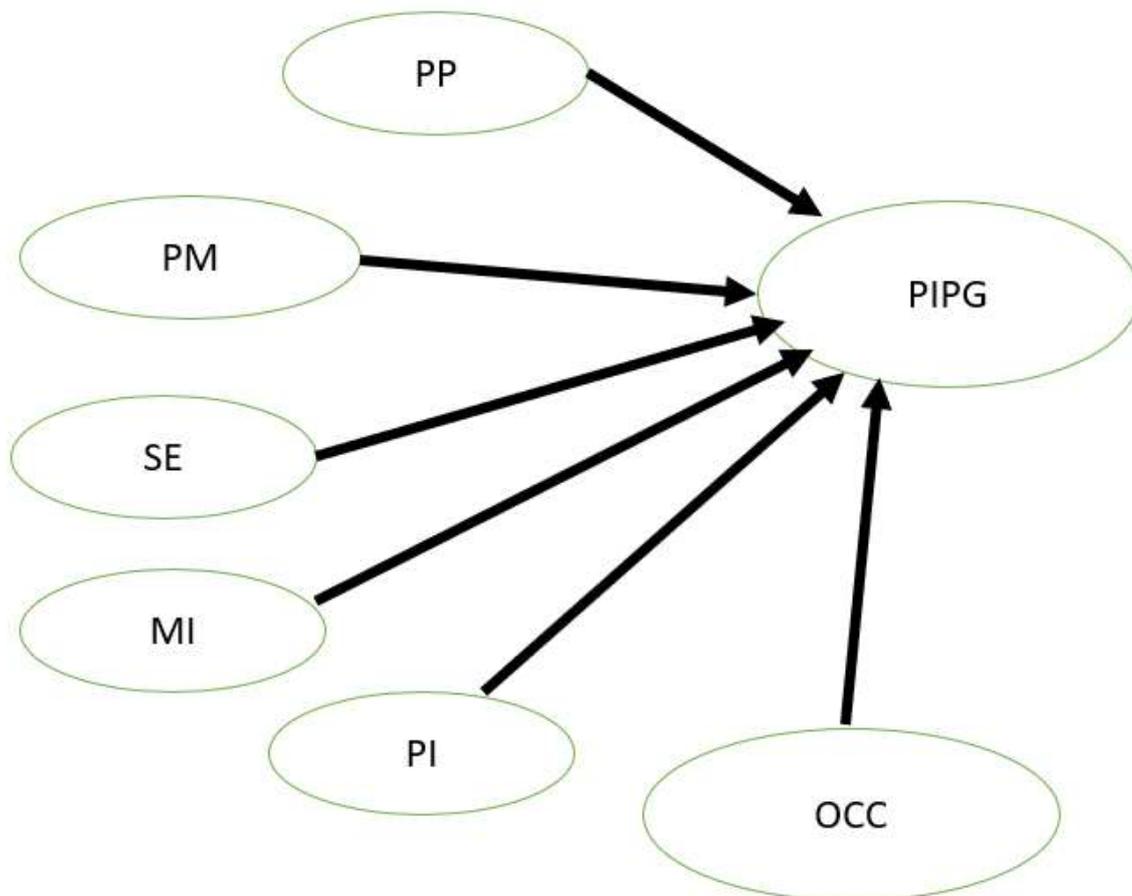
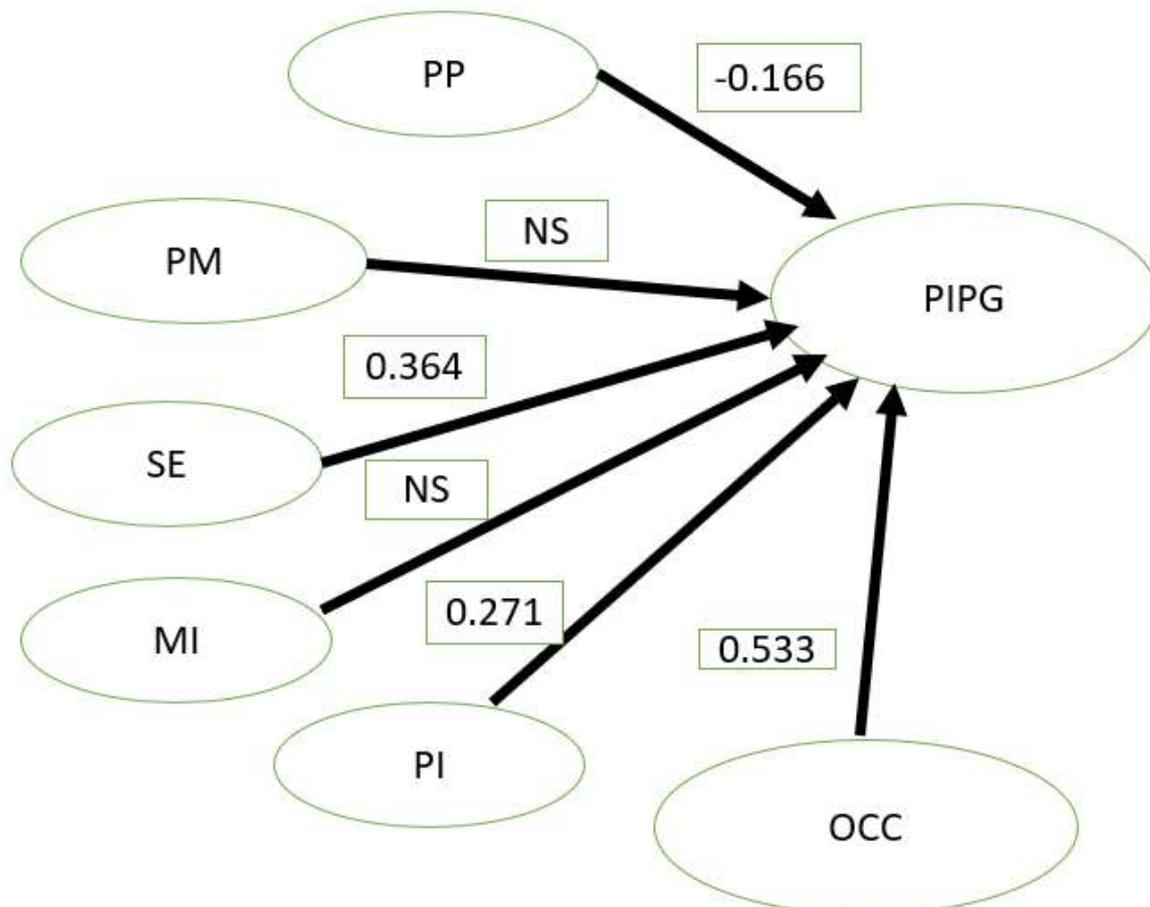


Figure III Beta Coefficient of the model

0.533, $\rho < 0.01$) have a positive significant influence on PIPG. PP ($\beta = -0.166$, $\rho < 0.05$) has a significant negative impact on purchase intention of paid mobile gaming applications. PM ($\beta = -0.116$, $\rho > 0.05$, t-statistics = -0.987) and MI ($\beta = -0.057$, $\rho > 0.05$) have no significant impact on PIPG. Table IV shows the path coefficient of the proposed hypothesis. Figure II and Figure III shows the path analysis and results obtained from SPSS. The R-square values are obtained for the constructs. The results show the R-square value of $R^2 = 0.66$. Thus, the proposed model has substantial validity as stated by the existing theories.

Results and Conclusion

The results of this study revealed that the OCC has the strongest impact on PIPG. This infers that consumer are influenced to a greater extent by their online peers than others. So, the policymakers should see that the marketing campaigns are reaching a large number of customers online. The policymakers must take care of the social platforms because the sentiments about gaming application shared through such platforms have a huge impact on purchase behaviour. The SE has the second largest influence on PIPG. The person's

self-interest plays a major role. So, the policymakers should make sure the person's interest in purchasing the gaming application is not changed. From the result of the study, the third-largest contributor to PIPG is PI. A consumer's decision to buy a gaming application depends on the consumer's friends, family or colleagues which means if they have a negative influence, the consumer will not buy the gaming application and vice versa. The policymakers have to ensure that the consumer gains a positive experience while using the gaming application so that it results in positive word of mouth. Lastly, PP has a negative impact on purchase intention. Policymakers should strategize with attractive pricing of the application in order to gain the Indian market.

Limitations and Future Research

The following limitations might possibly act as a scope for future research. a) The sample was chosen for the current study where the respondents belonging two metro cities of south India, Chennai and Bengaluru, b) The present research did not consider a particular genre of the game. This means the perspectives of the respondents may differ with the different genres of the game, the future study can be done by comparing consumers' paid gaming purchase intentions on different platforms (Yang et al, 2017). Future research can also study the impact of negative sentiments on brand image towards the gaming application (Graeme et al., 2020). Future research can also study the applications which are likely to make paid apps like health care apps. (Catherine Han. et.al., 2020). The future study can also explore future research avenues across different cultures like Africa (Michael Humbani and Melanie Wiese., 2018). The future study can know the impact of privacy of mobile apps in other stores like Appstore (Spyros E. Polykalas and George N. Prezerakos 2018). The future study can also research in the region of a cross diverse population (Wei et al., 2020) The future study can say how governments can make use of the applications of paid mobile gaming applications.

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