

TECHNOLOGY ACCEPTANCE MODEL AND SOCIAL COMMERCE SITES USAGE: AN IMPACT OF SOCIAL INFLUENCE AND SOCIAL CAPITAL

Kamaljeet Kaur, School of Management Studies, Punjabi University
Dr. Satinder Kumar, School of Management Studies, Punjabi University

ABSTRACT

Given the broad adoption of social commerce sites, like Facebook, Twitter, Google and LinkedIn, theorizing and comprehending the usage behavior and attitude of users towards the social commerce sites are prime in emerging consideration and deployment of those new advancements in future. One way to deal with such issues on various factors of social commerce sites adoption behavior is return to the TAM. The aim of this study is to identify underlying factors and causal relationships that affect behavioral intentions to use social commerce sites. Thus, this study established an extended TAM, integrating social influence and social capital for forecasting the adoption and usage behavior of social commerce sites. This study was applied exploratory correlation and path analyses to find the relationship among six constructs: perceived ease of use (EU), social influence (SI), social capital (SC), perceived usefulness (PU), intention to use (ITU), and actual use (AU) with a questionnaire survey of 579 social commerce site users. Study reveals that the social commerce adoption model anticipated during this research accepted all the hypotheses related to usage behavior of social commerce site users. Moreover, study provides a clear and well understanding of “who is and who is not using these sites, why and for what purposes”.

Keywords: Social Commerce Sites, Technology Adoption, Usage Behavior, TAM.

INTRODUCTION

Today's current business world, advertisers, businesses and organizations are diving to social commerce sites since it is the place where suppliers, clients, and prospective staff are to be found. Social commerce sites, like Google, Facebook, Twitter, and LinkedIn, that depend upon the web 2.0 technology, and which permit the exchanging knowledge and information which are produced by users (McAfee, 2006). As per the Webster online dictionary, social commerce sites are characterized as the kinds of transmission (as online sites for social interacting and microblogging) via that users produce online networks to share ideas and information, personal messages, and others (for example videos). The social commerce sites interactivity has empowered the inactive viewers of the social media to turn into a functioning and connecting with community. The new transformative intensity of social commerce sites on business keeps on reflecting in parts of organizations, like, promoting, marketing, operations, and management. Social commerce sites are concerning online interacting and communication among the mass through user created. Technology empowered social communication methods, like regular interaction, sharing photos, introduction of self, and so forth., via social commerce sites permits new research activities that emphasize social commerce. The across the board prominence of these social media sites recommends that these online advancements are fruitful due to the acknowledgment and utilization within the individual, social, and business life of individual users. If the usage behavior of social commerce sites by the individual users is basically deliberate, at that point

the reasons for these behaviors must be established in the individual intentions and purposes. The general purpose behind this research is to begin with, it expects to check the technology acceptance model stated by (Davis, 1986) and assessed in many forms of framework like, communication technologies, software applications, and e-commerce (Koufaris, 2002).

In order to help experts in emerging strategies and scholars who are keen on creating concepts and models associated with online networking, researchers revisit and extend technology acceptance models (Davis, 1986) to elucidate social commerce sites usage behavior among its users. Technology acceptance model has become extremely prevalent as it fulfils the features to predict the information system acceptance and usage among its users. Studies and research advancements created should be re-examined to provide an appropriate knowledge of the general acceptance of social commerce sites by users. An evaluation of research studies on new technology adoption and behavioral intention proposes that the technology acceptance model given by Davis (1986), has appeared as the most important model in this area of study (Le et al., 2003). To achieve the research objective, study retains the important features of the technology acceptance model in present research on social commerce sites.

However, the technology acceptance model firstly presumed that advanced technologies are adopted in the organizations for the benefits of the employees. TAM excluded the actual figure that information systems may be used outside the organizational settings by individual users, and such usage may have an “*entertainment*” element for such users. Further, TAM theory does not include the participation of other users in affecting a person’s attitude and usage behavior toward social commerce sites. This can be problematic since many studies related in the context of psychology showed that users' activities are affected by another user’s behavior. Likewise, psychological ideas of social impact are established from the presumption that an individual’s behavior is strongly affected by the performance of others. In this way, the group of individuals in social commerce sites associated with a user could be a vital element to describe the behavioral intention towards the social commerce sites. In this manner, the objective of this research is to reconsider the technology acceptance model with further factors, like social influence (SI) and social capital (SC).

To explore the new components of the social commerce adoption model established in the present research, researchers collected the data through questionnaires from social commerce site users. In the area of social commerce, very few studies carried out to empirically explain the social commerce adoption behavior. This study is conducted as follows. Initially, we have a tendency to reconsider the TAM model and draw out the further variables associated with studies in electronic commerce which appear to be vital elements of the usage behavior towards social commerce sites. Following, we present the analysis of social commerce sites technique and empirical analysis of social commerce sites of the proposed model.

RESEARCH BACKGROUND

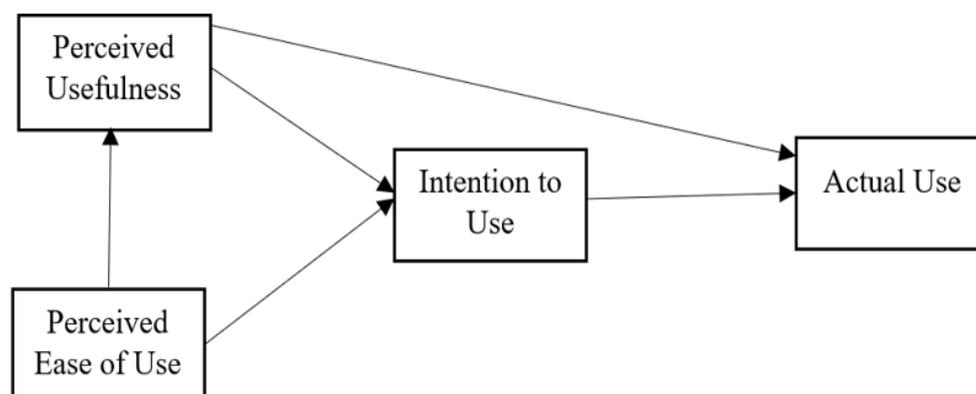
Technology Acceptance Model

Technology acceptance model was developed based on the theory of reasoned action, used to evaluate the individual’s acceptance behavior by Davis (1989). He found the most essential factors for framing users’ behavior to adopt new technology i.e. perceived ease of use and perceived usefulness and, then, finally describe the actual usage behavior of users towards technology. Perceived ease of use states that a person thinks that using a particular technology or system would be free of effort. Perceived ease of use is a significant factor in

technology acceptance model for two purposes. Foremost, perceived ease of use positively affects the user's intention and indirectly through perceived usefulness. Second, users have to beat a primary barrier associated with perceived ease of use to accept and use any type of technology (Davis, 1989). On the other side, perceived usefulness is described as the degree to which an individual believes that using a technology improves his/her efficiency or productivity. TAM recommends that PEOU establishes a substantial effect on PU (Davis,1989).

Figure 1 demonstrates the relationships between main constructs of TAM. It depicts that intention to use is evaluated by perceived ease of use and perceived usefulness. Thus, the TAM shows that intent to use is a significant influence on actual use of the technology. The figure signifies that perceived ease of use directly or indirectly influences attitudes toward technology use through perceived usefulness. Further, the Technology acceptance model posits that the influences of other factors are intervened by perceived usefulness and perceived ease of use.

TAM has been broadly examined via applications, validations, and replications. TAM is known as a robust model, in terms of evaluating the acceptance and utilization of advancement technologies across time, surroundings & people (Venkatesh & Davis, 2000). TAM tries to explain adoption of new technology through a few numbers of variables in the original TAM. Therefore, earlier studies point out that future research requires to include social and human factors to well describe the adoption and usage of technology. Moreover, other constructs which have not been broadly studied are social influence and social capital which influence individuals' behavior towards adoption of new technology. Thus, the present research proposes that social influence and social capital are important factors for the adoption and usage of social commerce sites.



Source: Davis (1986)

FIGURE 1
TECHNOLOGY ACCEPTANCE MODEL, TAM

Social Influence

The influence of society, consisting of family members, relatives, friends, mass media etc., also significantly impacts the attitude and behavior intention of social commerce users. The results showed that the social influence has a positive and significant impact on the social commerce users' attitude and behavior intention towards social commerce. It implies that the social commerce user will choose or decide to use social commerce depending on the society in which he/she lives. The family members, friends and peers have influence on the users' decision to use social commerce. These results are consistent with past results drawn by various authors like Choi & Chung (2013) in his study found that social influence is a vital

factor in predicting social commerce users' attitude towards social commerce. People living around the user and the mass media to which the user is exposed have a huge influence on the users' attitude towards social commerce. Any suggestion or recommendation given by the family or friends might lead to development of a positive or negative attitude towards social commerce. Zhang et al. (2014) also found out that the mass media consisting of television, radio, newspaper, social media etc., which are nowadays a very integral part of every person's influence his/her decision to use social commerce. Hajli et al. (2015) in their study found that social influence is one of the important factors which influence the adoption of social commerce. They observed that the youngsters are more inclined to social influence and the setting of social commerce trends. The members are now able to share their experiences with the help of growing strength of the virtual community. The impact on celebrity and opinion leaders through offline/online communication has been seen in the context of social commerce that influence the adoption of social commerce. Koufaris, (2002) in their study found out that social influence has a direct and significant impact on behavior intention towards social commerce. They also revealed the importance of considering social communities as it influences the user's decision power, as the development of the internet and social networks has exposed people to social information, especially information about social groups, friends and celebrities.

Social Capital

Social capital means

“Mutual support, bonds of kindness, shared norms, social beliefs, and a sense of common responsibility that individuals can originate value from” (Ellison et al., 2006).

Social capital provides benefits to individuals, who can believe in information or knowledge provided by other members related to products and services (Huysman & Wulf, 2004). In a large online environment, there are participants who act as middles, and they connect sub- networks together through providing the efficiency of data and information. These activities provide the facility to share or exchange the updated information and knowledge among members of a group, thus permitting them to work proficiently (Putnam, 2000). The worth of information varies whereas information transfers from one community, where it is treated as normal and ordinary to another group because it is current information and more valuable. Boyd (2008) studied the role of social commerce sites and shows that social commerce sites support individuals to build social capital with higher levels of bridging and bonding. Another study, Ellison et al. (2006) emphasized on teenage users and found that social commerce sites were utilized as a crucial resource to make a person's individuality, meet people, and convey information between different groups. All these previous studies give an idea, social commerce sites can be valuable to help the groups of individuals.

RESEARCH QUESTIONS

The present research was intended to develop TAM with social influence and social capital construct to determine user's adoption and usage of social commerce sites. The direct and indirect impact of each factor were hypothesized and studied (shown in figure 2). Each hypothesis is discussed below.

Perceived Ease of Use and Perceived Usefulness

Perceived ease of use states the individual's belief for a specified system, which would be easy to use and effortless (Nysveen et al., 2005). Perceived usefulness also refers to an assessment of individuals towards the usefulness offered by the advancement technology. The significant relationship among PEOU and PU has been exposed with empirical support (Zeithmal et al., 2002). Existing TAM based theory states that, the ease to use the new technology, it is considered as more useful. Thus, study propose the following hypothesis:

H1a: Perceived ease of use of social commerce sites is positively related to perceived usefulness.

There is a plethora of research studies which describes the positive effect of perceived ease of use on the attitude and behavioral intention. Also, the number of studies in the context of TAM has been validated that there is a positive relationship between perceived usefulness and behavioral intention to use the new technology (Molla & Licker, 2001). In our framework, we identified a positive relationship among perceived usefulness and perceived ease of use and behavioral intention in the context of social commerce sites. Therefore, we hypothesize:

H1b: Perceived ease of use of social commerce sites is positively related with the intention to use the social commerce sites.

H2: Perceived usefulness of social commerce sites is positively related with the intention to use the social commerce sites.

Social Influence

Social influence is defined as

“A person’s perception that most people who are important to him or her think he should or should not perform the behavior in question” (Yuen & Ma, 2008).

Another study observed that other people who are important to them affect their opinions and behavior towards the usage of social commerce sites (Teo, 2009). Thus, the study proposed hypothesis are as follows:

H3a: Social influence is positively related to intention to use social commerce sites.

We also represent that from the other perspective, that the group in which they are involved may be influencing others to use social commerce sites.

H3b: Social influence is positively related to perceived usefulness of social commerce sites.

H3c: Social influence is positively related to perceived ease of use of social commerce sites.

Social Capital

Social capital concept contends that the attributes derived through social connections and exchange of information and knowledge, which is fruitful for participants of that particular community (Coleman, 1988). Thus, it was hypothesized, social capital construct has a positive influence on two important constructs (PEOU and PU) of TAM.

H4a: Social capital is positively related to perceived usefulness of social commerce sites.

H4b: Social capital is positively related to perceived ease of use of social commerce sites.

Intention to Use

The perceived benefit and positive behavior toward social commerce sites according to Davis (1989), forecast the intention to use and actual usage behavior towards the new technology. There is empirical research-based studies gathered through a period, which has surveyed the intention-behavior causativeness in the usage of internet technology (Davis et al., 1989). So, conclude that an individual involved in a social-commerce-sites related activities and develop a future intention to use the activity. The future intention leads to further engagement with the social commerce sites depending on the individuals past knowledge and experience. This connection supports the heavy usage of social commerce sites. Based on the TAM, we hypothesize:

H5: Intention to use is positively related to actual use of social commerce sites.

On the basis of previous studies, in this current research we redesigned the technology acceptance model to constitute our proposed social commerce adoption model (Figure 2).

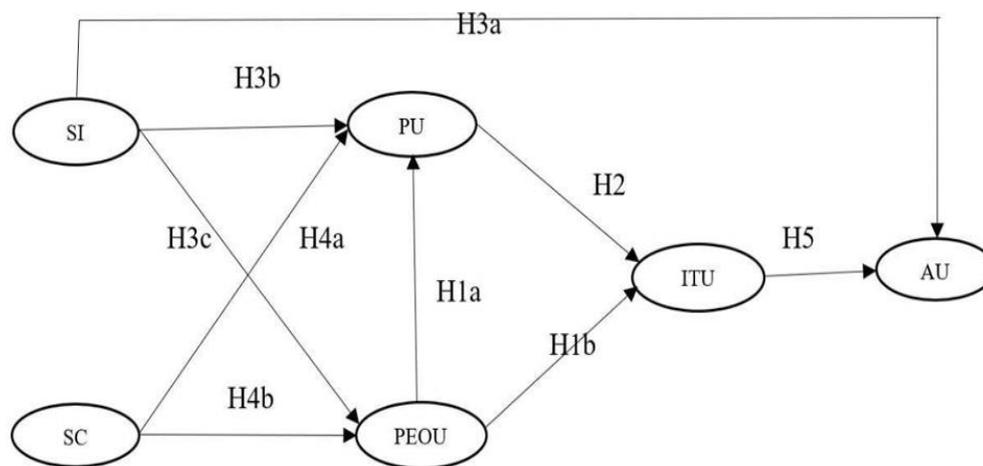


FIGURE 2
HYPOTHETICAL MODEL OF THE SOCIAL COMMERCE ADOPTION (TAM)

Research Methods

For the purpose of this study, a total of 800 regular students of undergraduate or postgraduate were recruited from business schools of India were invited to take part in this online based survey. And, requested to the participant to fill the questionnaire about their knowledge as consistent utilization of social commerce sites. A total of 612 online questionnaires were filled during the first report. Almost after two weeks an e-mail notice was sent, and received 35 more filled questionnaires. Out of the total 647 filled questionnaires received throughout the two levels of online survey; 68 unfinished questionnaires were removed. The sample size for study was 579. In order to avoid biased participation, no incentive was offered to the respondents for their contribution. The demographics of respondents are shown in Table 1. Three statements were managed precisely questioning participants to express their adoption and usage behaviors towards social commerce sites: (a) “*When did you start using social commerce sites?*” (b) “*How often do you visit your social commerce?*” and (c) “*How many hours do you use your social commerce account every week?*” Among 579 participants, details of each statement were shown in Table 2.

Demographic Variables		%
Gender	Male	60
	Female	40
Age	25 or under	52
	25-35	38
	35 and above	10
Course	Under-Graduate	58
	Post-Graduate	42
Number of persons connected on Social Commerce Sites	0-100	7
	100-200	13
	200-400	35
	Above 400	45

Note: n=579

Statements	Numbers	%
When did you join social commerce sites?		
Less than six months ago	43	7.43
Six months–one year ago	57	9.84
One–two years ago	65	11.23
Two–three years ago	167	28.84
More than three years ago	247	42.66
How frequently do you visit your account on social commerce sites?		
Less than a week	45	7.77
A few times a week	67	11.57
One–Five times per day	276	47.67
Six–Ten times per day	148	25.56
More than ten times per day	43	7.43
How many hours do you use your social commerce account every week?		
15 min to 30 min	328	56.65
30 min to 1 hr	110	18.99
1 hr to 3 hr	70	12.09
More than 2 hr	58	10.02

Measures

The constructs of social commerce adoption model given in Figure 2, and formed on the basis of the following process. Firstly, a comprehensive review of literature was accomplished that involved empirical and theoretical research work in the context of technology acceptance model, also additionally in the context of social commerce and potential user of new technology. Second, an discussions were conducted with manager of social commerce sites, accountable for the trade account on various sites like; Twitter, Facebook and LinkedIn, and five scholars of business schools who regularly visit social commerce accounts, and one professor who was teaching e-business related subjects in business schools in India, help out in constructing statements. The measures for PEOU, PU, ITU, and AU were adapted from previous studies and various scales from them have checked their reliability and validity (Moore & Benbasat, 1991; Venkatesh & Davis, 1996; Doll & Torkzadeh, 1988). Researchers revised the wording of constructs' variables to reproduce the measurement for social commerce users. The users of social commerce sites were mostly targeted as of the higher level of acceptance of these sites at global level. As per social commerce sites (2019) statistics, the number of social commerce users surpasses. So that, it is relevant to accept that an intended user of social commerce sites would be an appropriate or

typical respondent to respond to the statements mentioned in a survey about the adoption behavior of social commerce sites. The items for social commerce site SI and SC were constructed mainly from recommendations given by the three well knowledgeable users (educators, practitioners, and consistent users) throughout the discussion. The objective of this research was to examine the relationship between intent to use and actual usage behavior towards social commerce sites and also use other four constructs i.e., PEOU, PU, SC and SI. The current study empirically examined the proposed research model. So, the total number of statements 29 were added in the questionnaire. Following, two academicians and three researchers with research knowledge and expertise in marketing and human behavior assessed the variables in a formal pre-test. The initial items were modified and removed for relevance of this study on the basis of their recommendations. Of the finalized 25 statements, PU construct (4 items), PEOU (5 items), SC construct (5 items), SI (5 items), ITU (4 items), and AU (two items). The descriptions of selected variables for this study shown in Table 3. Five- point Likert scale was used to distinguish the responses for each item, where 1 = strongly disagree and 5= strongly agree. Similarly, the study used different measurement scales for demographic items included in the questionnaire.

Factors	Sources of Measured Variables	Measures
Social Capital	Lau & Woods (2009) a Lee et al. (2003)	SC_1 Social commerce sites make it easier to build social networking and relationship
		SC_2 Social commerce sites broaden users' social networking.
		SC_3 Social commerce sites improve user's efficiency in constructing social relationships.
		SC_4 Social commerce sites support the users to build social bonds more quickly.
		SC_5 User find social commerce sites valuable in making social connections
Perceived Usefulness	Davis (1989) Lau & Woods (2009)	PU_1 Social commerce sites make it easier to search or find any information.
		PU_2 Social commerce sites useful in user's information seeking.
		PU_3 Using social commerce sites allow users to get re-connected with persons that matter to them.
		PU_4 Using social commerce sites makes it easier to stay in touch.
Perceived Ease of Use	Yuen & Ma (2008) Venkatesh & Davis (2000)	PEOU_1 Social commerce sites are flexible to interact and connect with others.
		PEOU_2 Users find it easy or relaxing to get social commerce sites to do what they want to do.
		PEOU_3 It is effort-free to become skilful by using social commerce sites.
		PEOU_4 Users find social commerce sites easy to use.
		PEOU_5 Dealings with social commerce sites are clear and understandable
Social influence	Koufaris, (2002) Hajli et al. (2015)	SI_1 Other persons think that using social commerce sites is noteworthy to me.
		SI_2 It would not matter to other persons. If I decided to despair from social commerce sites.
		SI_3 Other people would not be surprised if I disconnected from social commerce sites.
		SI_4 Other people would perhaps make me feel embarrassed if I stopped using social commerce sites.

		SI_5 Most of the persons that I know, assumed that I will regularly use social commerce sites.
Intent to Use	Davis (1989) Davis et al. (1989)	IU_1 Users will continuously use social commerce sites in the future.
		IU_2 Users will continue to increase the usage of social commerce sites.
		IU_3 Users purpose to use social commerce sites for communicating with others,
		IU_4 Users objective to visit social commerce sites to get reconnected with persons that matter to them
Actual Use	Davis (1989) Rauniar et al. (2013)	AU_1 How often per week do you visit your social commerce account?
		AU_2 How many hours do you use your social commerce accounts every week?

Note: SC = social capital; PU = perceived usefulness; PEOU = perceived ease of use; SI = social influence; IU = intent to use.

- a. Items were modified based on this reference.

Factorial Validity, Reliability, and Discriminant Validity

First stage of item purification was conducted using exploratory factor analysis with the help of principal component analysis method in SPSS 20. Also, results showed that all items loaded on their intended constructs, and that there was no cross-loading of any variable was found. According to Dillon & Goldstein (1985) that factor loading value of an item should be at least 0.60, all item loadings were found to be above 0.70 of each construct; except for PU1 (0.60), PU3 (0.52), SI2 (0.48) and ITU1 (0.56) and all these items were deleted due to eigenvalue less than one and Cronbach alpha of individual statements less than 0.60 as suggested by Hair et al. (2006). The Kaiser-Meyer-Olkin (KMO) is calculated to measure the sampling adequacy which indicates that the sample size is big enough for conducting research or not. The value of KMO should be more than 0.5 and values between 0.5 and 0.7 are considered as mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great values and above 0.9 are superb; which indicates that the sample is adequate for applying factor analysis. Bartlett's test of sphericity defines whether the correlation matrix is an identity matrix or not, which could indicate that the variables are unrelated. The multicollinearity among the variables are checked using Bartlett's test of sphericity. The value derived from Bartlett's test should be less than 0.05 (Field, 2009). The KMO and Bartlett's test values of the objective have been found to be above the defined standard. The KMO value of the sample data is calculated at 0.818 and Bartlett's test is found to be significant ($p < 0.001$), which shows that the data set is appropriate for factor analysis.

The cumulative variance explained by the six extracted factors is 72.31 %, which is considered to be good value for optimum factor analysis results. Only those factors were considered whose Eigenvalue is more than one. Table 4 shows the results of total variance explained, which include the variables extracted, their Eigenvalues, the percentage of variance and cumulative percentage. The results of factor analysis concluded that the present data has six primary dimensions, which explained 72.31% of total variance for s-commerce adoption. The results also show that the percentages of variance explained by each and every factor has been optimized by rotating the extracted sums of squares loadings (Table 5).

Component	Rotation Sums of Squared Loadings		
	EigenValues	% of Variance	Cumulative %
1	4.09	16.373	16.373

2	4.031	16.125	32.498
3	3.046	12.182	44.680
4	2.688	10.752	55.432
5	2.422	9.688	65.120
6	1.797	7.189	72.308

Note: Extraction method: Principal Component Analysis Social Commerce Sites

Reliability is the constancy of the items it uses in a survey questionnaire. Each construct included in a survey has various items that measure the internal consistency. There are various techniques available which evaluate the internal consistency. McLure Wasko & Faraj, (2005) states that in AMOS the standardized value of the composite reliability is more than 0.70, where it should be accepted and interpreted by Cronbach's alpha. Table 6 shows the composite reliability outcomes which represent an acceptable range and also demonstrate the measurement items for each 11 construct has an internal consistency, represented by Cronbach's alpha. Each construct has a value exceeding 0.70, accordingly, it is an acceptable value for this method shown in Table 5. Also, after the pilot study, questionnaire has been reframed to improve the reliability of the survey items. Additionally, to test the reliability of the study built on statements wording and piloting survey of the questionnaire (Bell, 2010). These two kinds of methods to test the reliability confirm that researchers can analyse the data accurately for the study.

Researchers have tested the construct validity through evaluating convergent and discriminant validity. The outcomes of convergent validity are presented in Table 5, where the AVE value of each construct is higher than 0.5 signifying that this research achieved the established standards. Also, checked the discriminant validity of this research, to measure the range of all constructs of the proposed model is dissimilar from other constructs (McLure Wasko & Faraj, 2005). As indicated by the results in Table 6, all AVEs of each construct are more than the threshold limit and validate discriminant validity. One more assessment was made to check the convergent and discriminant validity, through assessing the factor loading value for all items of the factors were above 0.5 as suggested by (McLure Wasko & Faraj, 2005) and result shows that each variable of latent constructs have adequate convergent and discriminant validity. Due to low factor loading four variables have been dropped that helps to get better results from AMOS. The overall results and scale have been checked to make sure the dropped items do not affect the model.

Items	α	CR	AVE	1	2	3	4	5	6
Perceived social capital	0.94	0.95	0.80						
SC-1				0.93					
SC-2				0.92					
SC-3				0.89					
SC-5				0.88					
SC-6				0.85					
Social influence	0.93	0.95	0.78						
SI-1					0.94				
SI-2					0.92				
SI-4					0.87				
SI-5					0.86				
SI-6					0.83				
Perceived ease of use	0.84	0.88	0.58						

PEOU-1						0.80			
PEOU-2						0.78			
PEOU-3						0.77			
PEOU-4						0.76			
PEOU-5						0.70			
Perceived Usefulness	0.83	0.87	0.62						
PU-1							0.83		
PU-2							0.80		
PU-4							0.77		
PU-6							0.76		
Intent to use	0.77	0.85	0.58						
ITU-1								0.79	
ITU-2								0.78	
ITU-3								0.75	
ITU-4								0.72	
Actual Use	0.89	0.92	0.85						
AU-1									0.93
AU-2									0.92

Note: Cronbach Alpha (α), Composite Reliability (CR), Average Variance Extracted (AVE). Extraction Method: Principal Component Analysis of social commerce sites. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

Constructs	SC	SI	PEOU	PU	ITU
SC					
SI	0.483				
PEOU	0.463	0.474			
PU	0.118	0.388	0.427		
ITU	0.398	0.403	0.369	0.393	
AU	0.473	0.477	0.340	0.042	0.339

Note: Correlation is significant at the 0.05 level.

The correlation between each factor that is included in the research model was calculated to identify any multicollinearity problem. Spearman's rho correlation analysis of social commerce sites was conducted to examine the relationship between the variables. As per Field (2009), the correlation coefficient value should not be more than 0.80 to avoid multicollinearity. Table 6 shows that the maximum correlation between the factors is 0.483, therefore, there is no problem of multicollinearity.

Confirmatory Factor Analysis of social commerce sites: Measurement Model

CFA is a statistical tool that helps in verifying the factors that have been extracted by using EFA. It is a technique to validate the structure of the set of observed items and checks how well the observed items signifies the number of constructs formed. It helps in hypothesis social commerce sites testing to study the relationship between observed variables and their latent factors. EFA is the initial step to develop the new model or theory and for data reduction. But after EFA, CFA helps in testing validating the existing theory/ model. The measurement model developed using CFA shows that the observed variables were loaded in accordance with the pattern discovered in EFA. Figure 3 represents the six factors measurement model with the correlation relationship measured between the constructs. The result of confirmatory factor analysis social commerce sites includes the significant value of regression coefficient i.e. $p < 0.05$, the validity results which include convergent and

discriminant validity and importantly model fit indices. All these results are explained below in detail.

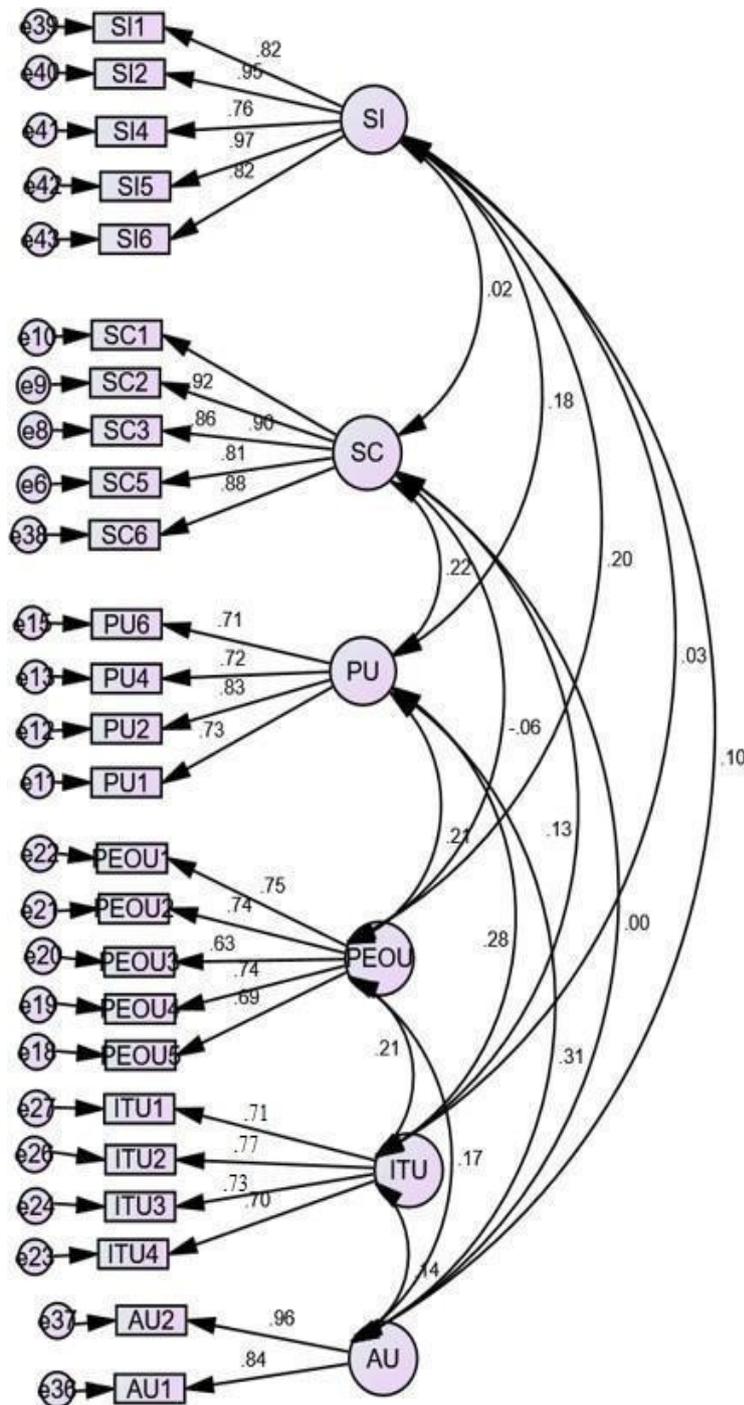


FIGURE 3
MEASUREMENT MODEL

Validity of the Measurement Model

After developing the measurement model for the study and checking its significance, it is important to check the validity of the model. In CFA, the most vital validity that needs to be checked is construct validity. Construct validity is defined by Hair et al. (2010) as

“It is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure”.

The construct validity consists of social commerce sites of two parts i.e. convergent validity and discriminant validity. The results of both the validity are shown in Table 7.

The composite reliability (CR) is used to check the internal validity of the measurement model. Cronbach’s alpha is the most commonly used indicator for checking the internal consistency of social commerce but some researchers like Joreskog (1971) suggested the composite reliability should be used for checking the internal validity and set the threshold limit of >0.70 . The results for the current study model show that the CR value for all the constructs were above the limit of 0.70. The convergent validity refers to

“The extent to which the items of the specified constructs should converge or share a high proportion of variance in common” (Hair et al, 2010).

The convergent validity of the measurement model is tested through analyzing the Composite reliability (CR), Average Variance Extracted (AVE) and Maximum Reliability (H). The results of the model indicate that all CR values of all constructs are above the limit of 0.70 and the values of AVE of all the constructs are above the acceptable limit of 0.50 (Fornell & Larcker, 1981). The other condition is that the CR values of all the constructs should be greater than the AVERAGE value of the respective construct i.e. $CR > AVE$ that is fulfilled in the current model (Hair et al., 2010). The maximum reliability (H) of all the constructs were greater than the 0.60, which indicates that the results are significant for the study. So, the criteria for the convergent validity are met and found to be significant.

Discriminant validity refers to the extent to which one construct is truly different from another construct.

“When the construct is unique and it explains some phenomenon which other measures do not then the discriminant validity exists” (Hair et al., 2010).

The discriminant validity is checked by comparing the AVE values with the maximum shared value (MSV) and average shared value (ASV). The AVE of two constructs are compared with the square of correlation estimate between these two constructs. The AVE estimates should be greater than the squared correlation estimates (Hair et al, 2010).

“The latent construct should explain more of the variance in its measurement items than the variance it shares with other constructs to get the optimum discriminant validity” (Hair et al, 2010).

There are two conditions of discriminant validity which should be met to make the model valid i.e. $AVE > MSV$ and $AVE > ASV$. For the current study, the results of the measurement model Table 8 show that all the values of AVE were greater than the values of MSV and ASV. This indicates that the measurement model is valid for further model testing.

Table 7
MODEL VALIDITY MEASURES

	CR	AVE	MSV	ASV	MaxR (H)	SC	SI	PU	PEOU	ITU	AU
SC	0.94	0.77	0.05	0.02	0.95	0.88					
SI	0.93	0.75	0.04	0.02	0.97	0.03	0.87				
PU	0.84	0.56	0.10	0.06	0.85	0.22	0.18	0.75			
PEOU	0.83	0.51	0.04	0.03	0.84	-0.06	0.20	0.21	0.71		
ITU	0.82	0.53	0.08	0.03	0.83	0.13	0.03	0.28	0.23	0.73	
AU	0.90	0.81	0.10	0.04	0.93	0.00	0.10	0.31	0.17	0.15	0.90

Notes: CR, composite reliability; AVE, average variance extracted; MSV, maximum shared value; ASV, average shared value.

Numbers on the diagonal (in boldface) are square roots of AVE. Other numbers (in italic) are the values of correlation.

Table 8
STANDARDIZED REGRESSION WEIGHTS AND T- VALUE OF THE FINAL STRUCTURAL EQUATION MODEL

Items	t-value	1	2	3	4	5	6
Social Capital							
SC-1	27.92	0.92					
SC-2	24.96	0.86					
SC-3	27.08	0.90					
SC-5		0.81					
SC-6	25.86	0.88					
Social influence							
SI-1	30.82		0.82				
SI-2			0.95				
SI-4	25.95		0.76				
SI-5	55.10		0.97				
SI-6	30.46		0.82				
Perceived ease of use							
PEOU-1	15.28			0.75			
PEOU-2	15.15			0.74			
PEOU-3	13.21			0.63			
PEOU-4	15.17			0.74			
PEOU-5				0.69			
Perceived Usefulness							
PU-1					0.72		
PU-2	17.28				0.84		
PU-4	15.56				0.72		
PU-6	15.25				0.70		
Intent to use							
ITU-1						0.71	
ITU-2	13.24					0.77	
ITU-3	12.80					0.73	
ITU-4	12.30					0.70	
Actual Use							
AU-1							0.92
AU-2	6.46						0.88

Notes: PEOU = Perceived Ease of Use; PU = Perceived Usefulness; IU =Intent to Use; SI = Social influence; SC = Social Capital; AU= Actual Use

One more way to measure the discriminant and convergent validity of observed indicators by calculating standardized regression weights. As shown in Table 8 the standardized regression weights for all constructs has more than 0.60, an acceptable value and approves that the observed variables have sufficient convergent and discriminant validity.

Goodness of Fit Results of Structural Equation Model

The model developed by the researcher needs to reproduce the observed covariance matrix using the indicator measurement items, this can be done by observing goodness of fit indices. There are three goodness of fit indices categories i.e. absolute fit indices, incremental fit indices and absolute badness of fit indices. The Table 9 shows the results of goodness of fit of the measurement model. It can be seen that all the model fit indices are within the range of the recommended criterion given by (Hair et al., 2010). The chi-square value of the current model was significant as the sample size of the study is large. The value of chi-square is sensitive to the sample size when the sample size is above 200, as per (Hair et al., 2010; Schumacker & Lornax, 2010). However, the chi-square/degree of freedom value for the research model was 2.73, which is an acceptable value and threshold limit of below 3 as suggested by (Hair et al., 2010). The proposed model was found to be significant with p-value > 0.05. Also, the goodness of fit (GIF) value was found to be more than the limit defined by Hair et al. (2010) of 0.90.

The Root Mean Residual (RMR) for the model with respect to absolute badness of fit indices was calculated at 0.045, which is within the range specified by the (Hair et al., 2010). In the same way, the Root Mean Square Error of Approximation (RMSEA) was figured at 0.055, which is also within the specified range.

The values of Normed Fit Index (NFI), Comparative Fit Index (CFI), and Tucker Lewis Index (TLI) for the measurement model were found to be above the acceptable limit of 0.90, this shows that the model is highly significant as it confirms the strong uni-dimensionality of the scales used in the model to achieve the current objective. As per Hair et al. (2010), the minimum limit of CFI for the model to be fit is 0.95 and the CFI value for the current measurement model is 0.95, which shows the model is fit for the study. All the goodness of fit indices was found to be significant and fit for the study.

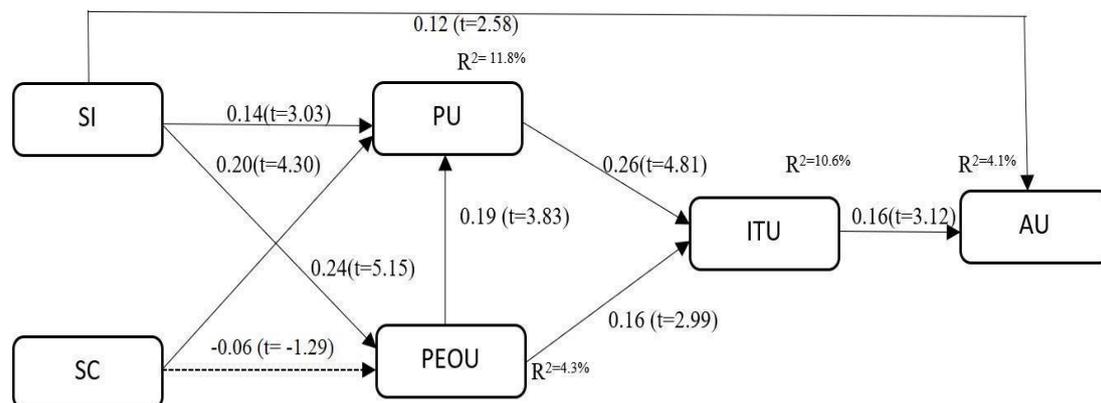
Model Fit Indices	Recommended Criterion (Hair et al., 2010)	Measurement Model
Absolute Goodness of Fit		
Chi-Square	-	724.35
Probability	p-value > 0.05	0.000
Chi-Square/Degree of Freedom (CMIN/DF)	< 3	2.73
Goodness of Fit	> 0.9	0.910
Absolute Badness of Fit		
Root Mean Residual (RMR)	0.03-0.08	0.08
Root Mean Square Error of Approximation (RMSEA)	0.03-0.08	0.055
Incremental Fit Measure		
Comparative Fit Index (CFI)	> 0.95	0.95
Normed Fit Index (NFI)	> 0.90	0.92
Tucker Lewis Index (TLI)	> 0.90	0.94

Path Analysis of Structural Model

Current study was analyzed the measurement and structural models by performing structural equation model (SEM) through AMOS 5.0 (Arbuckle, 2003). Even though our study applied the SEM technique, the study should be known as exploratory in nature. The pattern of measuring structural equation models, firstly the measurement model was confirmed followed by the comprehensive structural model according to (Gerbing &

Anderson, 1988). Tables 8 and 9 showed the outcomes of each exogenous and endogenous construct of the measurement model. Study analysis the measurement model to identify the standardized coefficient and t- values for each variable of all the constructs. Researchers examined the standard error, standardized coefficient weights, and critical ratio for all the 25 variables. Study found that coefficient values of each item were significant within the threshold of $p < 0.01$. Thus, the measurement model was found to be adequate fit, further continuing to the following level of testing the structural model without any modification to the variables of all the constructs.

This study evaluates the all nine proposed hypotheses of the structural model shown in Figure 2. The path coefficients SEM can be denoted as standardized beta coefficients (β). The path coefficients indicate the variation in the endogenous variables for the amount vary in the exogenous variables for each unit (Hair et al., 2010). The proposed model is compared with the help of β values among all the paths, shows that a greater β value has a substantial influence on endogenous variables. T-test is performed to measure the significance level of path coefficient (s) and also measuring the significance of hypothesis. Hair et al. (2010) refers that t-statistics values must be greater than or equal to cut off value 1.96 at the 5% level of significance. The values of the β and t-statistics are shown in Table 10. The result of the structural model data analysis is presented in Figure 4 and indicates that all eight hypotheses out of nine were supported, at $p < 0.01$ significant level. The path coefficients of model presented that user’s perceived usefulness performed a mediating role among social capital ($\beta = 0.24$, t-value= 5.15, $p = 0.00$) and intent to use ($\beta = 0.26$, t-value=4.81, $p = 0.00$) as shown in Table 10.



Note: R^2 for the path predicting intention to use and the interim R^2 for each step were listed under each criterion.

* $p < 0.01$.

FIGURE 4
FINAL PATH MODEL

Moreover, social capital predicted directly and indirectly individuals perceived usefulness and intent to use social commerce sites respectively. In other words, as we hypothesized a mediating role played by perceived usefulness between social capital and intention to use. In addition, social capital was not substantially associated with individual perceived ease of use directly ($\beta = -0.06$, t-value= -1.29, $p = 0.195$) but it has significant predictions on intent to use indirectly ($\beta = 0.16$, t-value=2.10, $p = 0.003$). Perceived usefulness directly predicted by perceived ease of use ($\beta = 0.19$, $p = 0.00$) and intent to use indirectly predicted ($\beta = 0.26$, t-value=4.81, $p = 0.00$). Social influence has significant effect on actual use directly ($\beta = 0.12$, t-value=2.58, $p = 0.010$). The path loadings are significant of the current model which shows that the social influence in social networking sites are crucial

among participants. Though, social influence was substantially associated with perceived usefulness ($\beta = 0.14$, $t\text{-value}=3.03$, $p = 0.002$) or perceived ease of use ($\beta = 0.20$, $t\text{-value}=4.31$, $p = 0.00$). This implies that social influence has significant indirect predictions on intent to use. Intent to use was found to have a significant effect on actual use directly ($\beta = 0.16$, $t\text{-value}=2.10$, $p= 0.010$). All the associated p values and parameter estimates are summarized in Table 10. The research model in figure 4 defined 11.8% of perceived usefulness, and 4.3 % of perceived ease of use, 10.6 % of intention to use and 4.1% actual use.

Hypotheses	Path	Standardized Beta Coefficient	p-value	t-value (1-tail)	Result
H1a	PEOU→PU	0.19*	0.000	3.831	Significant
H1b	PEOU→ITU	0.16*	0.003	2.998	Significant
H2	PU→ITU	0.26*	0.000	4.809	Significant
H3a	SI→AU	0.12*	0.010	2.581	Significant
H3b	SI→PU	0.14*	0.002	3.036	significant
H3c	SI→PEOU	0.20*	0.000	4.309	significant
H4a	SC→PU	0.24*	0.000	5.154	significant
H4b	SC→PEOU	-0.06	0.195	-1.295	Not significant
H5	ITU→AU	0.16*	0.002	3.121	significant

Note: PEOU = Perceived Ease of Use; PU = Perceived Usefulness; IU =Intent to Use; SI = Social influence; SC= Social Capital; AU= Actual Use.

Note: *Standardized coefficient significant at $p < 0.01$

Note: Fit indices: χ^2 (df)=724.37 (579); $\chi^2/df=2.73$; TLI=0.94; CFI=0 .95; GFI=0.91; RMSEA=0.055

DISCUSSION & CONCLUSION

Now social commerce sites have become a worldwide phenomenon to provide various tools for exchanging information and knowledge, communications, social bonding, social interactions, and entertainment among its users. Encouraged through extensive and noteworthy acceptance of social commerce sites, the present research tries to identify the factors which leads to adoption of social commerce sites. Therefore, the present research has extended and modified the technology acceptance model to define major factors of social commerce adoption by users. Current study contributes some theoretical base related to social commerce adoption. Primarily, we supported re-validating and extending previous framework and theories in a new domain. For instance, the current study provides the extensive review related to adoption of social commerce sites adopting parameters obtained from previous studies. Also, construct reliability of (social influence SI, social capital SC, perceived usefulness PU, perceived ease of use PEOU, intent to use ITU, and actual use AU) consider reliable instruments that can be valuable for future research in the area of social commerce. The outcomes from factor analysis and the measurement model contributes in recognizing the key variables for the extended TAM model for social commerce sites. Therefore, our study added significant values to the social commerce literature.

Following, the outcomes of SEM of current study again finds the relationships among the constructs of original technology acceptance model, that are perceived EU and PU (H1a), perceived EU and ITU (H1b), PU and ITU (H2), and the significant association among the ITU and AU (H5). Together, all the four hypotheses consider that successive usage of these sites are the consequence of intentions to use, that the user measured through the prior usage of the social commerce sites. Study has found that these four hypotheses

which are accepted through sample data, also contribute towards the confirmation of the technology acceptance model in the area of social commerce sites. Study also revealed that social influence was a key determinant of both perceived usefulness and perceived ease of use. Thus, social influence plays a most significant role in the adoption and usage of social commerce sites. Otherwise stated that social commerce site users are certain that they are likely to accept or use social commerce sites through one or more strong referents. In conclusion, social influence and social capital were found to be the robust constructs in using and adopting social commerce sites. Thus, all these constructs are included as a key factor for extending the technology acceptance model.

Theoretical and Practical Implications

From a theoretical perspective, the current research explained the technology acceptance with the two additional factors, which affect the adoption behavior of users towards social commerce sites. This study authorizes the robustness of technology acceptance model by way of persuasive model to predict and understand user's acceptance of social commerce sites. Also, study identified two new determinants which affect the adoption behavior i.e., social influence and social capital and both new constructs provide clear representation of the users' acceptance behavior. After all these findings, studies have various suggestions for practitioners in relation to social commerce-based marketing and communication, for the social commerce trainers and educators in the context of development and instructional design of social commerce sites. Authors are optimistic that study findings can help the developers and designers of social commerce sites, pages, and applications should emphasize in the way to generate value for the users that benefits them to accomplish certain social commerce site-related purposes. After all these advantages are practiced, it converts into an optimistic behavior to come back to these sites in future, so forecasting the acceptance behavior of the users towards social commerce sites in the future. So as to achieve effective external communication on social commerce sites, managers should confirm that a regular user's efficacy is higher during the engagement of users at social commerce sites. Also, Managers should preserve in observation that valuable information is significant for a continuing relationship as a positive intention developed by the user.

One more theoretical contribution is the empirical indication on the association among the number of users on a social commerce network of a user and the perceived usefulness and perceived ease of use which is created for the user through the social influence and social capital on social commerce sites. Thus, developers of social commerce sites require to find methods in enhancing beneficial components, or applications so as to affect the continued utilization of social commerce sites. In order to manage the social commerce sites existence will also need that social commerce managers provide full attention to making entertaining and exciting activities and events to enhance the contribution of users and involvement on the business's page on social commerce sites. In order to make practices of developing and managing strategies of social commerce sites that result in energetic and exciting user support, the findings of the study on the extended Technology Acceptance model can be referenced by scholars, practitioners, and instructors of social commerce sites. We are optimistic that findings of the study can help designers to be more productive by confirming that the social commerce sites strategy contributes to a positive attitude of the social commerce participants.

Limitations and Suggestions for Future Research

However, this study has a few limitations that require it to be identified. Primarily, as the survey was conducted among undergraduate and postgraduate students from business

schools in India, the outcomes should be explained with caution, specifically in respect to the generalization of study results of social commerce users as a whole. Next, social commerce sites are well liked and admired for marketing products and services and hence we performed the data gathered from social commerce users. Future studies can involve analysis of data from specific social commerce sites, such as Facebook, Google, YouTube or Twitter. There are various factors in the behavioral theories which require to be examined to enlarge the prediction of social commerce acceptance and usage behavior recommended by our extended Technology Acceptance Model.

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