

Determinants for Purchase of Virtual/Digital Goods using Social Apps

Mayank Sharma⁺, Pradeep Kumar and Bharat Bhasker

Indian Institute of Management, Lucknow India – 226013

Abstract. Social networking sites have become an important market space in Internet. Social apps existing in social networking sites thrive in the environment provided by them. Companies are focusing more on social networking sites to promote their products and identify new sources of revenue generation. One such nascent way is by sale of virtual/digital goods through social apps using social networking sites. To the best of our knowledge, research in this area has been growing, with limited studies exploring the business potential involved with purchase of virtual/digital goods. The aim of this paper is to identify the determinants of purchase decision of virtual/digital goods in social apps. We use TAM, social app usage, attributes of virtual/digital goods and other factors to explain the purchase intention of virtual/digital goods in social apps. Survey based methodology has been adopted to show the viability of our research.

Keywords: Purchase intention, Social networking sites, Social apps, TAM, Virtual/digital goods

1. Introduction

Over the last decade the popularity of social networking sites and the apps used in them has grown tremendously [1]. The social networking sites besides providing the environment for development of such apps also provides user-to-user interactions. These interactions in social networking sites have lead to the tremendous growth of social apps. Some social apps such as *Farmville*, *Mafia Wars* have unprecedented success stories [2]. *Farmville*, the social game of company Zynga has around 80 million users [3]. The social apps such as video/text chat, photo/video sharing also provides utility to users, thus, contributing towards the development of a community.

As a part of their revenue model, some of the social apps provide users with option to purchase virtual/digital goods. The purchase intention in social networking sites has been studied from various perspectives. Wang et al. [4] studied purchase intention from the perspective of communication among social media users, Kim et al. [5] studied from the customer value perspective and Lu et al. [6] studied from the trust perspective. The purchase intention is the antecedent towards the actual purchase of virtual/digital goods.

The current study focuses on purchase intention of virtual/digital goods, which can be a key determinant of success of social apps existing in social networking sites. The success of social apps and the impact of interactions through social networking sites make an interesting case to study the factors behind these phenomena.

Our objective of this study is to enlist and analyze the impact of the factors which can affect our outcomes of interest such as purchase intention of virtual/digital goods existing in social apps in social networking sites. To accomplish this, we use Technology Acceptance Model (TAM) [7] as the base model and include the other affecting external variables. We study the relationships of these factors and their effect on each other. We conceptualize our research model and also measure the significant relationships among the factors. We then developed a survey questionnaire and collected data comprising of unbiased sample of users of social apps in social networking sites. The proposed model has been analysed using linear regression.

⁺ Corresponding author.
E-mail address: fpm10012@iiml.ac.in

Our study reveals that the factor like self-efficacy and social influence along with Technology Acceptance Model affects the social app usage which then drives the purchase intention. Other factors such as social self-image expression and the attributes of virtual/digital goods also affect the purchase intention.

The paper is organized as follows: In section 2, the theoretical background along with the constructs used in our study has been discussed. Hypotheses formulation and research model is covered in section 2. In section 3, methodology and data analysis has been discussed. We conclude in section 4.

2. Theoretical Background and Research Hypotheses

In this study we have utilized Technology Acceptance Model (TAM) [7] to include the factors involved with use of social networking sites [8]. According to TAM, the attitude towards a technology affects its use. The two belief variables used in TAM which explains the impact on attitude and in turn determine the intention to use, are perceived ease of use and perceived usefulness. Other variables used in conjunction with TAM are perceived enjoyment, self-efficacy and sense of belonging. To include, user using a social app in our exploratory study we devised a construct as social app usage and included social influence [9] of other users using the app in our research model. To include the factors accounting for the functional, hedonic and social aspects of attributes of virtual/digital goods we used customizability [10], aesthetics [5] and social self-image expression [5] respectively.

We first hypothesize the purchase intention of virtual/digital goods. The purchase intention of any item from a website has been seen to be linked with use of that website and the browsing time spent on the website [5]. In our study to account for the degree of app usage in social networking sites, we borrow the concept of social media product browsing [10] and include it as social app usage. We define social app usage in our case as the “*degree to which users of social networking sites engage in the process of using such sites to browse and use apps*”. In our case, the amount of time a user spends on a particular social app in social networking site and the intensity with which s/he uses that social app will positively affect purchase intention of virtual/digital goods from that social app. Hence, we hypothesize

Hypothesis 1a: Social app usage will positively affect purchase intention of virtual/digital goods

The attributes of virtual/digital goods can be classified into functional, hedonic and social aspects [11]. To include these aspects in our study we use customizability [10] for functional attributes of virtual/digital goods. Similarly we use aesthetics [5] attribute to account for the hedonic aspect of virtual/digital goods and lastly we use social self-image expression [5] to account for the social aspect of virtual/digital goods.

Kim et al. [5] defines social self-image expression as “an aspect of social value and is the perceived capability of a digital item to enhance one’s image in the eyes of others”. The social self-image expression is linked with the user trying to project him/her as best possible among the other users of that social app. In this process s/he tries to enhance the image linked with social app by buying the virtual/digital goods and using them in social app to uplift his/her status. Hence, we hypothesize

Hypothesis 1b: Social self-image expression will positively affect purchase intention of virtual/digital goods

Social networking site affinity relates to the use of social networking site which thus is likely to affect social app usage. Also the user-to-user interactions among friends and peers of social networking site are also likely to affect social app usage. Thus, we hypothesize

Hypothesis 2a: Social networking site affinity will positively affect social app usage

Hypothesis 2b: Social influence for using an app will positively affect social app usage

Aesthetics and customizability are the attributes of virtual /digital goods. Some users are likely to look for the utility aspect of these virtual/digital goods which give more weightage to the customizability aspect. Also if some other user weighs the hedonic aspect of the virtual/digital goods, then s/he is likely to buy the item which has some aesthetic appeal. Hence, we hypothesize

Hypothesis 2c: Aesthetics of virtual/digital goods will positively affect social app usage

Hypothesis 2d: Customizability of virtual/digital goods will positively affect social app usage

TAM variables, namely, perceived ease of use, perceived usefulness and perceived enjoyment is likely to affect the social networking site affinity. When a user finds a social networking site, easier to use and its

features useful, it is more likely that s/he will use it. Also, when a user enjoys the experience of social networking site, s/he is more likely to use it in voluntary context [12]. Hence, we hypothesize

Hypothesis 3a: Perceived ease of use will positively affect social networking site affinity

Hypothesis 3b: Perceived usefulness will positively affect social networking site affinity

Hypothesis 3c: Perceived enjoyment will positively affect social networking site affinity

Aesthetics and customizability of virtual/digital goods provides a user to express him/her to other users. The interactions and the social status among peers of social apps make the attributes of virtual/digital goods an important factor to affect the social self-image expression. Hence, we hypothesize

Hypothesis 4a: Aesthetics of virtual/digital goods will positively affect social self-image expression

Hypothesis 4b: Customizability of virtual/digital goods will positively affect social self-image expression

Hypothesis 4c: Self-efficacy will positively affect social self-image expression

From the extended TAM [12], we know that social influence is an important driver of perceived usefulness. Also perceived enjoyment and perceived ease of use as per TAM affects the perceived usefulness. Hence, we hypothesize

Hypothesis 5a: Social influence of using an app will positively affect perceived usefulness of social networking site

Hypothesis 5b: Perceived enjoyment from using a social networking site will positively affect perceived usefulness of social networking site

Hypothesis 5c: Perceived ease of use of a social networking site will positively affect perceived usefulness of social networking site

A high sense of belonging is expected to lead to greater participation of user in the social networking site. This greater participation in a voluntary context is likely to results in perceived enjoyment of using a social networking site. Thus, we hypothesize

Hypothesis 6a: Sense of belonging to a social networking site will positively affect perceived enjoyment from using a social networking site

Self-efficacy of social networking site relates to the ability and skills that an individual possesses to use a social networking site.

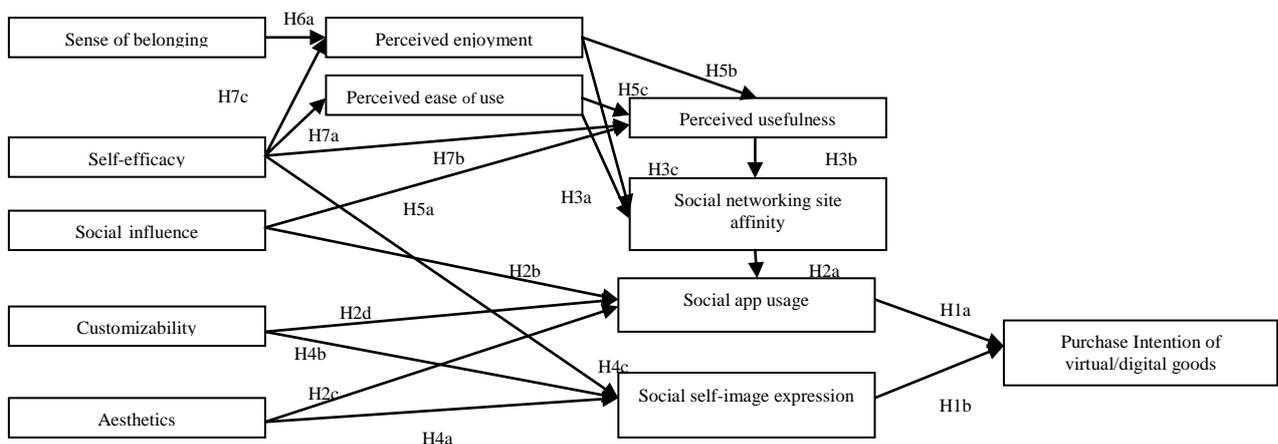


Fig. 1: Research model and hypotheses.

This ability and skills of a user helps him/her to enjoy the experiences of social networking site and thus contribute positively to usefulness, ease of use and enjoyment of social networking site. Thus, we hypothesize

Hypothesis 7a: Self-efficacy of social networking site will positively affect perceived ease of use of a social networking site

Hypothesis 7b: Self-efficacy of social networking site will positively affect perceived usefulness of a social networking site

Hypothesis 7c: Self-efficacy of social networking site will positively affect perceived enjoyment from using a social networking site

From our hypotheses formulation, we thus propose our research model as shown in Figure 1. This research model combines the TAM with other constructs such as social influence, self-efficacy, sense of belonging, and social app usage along with the attributes of virtual/digital goods. We study how these variables affect the purchase intention of virtual/digital goods through an empirical study.

3. Methodology and Data Analysis

For capturing the user’s perception we build a survey instrument based on measurement scales borrowed from the literature. While the measures are based on previously validated instruments in the literature, the current study re-validates these measures, as recommended by Straub [13]. To accomplish our data gathering, an online survey was created on an online survey hosting site and the link was sent with emails to the respondent explaining the nature of study. Similarly, a paper based survey was also used to get responses from few other respondents.

Table 1. Descriptive statistics and Chronbach’s alpha for all measures used.

Measure	Number of items in scale	Chronbach’s alpha	Mean	Std. Deviation
Social networking site affinity	6	0.864	3.73	0.807
Perceived ease of use	3	0.850	4.06	0.638
Perceived usefulness	4	0.803	3.61	0.780
Sense of belonging	5	0.809	3.23	0.733
Self-efficacy	5	0.813	3.58	0.723
Perceived enjoyment	3	0.777	3.67	0.696
Social app usage	4	0.844	3.26	0.830
Social Influence	2	0.896**	3.38	0.820
Aesthetics	4	0.943	3.46	0.776
Customizability	3	0.897	3.09	1.03
Social self-image expression	4	0.944	3.01	1.01
Purchase Intention	4	0.902	3.04	1.02

** Spearman brown coefficient

Each respondent was asked to fill the survey provided they had any prior experience of using an online social networking site and social apps. The response to survey was voluntary and optional to submit so that there will be no confounding effects from coercing subjects into participation. They were also asked to mention the online community and the social app to which they mostly associate with and were part of it. After collecting the responses the data was cleaned and invalid responses were discarded. Then we used *SPSS version 17.0* to calculate the reliability and validity of the constructs used. We conducted linear regression among the constructs used. This way the significant relationships among constructs were identified.

In total 140 responses were received and retained after pre-processing of data. In our study sample we have avid users of social networking sites, with an average of 1-2 hours of daily usage. Also, less than a third of sample users had past experience of purchasing from social networking sites. Thus, we have a sample mix in which some buyers and some potential buyers of virtual/digital goods exist. Table 1 summarizes the reliabilities and descriptive statistics of all the measures used in our study. As the table shows, all the Chronbach’s alpha values were above the 0.70 threshold, indicating that the scales had high reliabilities. For discriminant validity, we observed that each scale item was loading with factor of above 0.4 values on their respective scales apart from aesthetics, customizability and social self-image expression. The items of these three scales loaded on single factor indicating that they belonged to attribute class of virtual/digital goods.

To test our hypotheses, we conducted linear regression model, the result of which is shown in Table 2. Our research model helps us to explain 46.8 % of the variance for the purchase intention of virtual/digital goods. The social app usage and social self-image expression are found to be significant in determining the purchase intention of virtual/digital goods.

The empirically validated model based on the linear regression results and the significant relationships among the constructs used is shown in Figure 2. From our exploratory study, we find that the purchase intention of virtual/digital goods is dependent on social app usage and social self-image expression.

The social networking site affinity is the degree to which a user uses a particular social networking site and finds it indispensable. Thus, the TAM variables, namely, perceived usefulness, perceived ease of use and perceived enjoyment from social networking site contributes indirectly to the purchase intention of virtual/digital goods.

Table 2. Linear regressions results for all the hypotheses

Linear Regression for	Variable	B (Unstd. coeff.)	Std. Error	β (Standardized. coeff.)	Significance
Purchase intention of virtual/digital goods $R^2=0.468$; $F= 60.236$ (**p <0.01, *p<0.05)	Constant	0.290	0.259		0.263
	Social self-image expression	0.521	0.067	0.538	0.000**
	Social app usage	0.290	0.082	0.247	0.001**
Social app usage $R^2=0.394$; $F= 21.943$ (**p <0.01, *p<0.05)	Constant	0.976	0.283		0.001
	Social networking site affinity	0.227	0.074	0.221	0.003**
	Social influence	0.243	0.071	0.303	0.001**
	Aesthetics	0.218	0.086	0.266	0.013*
	Customizability	0.010	0.091	0.013	0.909
Social networking site affinity $R^2=0.454$; $F= 37.701$ (**p <0.01, *p<0.05)	Constant	0.209	0.363		0.565
	Perceived ease of use	0.250	0.100	0.198	0.013*
	Perceived usefulness	0.278	0.088	0.268	0.002**
	Perceived enjoyment	0.410	0.087	0.354	0.000**
Social self-image expression $R^2=0.675$; $F= 93.998$ (**p <0.01, *p<0.05)	Constant	0.061	0.265		0.818
	Aesthetics	0.209	0.075	0.210	0.006**
	Customizability	0.625	0.075	0.630	0.000**
	Self-efficacy	0.086	0.071	0.061	0.232
Perceived usefulness of social networking site $R^2=0.514$; $F= 35.757$ (**p <0.01, *p<0.05)	Constant	-0.328	0.339		0.334
	Social influence	0.180	0.048	0.239	0.000**
	Perceived enjoyment	0.269	0.081	0.240	0.001**
	Perceived ease of use	0.474	0.085	0.388	0.000**
	Self-efficacy	0.132	0.082	0.122	0.108
Perceived enjoyment from using a social networking site $R^2=0.385$; $F= 42.912$ (**p <0.01, *p<0.05)	Constant	1.262	0.265		0.000
	Self-efficacy	0.343	0.071	0.356	0.000**
	Sense of belonging	0.365	0.070	0.384	0.000**
Perceived ease of use of a social networking site $R^2=0.231$; $F= 41.555$ (**p <0.01, *p<0.05)	Constant	1.367	0.348		0.000
	Self-efficacy	0.545	0.084	0.481	0.000**

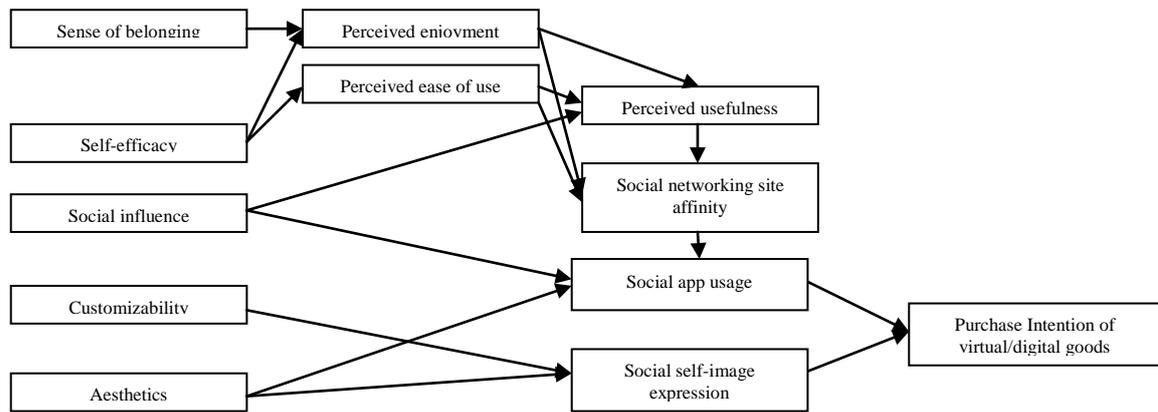


Fig. 2: Empirically validated research model.

The TAM variables on the other hand are affected by sense of belonging and self-efficacy. Thus, the more a user feels the community aspect of social networking site, and the more a user finds him/her able of using the features of social networking site, it is more likely that the user would use that particular social networking site. This social networking site affinity translates into the social app usage. Social influence of other users in using a social app also affects the social app usage which translates subsequently into purchase intention of virtual/digital goods. In voluntary context like social networking sites, social influence exists by virtue of influencing the perceptions about the technology [9].

In this study, customizability, aesthetics and social self-image expression represents the functional, hedonic and social aspect of virtual/digital goods. The hedonic aspect, aesthetics, positively affects the social app usage but functional aspect, customizability does not affect the social app usage. Since the functional aspect of virtual/digital goods may come into play only when the user has started using social app thus customizability of virtual/digital goods fails to be antecedent of social app usage. On the other hand, hedonic aspect of virtual/digital goods in social app can attract other non-user of social app by the mechanism provided in social networking site such as shared posts of such virtual/digital goods.

Both customizability and aesthetics contributes towards social self-image expression. The intention to uplift their image in the eyes of other users is likely to translate the users into purchase of virtual/digital good.

4. Conclusion

Since there has been little research investigating the purchase intention of virtual/digital goods existing in the social apps of social networking sites, this study attempts to identify the factors which can affect this outcome. The revenue model of any social app in social networking sites are increasingly relying on sale of these virtual/digital goods. The proof comes with the rise of company like Zynga, solely based on generating revenue from sale of virtual/digital goods in social apps and advertisements. Our focus in this study has been to study the purchase intention of virtual/digital goods which contributes to the revenue generation of such companies. In this study, we have utilized Technology Acceptance Model (TAM) and to include users using a social app in our exploratory study, we devised a construct as social app usage. To include the factors accounting for the attributes of virtual/digital goods we used customizability, aesthetics and social self-image expression respectively.

We identified and empirically validated number of factors which ultimately determines the purchase intention of virtual/digital goods. Our final research model represents a linear chain of factors which translates a social networking site user to social app user and subsequently to affect the outcome of interest, which is, purchase intention of virtual/digital goods.

5. References

- [1] Barnett, G. A, ed. *Encyclopedia of social networks* (Vol. 1). Sage, 2011.
- [2] MacMillan, D., Burrows, P., and Ante, S. E. Inside the app economy. *Business Week*. 2009, 4153, 347-357.
- [3] Cashmore, P.(2010). FarmVille Surpasses 80 Million Users. Retrieved October,15,2013 from <http://mashable.com/2010/02/20/farmville-80-million-users/> on
- [4] Wang, X., Yu, C., and Wei, Y. Social Media Peer Communication and Impacts on Purchase Intentions: A Consumer Socialization Framework. *Journal of Interactive Marketing*. 2012, 26(4), 198-208.

- [5] Kim, H. W., Gupta, S., and Koh, J. Investigating the intention to purchase digital items in social networking communities: A customer value perspective. *Information & Management*. 2011, **48**(6), 228-234.
- [6] Lu, Y., Zhao, L., and Wang, B. From virtual community members to C2C e-commerce buyers: Trust in virtual communities and its effect on consumers' purchase intention. *Electronic Commerce Research and Applications*. 2010, **9**(4), 346-360.
- [7] Davis, F. D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*. 1989, **13**(3) 319–340.
- [8] Sharma, M., Kumar, P., Bhasker, B., and Bhattacharya, A.. Incorporating Flow Theory to Technology Acceptance Model for Online Community Formation. In *ICIW 2013, The Eighth International Conference on Internet and Web Applications and Services* (pp. 167-173). 2013.
- [9] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. User acceptance of information technology: Toward a unified view. *MIS quarterly*. 2003, 425-478.
- [10] Mikalef, P., Giannakos, M., & Pateli, A. Shopping and word-of-mouth intentions on social media. *Journal of theoretical and applied electronic commerce research*. 2013, **8**(1), 17-34.
- [11] Lehdonvirta, V. Virtual item sales as a revenue model: identifying attributes that drive purchase decisions. *Electronic Commerce Research*. 2009, **9**(1-2), 97-113.
- [12] Venkatesh, V. Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*. 2000, **11**(4), 342-365.
- [13] Straub, D. W. Validating instruments in MIS research. *MIS quarterly*. 1989, 147-169.