Purchase intention and word of mouth in social apps

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Abstract: Social networking sites are used for both personal and professional interactions. Social apps thrive in the environment provided by social networking sites. Companies are focussing on this market space to promote their products and to identify new sources of revenue generation. The objective of our paper is to identify the factors for purchase decision and word of mouth of virtual and digital goods in social app-based communities. In this paper, we incorporate technology acceptance model, social influence, social app usage, attributes of virtual and digital goods among other constructs. Findings from our research indicate that the social self-image expression is an important determinant of both purchase intention and word of mouth of virtual and digital goods. Social app usage affects purchase intention of virtual and digital goods. Features of social apps and social networking site enabling and enhancing these factors can contribute towards business value from social app-based community.

Keywords: social networking sites; social apps; technology acceptance model; TAM; word of mouth; WOM; purchase intention; virtual goods; digital goods; social app-based community; web-based community; online communities.

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1 Introduction

In recent years, the popularity of social networking sites and the apps used in them has grown significantly.

On one hand social networking throws many challenges for organisations; while on the other it provides new opportunities (Issa and Kommers, 2013). The social networking site features facilitate the development of social apps by providing the environment. It also enables user-to-user interactions and development of an online community. These interactions in social networking sites have lead to the increased participation of users in social apps, resulting in tremendous growth of social apps. Not only social apps have seen unprecedented growth, in terms of number, but also, some social apps such as Farmville, Mafia Wars, and Candy Crush saga have unprecedented success stories (MacMillan et al., 2009). Farmville has around 80 million users with its parent company Zynga (Cashmore, 2010). Social apps existing in social networking sites can have various features which may include text/photo/video sharing, etc. These features acts as enablers for interactions among number of users of social networking site and thus contribute towards the development of a social app-based community. One of the revenue model of social app-based companies like Zynga and King is sale of virtual and digital goods. Virtual good example can be a prop used by an avatar in an online game. Digital good example can be music files, software, digital files, etc.

One of the important effects observed in social networks is network effect. This network effect contributes towards information exchanges between users and is referred to as word of mouth (WOM). WOM is informal, person-to-person communication between an individual and another in regard of a product, brand, organisation, or service (Anderson, 1998). WOM through user interactions contributes towards the popularity and growth in number of users for social app and social networking sites. The network effect in social networking site makes the success of social apps, such as Farmville and Candy Crush Saga, unprecedented through WOM. Thus, owing to the importance of WOM, we in our research study investigate the factors contributing towards the word of mouth for the social apps and virtual and digital goods.

Second outcome variable which we study in our research work is purchase intention of virtual and digital goods existing in social apps. The purchase intention in social networking sites has been studied from various perspectives. Wang et al. (2012) studied
purchase intention from the perspective of communication among social media users, Kim et al. (2011) studied from the customer value perspective and Lu et al. (2010) studied from the trust perspective. Liao et al. (2012) studied re-purchase intention for online gaming community. The purchase intention is the antecedent towards the actual purchase of virtual and digital goods.

The current study focuses on two key determinants of success of social apps existing in social networking sites namely, purchase intention and WOM of virtual and digital goods. The success of social apps and the impact of interactions through social networking sites towards building of social app-based community, makes it interesting to study the factors to derive business value from social app community. The business model which understands and incorporates these underlying factors is likely to show a robust growth of social apps.

Social networking sites, such as Facebook, where social app-based communities exist and thrive, are great market place for companies to sell their products. The virtual and digital goods which may/may not resemble the real world entities provides a means to engage the users of social apps and translate this engagement into business value. With advent of companies, like Zynga and King, based on social apps the study of key factors involved with this phenomenon becomes extremely important.

The objective of our research study is to enlist and analyse the impact of the factors which affect the outcomes of interest, namely, purchase intention and WOM of virtual and digital goods existing in social apps in social networking sites. To accomplish it we use technology acceptance model (TAM) (Davis, 1989), as the base model, and include the other affecting external variables to arrive at our research hypotheses and model. We study the relationships of these factors and their effect on each other. Following which we measure the significant relationships and validate our proposed research model empirically.

In this study, we took an unbiased sample of 212 users of social apps in social networking sites and developed a survey questionnaire based on supporting literature. We then analysed our proposed model based on the linear regression and structured equation modelling (SEM) and validated with empirical data.

Our study reveals that the factors social influence along with TAM affects the social app usage, which then drives the purchase intention of virtual and digital goods. Other factors such as, social self-image expression and the attributes of virtual and digital goods also affect the purchase intention and WOM.

Our paper is organised as follows. In Section 2, we provide the theoretical background along with the constructs used in our study. Next we discuss the hypotheses and our research model in Section 3. In Section 4, we discuss our research methodology, data collection, and its analysis. Finally we discuss our result in Section 5 and conclude it in Section 6.

2 Theoretical background

Every social app existing in the social networking sites has certain attributes. These attributes becomes essentially the sum of parts which tends to make the whole app more attractive for a user to use. Our literature review first tries to classify these attributes of the social apps based on the perspectives of the stakeholders involved. This is a novel classification to identify the key attributes based on existing literature.
The stakeholders involved in these social apps are firstly social networking sites which provide the platform/environment for building of these social apps and the user connectivity. The features of these social networking sites thus become extremely important to be taken into account while assessing the success/failure of a social app. Some of the social apps may be provided by the social networking sites itself which acts as utilities for the users of social networking site. For example, in Facebook a chat/messaging service is an app which provides the users to post messages privately among a closed set of users. While a newsfeed is an app with functionality in the Facebook to provide the public feeds of friends and pages. The features of the social networking site thus become important to be taken into account.

The second stakeholder involved in the social apps existing in social networking sites are the users. The users leverage upon the social apps to fulfil their particular need(s) addressed by the social apps. The users motivated by variety of reasons seek a certain fulfilment of needs. These motivations can be categorised based on the e-commerce literature into the hedonic, utilitarian and social motivations (Lehdonvirta, 2009).

The shopping motivations from various social networking sites can be classified into utilitarian and hedonic attributes. The utilitarian attributes are the attributes which relates to the utility or functionality of the social apps. These attributes can influence the purchase intention and WOM. WOM is informal, person-to-person communication between an individual and another in regard of a product, brand, organisation, or service WOM usually involves information exchange (Anderson, 1998). With regard to WOM researchers have examined the conditions under which consumers are likely to rely on others’ opinions to make a purchase decision, the motivations for different people to spread the word about a product, and the variation in strength of people’s influence on their peers in WOM communications. Researchers have studied WOM in various contexts. Ellonen et al. (2013) studied WOM for Finnish business-newspaper brand community. Cheung and Lee (2012) investigated WOM in context of online consumer-opinion platforms while Liao et al. (2012) studied WOM for online gaming community. In the current study we utilised WOM as a consequence variable for social app-based community existing in social networking sites.

Lin and Vassar (2009) develop a framework of the determinants that identify the motivating forces required to build online learning communities. They concluded factors such as, self-governance, self-efficacy, perceived behavioural control and personal outcome expectations play significant role in building online learning communities.

Maditinos et al. (2012) conducted the study regarding the internet-based web blogging and the factors that influence users to participate in a weblog. In their studies they utilised the theory of reasoned action, to understand the reasons why users take part in a weblog. They concluded that technology acceptance factors (ease of use and enjoyment) and knowledge sharing (reciprocal benefit) was positively related to attitude towards participating in a blog. On the other hand, social influence factors (community identification and social norm) were positively related to user’s intention in regard to blog usage.

As we are measuring the purchase intention of virtual and digital goods, it is imperative that we take into consideration the TAM (Davis, 1989) and use it as the backbone to study the purchase intention. The parsimony of TAM combined with its predictive power make it easy to apply to different situations, hence, we use TAM in our context of social app-based community. As per TAM, the intention of use a system, in
this case being social networking site and the social app existing in it, is affected by the
perceived ease of use and perceived usefulness of system. The perceived ease of use and
perceived usefulness have also been explored in conjunction with perceived enjoyment,
social influence (Venkatesh et al., 2003) among various other attitudinal variables.

Since we are studying the user purchase intention of virtual and digital goods in a
social networking site environment, sense of belonging is used to incorporate this
context. Sense of belonging is considered a very important factor for participation in the
community. A sense of belonging grows from active participation and experience in a
community and thus is essential to be used in context of social networking sites.

We also use self-efficacy in our study. Self-efficacy is a behavioural concept which
was first proposed by Bandura (1977) and is defined as the belief in one’s capabilities to
organise and execute the courses of action required to produce given attainments. Lin and
Vassar (2009) used self-efficacy to study online learning communities. Self-efficacy has
been studied in conjunction with TAM as an antecedent to the TAM variables. Venkatesh
(2000) found it as important determinant of perceived ease of use of information system.

3 Research model and hypotheses

We first hypothesise the purchase intention of virtual and digital goods. The purchase
intention of any item in from a website has been seen to be linked with use of that
website and the browsing time spent of the website (Kim et al., 2011). In our study, to
account for the degree of app usage in social networking sites we borrow the concept of
social media product browsing (Mikalef et al., 2013) 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 user spends on a particular social app in social networking site, and the
intensity with which it uses that social app will positively affect purchase intention of
virtual and digital goods from that social app. Hence, we hypothesise

Hypothesis 1a Social app usage will positively affect purchase intention of virtual and
digital goods.

As discussed earlier, the attributes of virtual and digital goods can be classified into the
functional, hedonic and social aspects. To include these aspects in our study, we use
customisability for functional attributes of virtual and digital goods. Similarly, we use
aesthetics attribute to account for the hedonic aspect of virtual and digital goods, and
lastly, we use social self-image expression to account for the social aspect of virtual and
digital goods.

Kim et al. (2011) 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 and digital goods and
using them in social app to uplift his/her status. The scenario is best explained when we
take some social games as example where one user tries to get ahead of other users of the
social app and to do so purchasing of virtual and digital goods becomes a good stepping
stone. Hence, we hypothesise
Hypothesis 1b Social self-image expression will positively affect purchase intention of virtual and digital goods.

Social app usage, as we discussed earlier, represents the degree to which user browses and uses the social app in social networking site. The virtual and digital goods existing in the social app thus are likely to be affected by social app usage. Thus, we hypothesise

Hypothesis 1c Social app usage will positively affect WOM of virtual and digital goods.

Social self-image expression makes the user to browse and use virtual and digital goods in order to boost the image of user in eyes of others. By spreading the information and use of virtual and digital goods is a way to enhance his/her image among other users of that social app. Hence, we hypothesise

Hypothesis 1d Social self-image expression will positively affect WOM of virtual and digital goods.

Social networking site affinity relates to the use of social networking site. This affinity towards the use of the social networking site is likely to be a driver for social app usage. Also, the user-to-user interaction among friends and peers of social networking site is likely to affect social app usage. Thus, we hypothesise

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 customisability are the attributes of virtual and digital goods. Some users are likely to look for the utility aspect of these virtual and digital goods which give more weightage to the customisability aspect. For example, a game card designed to level up and provide you some super power in Mafia Wars is likely to drive the usage of it as the users who does not have much time to play Mafia Wars. Also, if some other user weighs the hedonic aspect of the virtual and digital goods, then it is likely to buy the item which has some aesthetic appeal. Hence, we hypothesise

Hypothesis 2c Aesthetics of virtual and digital goods will positively affect social app usage.

Hypothesis 2d Customisability of virtual and digital goods will positively affect social app usage.

TAM variables namely, perceived ease of use, perceived usefulness and perceived enjoyment are 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 features, s/he is more likely to use it in voluntary context (Venkatesh, 2000). Hence, we hypothesise

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 customisability of virtual and 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 and digital goods an important factor to affect the social self-image expression. Hence, we hypothesise

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

Hypothesis 4b Customisability of virtual and digital goods will positively affect social self-image expression.

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

From the extended TAM (Venkatesh, 2000), we know that social influence is an important driver of perceived usefulness. Also, perceived enjoyment and perceived ease of use as per TAM affect the perceived usefulness. Hence, we hypothesise

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 hypothesise

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. 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 hypothesise

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 and sense of belonging, social app usage along with the attributes of virtual and digital goods. We study how these variables affect the purchase intention and WOM of virtual and digital goods through an empirical study.
4 Methodology and data analysis

For capturing the user’s perception we build a survey instrument based on measurement scales borrowed from the literature. The questions used in our survey are enlisted in Appendix along with the source of items. While the measures are based on previously validated instruments in the literature, the current study re-validates these measures, as recommended by Straub (1989).

<table>
<thead>
<tr>
<th>Variable</th>
<th>N = 212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>59.44%</td>
</tr>
<tr>
<td>Female</td>
<td>40.56%</td>
</tr>
<tr>
<td>Average age</td>
<td>28.25 years</td>
</tr>
<tr>
<td>Average usage hours of social networking site</td>
<td>One to two hours daily</td>
</tr>
<tr>
<td>Number of friends on an average in social networking site</td>
<td>400–500 friends</td>
</tr>
<tr>
<td>Percentage of sample user had prior purchase experience on social</td>
<td>36.32%</td>
</tr>
</tbody>
</table>

To accomplish our data gathering an online survey was created on online survey hosting site and the link was sent with e-mails to the respondent explaining the nature of study. Similarly, paper-based survey was also used to get responses from other respondents. We conducted a survey from September, 2013 to November, 2013. Each respondent was asked to fill the survey if they had any prior experience of the online social networking site and the 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. In total 212 responses were received and retained after pre-processing of data.
Table 2  Reliabilities and average variance extracted of constructs used

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of items in scale</th>
<th>Cronbach’s alpha</th>
<th>Average variance extracted (AVE)</th>
<th>Composite reliability (CR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social networking site affinity</td>
<td>6</td>
<td>0.845</td>
<td>0.551</td>
<td>0.831</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>3</td>
<td>0.857</td>
<td>0.832</td>
<td>0.936</td>
</tr>
<tr>
<td>Perceived usefulness</td>
<td>4</td>
<td>0.768</td>
<td>0.518</td>
<td>0.811</td>
</tr>
<tr>
<td>Sense of belonging</td>
<td>5</td>
<td>0.799</td>
<td>0.573</td>
<td>0.816</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>5</td>
<td>0.820</td>
<td>0.501</td>
<td>0.831</td>
</tr>
<tr>
<td>Perceived enjoyment</td>
<td>3</td>
<td>0.763</td>
<td>0.698</td>
<td>0.871</td>
</tr>
<tr>
<td>Social app usage</td>
<td>4</td>
<td>0.851</td>
<td>0.640</td>
<td>0.872</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>4</td>
<td>0.933</td>
<td>0.744</td>
<td>0.921</td>
</tr>
<tr>
<td>Customisability</td>
<td>3</td>
<td>0.883</td>
<td>0.715</td>
<td>0.882</td>
</tr>
<tr>
<td>Social self-image expression</td>
<td>4</td>
<td>0.931</td>
<td>0.749</td>
<td>0.923</td>
</tr>
<tr>
<td>Purchase intention</td>
<td>4</td>
<td>0.893</td>
<td>0.604</td>
<td>0.858</td>
</tr>
<tr>
<td>Word of mouth</td>
<td>4</td>
<td>0.864</td>
<td>0.558</td>
<td>0.834</td>
</tr>
</tbody>
</table>

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 also then conducted linear regression among the constructs used. This way the significant relationships among constructs were identified.

Our study sample has avid users of social networking sites using on an average of 1 to 2 hours daily as shown in Table 1. Among all the users near to one third of sample users had a past experience of purchasing from social networking sites.

To measure reliability we calculated Cronbach’s alpha for each of the construct used in our research model. The result of the reliability test is shown in Table 2 along with average variance extracted (AVE). All Cronbach’s alpha values were above the 0.70 threshold, indicating that the scales had high reliabilities (Nunnally, 1978). Social influence is two-item scale, so we calculate the Spearman-Brown statistic for it which comes out as 0.873 showing good reliability.

We show the Pearson correlation among the constructs used in Table 3 where the diagonal element represents square root of AVE. The square roots of AVE for each construct are larger than the corresponding correlation coefficients with other constructs used. This suggests that scales have good discriminant validity.

Factor analysis shows that the items of each of the construct used load on their respective factors except for the aesthetics, customisability and social self-image expression. The items of these constructs load on the single factor indicating they belong to a higher concept. We termed this factor as ‘attributes of virtual and digital goods’, which comprises of the aesthetics and customisability of virtual and digital goods as well as the social self-image expression of a user. Thus, we empirically validated result of the hedonic, functional and social attributes of virtual and digital goods as suggested by Lehdonvirta (2009). We also found the convergent validity of all the constructs used to be substantiated by AVE greater than 0.5 as shown in Table 2.
### Table 3

Pearson correlation coefficients

<table>
<thead>
<tr>
<th></th>
<th>SNSA</th>
<th>PEOU</th>
<th>PU</th>
<th>SOB</th>
<th>SE</th>
<th>PE</th>
<th>APPUSE</th>
<th>SI</th>
<th>AESTH</th>
<th>CUSTOM</th>
<th>SSIE</th>
<th>PI</th>
<th>WOM</th>
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<tr>
<td>SNSA</td>
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<td>PEOU</td>
<td>0.451**</td>
<td>0.912</td>
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<td>PU</td>
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<td>0.527**</td>
<td>0.720</td>
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<td>SOB</td>
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<td>0.381**</td>
<td>0.513**</td>
<td>0.757</td>
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<td>SE</td>
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<td>0.496**</td>
<td>0.501**</td>
<td>0.471**</td>
<td>0.708</td>
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<td>APPUSE</td>
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<td>0.230**</td>
<td>0.480**</td>
<td>0.441**</td>
<td>0.411**</td>
<td>0.381**</td>
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<td>SI</td>
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<td>0.443**</td>
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<td>AESTH</td>
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<td>0.530**</td>
<td>0.599**</td>
<td>0.660**</td>
<td>0.662**</td>
<td>0.777</td>
<td></td>
</tr>
<tr>
<td>WOM</td>
<td>0.163*</td>
<td>-0.025</td>
<td>0.291**</td>
<td>0.260**</td>
<td>0.172*</td>
<td>0.255**</td>
<td>0.373**</td>
<td>0.510**</td>
<td>0.525**</td>
<td>0.625**</td>
<td>0.657**</td>
<td>0.658**</td>
<td>0.747</td>
</tr>
<tr>
<td>Mean</td>
<td>3.72</td>
<td>4.01</td>
<td>3.65</td>
<td>3.25</td>
<td>3.60</td>
<td>3.68</td>
<td>3.34</td>
<td>3.14</td>
<td>3.01</td>
<td>3.08</td>
<td>2.96</td>
<td>2.823</td>
<td>3.09</td>
</tr>
<tr>
<td>Std. deviation</td>
<td>0.779</td>
<td>0.653</td>
<td>0.728</td>
<td>0.706</td>
<td>0.695</td>
<td>0.687</td>
<td>0.824</td>
<td>0.971</td>
<td>0.963</td>
<td>0.960</td>
<td>0.978</td>
<td>0.953</td>
<td>0.955</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Linear regression for</th>
<th>Variable</th>
<th>$β$ (unstd. coeff.)</th>
<th>Std. error</th>
<th>$β$ (standardised coeff.)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase intention of virtual and digital goods</td>
<td>Constant</td>
<td>.371</td>
<td>.209</td>
<td>.078</td>
<td></td>
</tr>
</tbody>
</table>
| $R^2 = 0.474; F = 94.177$ (***$p < 0.01$, *$p < 0.05$) | Social self-image expression | .551 | .055 | .565 | .000**  
| Social app usage | .247 | .065 | .213 | .000**  
| Word of mouth of virtual and digital goods | Constant | .950 | .217 | .000 |  
| $R^2 = 0.438; F = 81.543$ (***$p < 0.01$, *$p < 0.05$) | Social self-image expression | .600 | .057 | .614 | .000**  
| Social app usage | .109 | .067 | .094 | 107  
| Social networking site affinity | Constant | 1.153 | 244 | .000 |  
| $R^2 = 0.361; F = 29.263$ (***$p < 0.01$, *$p < 0.05$) | Social networking site affinity | .165 | .063 | .156 | .009**  
| Social influence | .238 | .062 | .281 | .000**  
| Aesthetics | .211 | .078 | .246 | .008**  
| Customisability | .061 | .078 | .072 | .432  
| Social self-image expression | Constant | .529 | .296 | .076 |  
| $R^2 = 0.665; F = 137.543$ (***$p < 0.01$, *$p < 0.05$) | Social influence | .184 | .218 | .399 |  
| Aesthetics | .159 | .065 | .157 | .015  
| Customisability | .689 | .065 | .676 | .000**  
| Self-efficacy | .049 | .060 | .034 | .420  
| Perceived usefulness of social networking site | Constant | .136 | .258 | .598 |  
| $R^2 = 0.493; F = 50.239$ (***$p < 0.01$, *$p < 0.05$) | Social influence | .197 | .040 | .263 | .000**  
| Perceived enjoyment | .303 | .066 | .286 | .000**  
| Perceived ease of use | .350 | .065 | .314 | .000**  
| Self-efficacy | .105 | .068 | .100 | 125  
| Perceived enjoyment from using a social networking site | Constant | 1.077 | .207 | .000 |  
| $R^2 = 0.441; F = 82.434$ (***$p < 0.01$, *$p < 0.05$) | Self-efficacy | .379 | .058 | .383 | .000**  
| Sense of belonging | .381 | .057 | .391 | .000**  
| Perceived ease of use of a social networking site | Constant | 2.3320 | .207 | .000 |  
| $R^2 = 0.512; F = 40.125$ (***$p < 0.01$, *$p < 0.05$) | Self-efficacy | .466 | .056 | .496 | .000**  

Table 4 - Linear regressions results for all the hypotheses.
Though, we have established that aesthetics, customisability and social self-image expression belong to one factor but still we are using them as separate constructs in order to identify their individual effects in our research model.

In the first analysis method we use linear regression technique using SPSS 17.0 software to test the hypothesis and the relationships among the variables as shown in Table 4. Our research model helps us to explain 47.4% of the variance for the purchase intention of virtual and digital goods and 43.8% of the variance for the WOM of virtual and digital goods.

The research model resulting from the regression analysis and results shown in Table 4 is shown in Figure 2. We observe from these results notably that, WOM is affected positively by social self-image expression of user which in turn is affected by customisability of the virtual and digital goods. Also, purchase intention of virtual and digital goods is influenced by social app usage and social self-image expression. Social networking site affinity, social influence and aesthetics of virtual and digital goods are the major driver of the social app usage.

**Figure 2** Empirically validated research model through linear regression

To further investigate our initial understanding of research model from the linear regression analysis we used covariance-based SEM using Lisrel 8.52. For the multilayered model such as in our study the covariance-based SEM is suitable analysis method. This will assess our research question and hypotheses more holistically and will help to revalidate our results from regression analysis.

The measurement model results shown in Table 2 satisfy the convergent validity criterion with values of AVE for all the constructs used are above 0.5 (Bagozzi and Yi, 1988). Also, the composite reliability strengthens the reliability of constructs used. We also conclude good discriminant validity among construct used as the square roots of AVE for each construct are larger than the corresponding correlation coefficients with other constructs used as shown in Table 3 (Fornell and Larcker, 1981).
Table 5  Fit indices for the structural path model

<table>
<thead>
<tr>
<th>Fit indices</th>
<th>Values</th>
<th>Accepted threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \chi^2/df )</td>
<td>2,217.09 / 1,191 = 1.86</td>
<td>&lt; 3</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.057</td>
<td>&lt; 0.08</td>
</tr>
<tr>
<td>NFI</td>
<td>0.93</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>NNFI</td>
<td>0.96</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>CFI</td>
<td>0.97</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>GFI</td>
<td>0.73</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.70</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>IFI</td>
<td>0.97</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.084</td>
<td>&lt; 0.08</td>
</tr>
</tbody>
</table>

Path analysis of the structural model included our hypotheses as the paths between the latent constructs as well as the paths between the items and its latent constructs. The fit indices were within the accepted threshold limits. The various fit indices are given in Table 5. Our research model helps us to explain 59% of the variance for the purchase intention of virtual and digital goods and 56% of the variance for the WOM of virtual and digital goods. Even though the chi-square statistic is significant due to the large sample size, the value of the chi-square statistic (= 2,217.09) divided by the degrees of freedom (1,191) is 1.86, which is well below the value of 5 that some researchers use as a guideline (Kline, 2005). The RMSEA of 0.057 is well within recommended value of 0.08 which is acceptable (Browne and Cudeck, 1993).

The result of path analysis shows some of the hypotheses are not supported. The complete result of supported hypotheses is shown in Table 6.

The empirically validated model through SEM is shown in Figure 3 with relationships representing the hypotheses which were supported from our empirical study. There are two major differences, in this empirically validated model through SEM, from the empirically validated model through linear regression shown in Figure 2. First, aesthetics of virtual and digital goods in SEM model becomes redundant. Secondly, social networking site affinity does not influence the purchase intention of virtual and digital goods, directly or indirectly.

We now summarise our research model and results. To accomplish our study, we started with the TAM to include the factors involved with use of social networking sites. The advantage of TAM is that it is parsimonious in its approach to explain the attitudes and intention to use an information system. But on the other hand TAM is usually extended and used with other constructs (Venkatesh and Davis, 2000). Hence, we included self-efficacy, sense of belonging, and perceived enjoyment as the external variables to supplement our research model.

Next the user using a social networking site should also be motivated to browse and use the social app. To include this aspect in our exploratory study we devised a construct as social app usage and included social influence of other users using the app in our research model.
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Supported (yes/no) by linear regression model</th>
<th>Supported (yes/no) by SEM model</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a: Social app usage → Purchase intention of virtual and digital goods</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H1b: Social self-image expression → Purchase intention of virtual and digital goods</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H1c: Social app usage → Word of mouth of virtual and digital goods</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>H1d: Social self-image expression → Word of mouth of virtual and digital goods</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H2a: Social networking site affinity → Social app usage</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>H2b: Social influence → Social app usage</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H2c: Aesthetics of virtual and digital goods → Social app usage</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>H2d: Customisability of virtual and digital goods → Social app usage</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>H3a: Perceived ease of use → Social networking site affinity</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>H3b: Perceived usefulness → Social networking site affinity</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H3c: Perceived enjoyment → Social networking site affinity</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H4a: Aesthetics of virtual and digital goods → Social self-image expression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>H4b: Customisability of virtual and digital goods → Social self-image expression</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H4c: Self-efficacy → Social self-image expression</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>H5a: Social influence → Perceived usefulness</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H5b: Perceived enjoyment → Perceived usefulness</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H5c: Perceived ease of use → Perceived usefulness</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H6a: Sense of belonging → Perceived enjoyment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H7a: Self-efficacy → Perceived ease of use</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H7b: Self-efficacy → Perceived usefulness</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>H7c: Self-efficacy → Perceived enjoyment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
After the user has used a social app s/he should also be motivated to browse and buy the virtual and digital goods in that social app. Therefore, in our study we included the factors to account for the functional, hedonic and social aspects of attributes of virtual and digital goods. These have been included in the form of customisability, aesthetics and social self-image expression respectively.

After arriving to our research model and hypotheses as was shown in Figure 1 we conducted linear regression to arrive at our final empirically validated model shown in Figure 2 and further analysed through SEM to arrive at research model shown in Figure 3. The social app in social networking site found nascent ways to generate revenue by sale of virtual and digital goods. To understand this we developed a research model based on TAM, attributes of virtual and digital goods and other factors. We studied the relationships among these factors by analysing through linear regression and SEM. This dual analysis approach revalidated most of the hypotheses. Some differences between the two validated models were found. These differences may be either, due to the unobserved effect of variables which we might have omitted in our study, or some mediation effect which we did not analysed in linear regression model. Overall, both models established the important role of social self-image expression and social app usage in predicting purchase intention and WOM of virtual and digital goods in social apps.

Now, in Section 5, we discuss the results based on both from linear regression and SEM and the ways in which we can bring out business value from social app-based community.

5 Discussion

Since there has been little research investigating the purchase intention and WOM of virtual and digital goods existing in the social apps of social networking sites, this study attempts to identify the factors which can affect these outcomes. The revenue model of any social app in social networking sites are increasingly relying on purchase of these virtual and digital goods. The proof comes with the rise of company like Zynga, King,
Purchase intention and word of mouth in social apps

etc., which generate revenue through sale of virtual and digital goods in social apps and through advertisements. In the current study, we focus on two outcomes, purchase intention and WOM of virtual and digital goods, contributing to the revenue generation of companies like Zynga. While purchase intention of virtual and digital goods may translate into actual purchase of virtual and digital goods, WOM on the other hand contributes indirectly by spreading of information in social networking sites and using the network effect to its advantage.

From our research study, we find that the purchase intention of virtual and digital goods is dependent on social app usage and social self-image expression. They explain 59% of variance for purchase intention. WOM on the other hand depends on social self-image expression. It explains 56% variance for WOM. First we discuss factors affecting the purchase intention of virtual and digital goods in a community based on social app in social networking site.

Firstly, we can infer that, the degree to which a user browses and uses social apps in social networking site determines the purchase intention of virtual and digital goods. The factors which can lead to such increased degree of usage of social app become important knowledge for researchers and business practitioners. Further, our research model and study indicates that such factors include social networking site affinity, social influence of other users in using a particular app and aesthetics involved with the virtual and digital goods. Social influence, in our research model, is one such factor which directly affects the social app usage. In voluntary context, social influence exists by virtue of influencing the perceptions about the technology (Venkatesh et al., 2003). In our case, the voluntary context is using of social apps in social networking site. This result is very useful for the companies which design social apps. In a web-based community of users of a particular social app, the companies can increase the social app usage by including features which are enablers of social influence by other users. For example, Farmville have thrived on this aspect by making user to send the game request to its social networking site friends which are not currently using the social app. Also, the posting of Farmville requests on newsfeed of Facebook inadvertently brought other users to try and play Farmville because it exerted the social influence through these mechanisms. When playing a Zynga game Farmville, if the users are able to post their weekly achievements comparing with the other users of game then also the social influence comes into focus. The virtual and digital goods to boost the weekly achievements of a user will thus be able to generate revenue for the company as more and more users would be interested in that virtual item by seeing other users using it. The features designed to exert social influence of users will thus be able to translate a social app community into some business value for companies through sale of virtual and digital goods.

Secondly, since purchase intention of virtual and digital goods is also positively affected by social self-image expression, we can infer that the features boosting the social self-image expression, for users of social app-based community, can bring business value to companies. Social self-image expression makes the user to browse and use virtual and digital goods in order to boost the image of user in eyes of others. In real life too we see such pattern. When considering geographical locality people generally tend to live in colonies comprising of people with similar economic status. The buying of a new car model by neighbour is often triggered through social self-image expression to enhance his/her image in eyes of others in that locality. This tendency of users can be exploited by companies to monetise the social app-based community through sale of virtual and digital goods. For example, in Farmville, a game coupon which can provide you to level up
faster or buying of a large mansion in the farm represents such aspects of virtual and
digital goods. The hedonic and functional attributes of virtual and digital can strengthen
the social attribute cause. A creation of status comparison chart in a social app-based web
community is also an example through which companies can benefit to leverage this
finding of our research study. The web-based community of social app users in social
networking site is likely to use such feature in social apps to enhance their image in eyes
of other players.

Now, we shift our focus of discussion to our second outcome of interest, which is,
WOM of virtual and digital goods in social app-based community in social networking
sites. WOM is informal, person-to-person communication between an individual and
another in regard of a product, brand, organisation, or service (Anderson, 1998). WOM,
like purchase intention, is positively affected by the social self-image expression. In
context of virtual and digital goods, in social app-based community, there should be
features incorporated in social app which enables social self-image expression and also
the interaction among users of the social app. In previous paragraph we discussed an
example of game coupon which can provide to level up faster in games like Farmville as
an instance for social self-image expression. Similarly another Zynga game, Farmville 2
uses a leader-board that displays the weekly points generated by each of the neighbours
of farm, and allows you to post in newsfeed when you cross over other users in points
tally. This example combines the social self-image expression and a means of interaction
for user to spread WOM. Such features which can provide with more enriched
interactions among social app community users and allows a user a platform to showcase
his/her social self-image expression will translate in garnering WOM of virtual and
digital goods in social app-based community in social networking sites.

We now discuss the factors which affect social networking site affinity. The social
networking site affinity is the degree to which user uses a particular social networking
site and finds it indispensable. Thus, the TAM variables perceived usefulness, perceived
ease of use and perceived enjoyment from social networking site contribute indirectly to
the purchase intention of virtual and digital goods. The TAM variables on the other hand
are affected by sense of belonging and self-efficacy. Thus, more a user feels about the
community aspect of social networking site and more a user finds his/herself to be able to
use and understand the features of social networking site, it is more likely that user
would use that particular social networking site. This social networking site affinity is
likely to translate into the purchase intention of virtual and digital goods. Thus from the
platform provider perspective, the social networking site should help its new user to get
equipped and familiar with the features of social networking site. This can be achieved
through tutorials, frequently asked questions and more importantly by providing support
through community forums, discussions, chatrooms and e-mail newsletter. Also building
sense of belonging in social networking sites takes time and best way to establish is
through building trust among users and trust between user and social networking site.
Social influence, as discussed previously, not only affects social app usage but also social
networking site affinity through perceived usefulness. Hence, the features designed to
exert social influence of users will not only be able to translate a social app community
into some business value for companies through sale of virtual and digital goods, but also
increase the active user base for social networking site. In case of Facebook, there was
increase in user base, with advent of social app-based companies, like Zynga and King,
as a result of social influence by social app community users.
The social self-image expression plays an important role in determining both outcomes of interest, purchase intention and WOM of virtual and digital goods. Social app usage affects the purchase intention of virtual and digital goods. The features of social app and social networking sites which can enable and enhance factors effectively in social app-based community can translate such community of user into potential business through sale of virtual and digital goods.

6 Conclusions and future scope

Social media is evolving and the social networking sites are adding new features to attract new users. The social app developers are making social networking sites more interesting and indispensable. The social app-based companies in social networking site found nascent ways to generate revenue by sale of virtual and digital goods. To understand this aspect we developed a research model based on TAM, attributes of virtual and digital goods and other factors.

In the current work, we identified and empirically validated number of factors which ultimately determines the purchase intention and WOM of virtual and digital goods. Our research model represents a linear chain of factors which translates a social networking site user to social app user and subsequently to affect the outcomes of interest, which are, purchase intention and WOM of virtual and digital goods.

Our first contribution to the relevant literature is that we empirically validated that the factors aesthetics, customisability and social self-image expression belong to one concept which is the attribute of virtual and digital goods. These factors are representation of hedonic, functional and social attributes of virtual and digital goods. Lehdonvirta (2009) suggested these aspects to be purchase drivers of virtual items which we have validated from our empirical results and thus becomes the second contribution to the literature. Next, we also established from our research model the factors which translate a social networking site user to social app user and finally into a prospective buyer of virtual and digital goods.

Social app usage affects the purchase intention of virtual and digital goods. Social influence of social app community users affects the social app usage. The features of social app and social networking site, designed to exert social influence of other users will thus be able to translate a social app community into a potential business value through sale of virtual and digital goods. We discussed few examples in which such features can act as enabler for social influence. The researchers can further study the ways in which the features to exert social influence in social apps can be achieved effectively.

Social self-image expression affects both purchase intention and WOM of virtual and digital goods. Social self-image expression makes the user to browse and use virtual and digital goods in order to boost the image of user in eyes of others. The features boosting the social self-image expression, for users of social app-based community, can bring business value to companies. We discussed the ways in which features of social app community can translate into purchase intention and WOM of virtual and digital goods. The researchers can further study the ways in which the features to enable social self-image expression more prominently in social apps.
In our study, we included aesthetics, customisability and social self-image expression as attributes of virtual and digital goods in social apps. In future work more number of factors comprising functional, hedonic and social aspects can be included as attributes of virtual and digital goods. Since trust represents an important aspect in social networks so trust components, trust among users and trust between user and platform provider, can be tested in future work. Trust component can build and strengthen the sense of belonging of user towards social app community. Furthermore, web data from social networking sites can be used to confirm the results found in our study.

References


Appendix

Questionnaire for the survey

1. **Purchase intention** (Mikalef et al., 2013)
   - After some thought I usually buy one or more virtual/digital goods which I browsed in the social apps.
   - After some thought I usually buy one or more virtual/digital goods which I browsed in the social apps.
   - I buy virtual/digital goods which I see advertised in the social apps through online purchase.
2 Word of mouth intentions (Mikalef et al., 2013)
- I sometimes share with my friends, virtual/digital goods that I like on the social apps.
- I had sent invitations to my friends to join a group of a product/brand on social networking site.
- I share information with my friends about information of a virtual/digital goods being promoted in social apps.
- I would say positive things through social networking site about the virtual/digital goods in social apps.

3 Social self-image expression (Kim et al., 2011)
- Using the virtual/digital goods sold in this app enhances my self-image to others.
- Using the virtual/digital goods sold in this app improves my self-expression to others.
- Using the virtual/digital goods sold in this app makes a good impression on other people.
- Using the virtual/digital goods sold in this app improves the way I am perceived.

4 Customisability (Mikalef et al., 2013)
- I like to purchase virtual/digital goods from apps that are more compatible to my likings.
- Virtual/digital goods presented to me in the apps are customised to my needs.
- Recommendations of virtual/digital goods suited to my needs in this app make me feel as an important customer.

5 Aesthetics (Kim et al., 2011)
- The virtual/digital goods sold in this social app are lovely.
- The virtual/digital goods sold in this social app reflect beauty.
- The virtual/digital goods sold in this social app are aesthetically appealing.
- The virtual/digital goods sold in this social app have attractive aesthetic feature.

6 Social app usage (Mikalef et al., 2013)
- Online communities provide a wonderful way to browse apps in social networking site.
- I browse and use apps as suggested by other users and social networking site.
- I plan to use apps as suggested by other users and social networking site.
- I will continue to browse and use apps as suggested by friends and social networking site.

7 Social networking site affinity (Ellison et al., 2007)
- Social networking is part of my everyday activity.
- I am proud to tell people I am on a particular social networking site.
Purchase intention and word of mouth in social apps

- I feel out of touch when I have not logged onto social networking site for a while.
- I feel I am a part of the online social network community.
- Social networking has become part of my daily routine.
- I would be sorry if the social networking site I am using shuts down.

8 Perceived ease of use (Koufaris, 2002; Teo et al., 2003)
- The features of the online community are easy for me to learn.
- The functionalities provided in the online community are easy for me to use.
- Overall, the online community is easy for me to operate.

9 Perceived usefulness (Koufaris, 2002; Teo et al., 2003)
- Using the features of social networking site will improve my understanding of online community.
- Using the features of social networking site in online community will enable me to communicate and discuss with my friends.
- Using the features of social networking site in online community will help satisfy my social needs.
- Overall the features of social networking site in online community are effective.

10 Perceived enjoyment (Hsu and Lu, 2007)
- The process of participating in online community is enjoyable.
- While participating in online community, I experience pleasure.
- Overall, I believe that online community is playful.

11 Sense of belonging (Teo et al., 2003)
- I feel a strong sense of being part of this online community.
- I have complete trust of others in this online community.
- I enjoy myself as a member of this online community.
- I am very committed to this online community.
- Overall, there is a high level of morale in the online community.

12 Self-efficacy (Eastin and LaRose, 2000)
- I feel confident to understand terms/words related to the social networking site.
- I feel confident to understand the features of the social networking site.
- I feel confident trouble shooting problems encountered in the social networking site.
- I feel confident using the social networking site to gather information.
- I feel confident learning advance features within a social networking site.

13 Social influence (Venkatesh et al., 2003)
- Most people who are important to me think that I should use this social app.
- Most people who influence my behaviour think that I should use this social app.