

# Adapting the UTAUT2 Model for Social Commerce Context

Zaki Shoheib, Al Taadhod Group, Qatar

 <https://orcid.org/0000-0002-4040-6385>

Emad Ahmed Abu-Shanab, Qatar University, Qatar\*

 <https://orcid.org/0000-0002-2826-883X>

## ABSTRACT

Social commerce (SC) became a major channel for conducting business as a result of the ban adopted by many countries because of COVID-19. The simplicity of the unified theory of acceptance and use of technology (UTAUT) and its extended version (UTAUT2) invites researchers to explore other options that can yield better explanation of the adoption of SC. This study extended the UTAUT2 with perceived value, trust, and a SC-related construct. In addition, the study re-structured the UTAUT2 to fit with SC environment. The study utilized 463 surveys distributed in Qatar and analyzed the data using SEM. Results fully supported the proposed model, where trust, perceived value, facilitating conditions, and hedonic motivation significantly predicted behavioral intentions with an R<sup>2</sup> value equal to 72%. The model supported the role of performance expectancy and SC constructs in predicting perceived value and the role of effort expectancy and habit in predicting hedonic motivation.

## KEYWORDS

Perceived Value, Qatar, Social Commerce, Technology Adoption, Trust, UTAUT2

## 1. INTRODUCTION

Social media is becoming the preferred channel for communication, entertainment and even business (Alquraan et al., 2017). The popularity, ease of use, and mobility of social media applications, are shaping the way we transact, communicate, and live our lives in the 21<sup>st</sup> century. Such social environment opened doors for humans to interact and socialize without location and time challenges. The top ranked popular social media platforms exceeded the populations of many countries. Facebook reported 2.2 billion users in 2019, YouTube reported 1.7 billion users in 2019, and Twitter reported 1.2 billion users in 2019 (Smart Insights, 2019).

The popularity of social media made it necessary for businesses to adopt such open platforms for reaching their customers. A smart practice is to target your customers wherever they are and follow them through the favorite channel they prefer. Social media is considered by many a revolution that changed our lives and influenced many practices (by businesses) and behaviors (by customers). Based on that, businesses tried to utilize such channel to conduct business and offer their products and services through social media platforms. Such practices are called social commerce. It includes all business transactions conducted on social media.

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\*Corresponding Author

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Utilizing social media for commerce is new for many businesses and for customers as well. The evolution from traditional brick and mortar business, to click and mortar business changed the business environment and how businesses compete. Still, the majority of research conducted focused on electronic commerce, where transactions are made online, but not on a social platform. Building a proprietary social platform makes it impractical for businesses as they will lose the advantage of population size, and will limit their exposure to existing customer base. Based on that, businesses tried to benefit from existing social media platforms to reach existing and new customers.

This study tried to adapt the UTAUT2 for the purpose of social commerce. The original model focused on the moderation influence and utilized 8 predictors of behavioral intentions. This proposed model extended the UTAUT2 with trust and adapted the model to the social commerce environment. The study tried to answer the following research question:

RQ: What are the factors influencing the intention to use social commerce?

The following section will try to explore the literature for the purpose of building the research model and summing the factors that are expected to influence the intention to use social commerce. Section three will describe the details of the research method conducted. Section four will describe the data analysis and discuss the results. The discussion will report the implications of research and the limitations and future work. Finally, section five will summarize the conclusions of research.

## **2. LITERATURE REVIEW**

This study aimed at exploring the context of social commerce, founding its investigation on the UTAUT2 model. The UTAUT2 model was proposed by Venkatesh et al. (2012) and extended the UTAUT with major changes. The study explored both models and the major indicators used and tried to adapt the UTAUT2 to social commerce environment with structural changes.

### **2.1 Social commerce**

Web 2.0 is characterized by opening a conversation channel between different parties (Blank & Reisdorf, 2012), where users enjoy dynamic platforms that enabled them to create content, socialize with users with similar profiles, and enjoy new business models (Lai & Turban, 2008). Such environment was well noticed by businesses and offered great opportunities, but also included some risks as well (Parise & Guinan, 2008).

Social media is a public communication platform, where users share thoughts, views and opinions with people with similar profiles (friends) or publicly with others (Kose & Sert, 2015; Alquraan et al., 2017). Others defined social media as a platform over the Internet to share and communicate views and thoughts between users (Ahlqvist & Tutkimuskeskus, 2008; Bandyopadhyay, 2016) or an Internet-based technology and application that is built on the foundation of Web 2.0 and enabled users to create and exchange content (Kaplan & Haenlein, 2010). The previous definitions indicate that Web 2.0 technologies are the main drivers of social media applications. In this study we define social media to be a web-based platform that connects people who have a common interest, where they can create, share and disseminate content.

Conducting commerce over the Internet started since its inception (i.e. the Internet), where it provided many advantages to businesses and consumers like reduced cost, broad reach, and convenience (Zhang, Mukherjee & Soetarmann, 2013). Adopting such channel for commerce was the focus of many studies with diverse factors ranging from context, technology type, behavioral factors, and cultural factors (Li, Wu & Lai, 2013; Mazzarol, 2015; Riantini et al., 2018; Suh & Han, 2003; Wymer & Regan, 2005; Yoon, 2009). New trends in research tried to link social media with

e-commerce, where they recognized the capabilities of social media to improve their offerings and reach customers (Huang & Benyoucef, 2013; Leitner & Grechenig, 2007).

The term social commerce was the result of merging e-commerce activities and social media (Hajli, 2015). Based on the previously mentioned studies and other reported research, this study defines social commerce as the process of exchanging products and services between sellers and buyers using social media platforms (Huang & Benyoucef, 2013; Parise & Guinan, 2008; Wigand, Benjamin & Birkland, 2008). Such definition implicates the following advantages: 1) access different markets and improve customers' outreach (Andrew & Beth, 2006; Ganapathi & Abu-Shanab, 2020), 2) enable customers to generate content related to transactions (Liang & Turban, 2011), and 3) introduce new business models (Leitner & Grechenig, 2007). Also, social commerce provides a platform of sharing experiences and opinions regarding products and services that can be utilized effectively by businesses as well as customers (Lai & Turban, 2008; Shin, 2010).

To enable such capabilities, businesses can incorporate social features to their existing e-commerce websites. They also can modify their social media pages to respond to commerce activities required by their consumers (Huang & Benyoucef, 2013; Hajli et al., 2017). Finally, businesses can deploy their own social community, where they provide the needed platform to accommodate all customers' activities (Hajli, 2015).

## 2.2 Technology Adoption and The UTAUT2

The technology adoption theory is founded on old behavioral set of theories and extended its specific technology-based focus through well-established set of models. Starting from the theory of reasoned action (TRA, Fishbein & Ajzen, 1975), the technology acceptance model (TAM, Davis, 1989; Davis et al., 1989), and TAM2 (Venkatesh & Davis, 2000) to the unified theory of acceptance and use of technology (UTAUT, Venkatesh et al., 2003). The evolutionary path of the previously mentioned theories ended up with five major constructs that sum the majority of research conducted in technology adoption; performance expectancy, effort expectancy, social influence, perceived facilitating conditions, and behavioral intentions (Rootman & Kruger, 2020; Alkailani & Abu-Shanab, 2021).

The UTAUT was modified in 2012 and extended with more constructs like habit, price value, and hedonic motivation (UTAUT2, Venkatesh, Thong & Xu, 2012). In both theories (UTAUT & UTAUT2), the authors utilized gender, experience and age as moderators and tested their influence on the relationships of predictors with behavioral intentions. Both theories also tested the use behavior as the ultimate dependent variable. Finally, both theories, and even the traditional old ones, depended on their simplicity and robustness is addressing the adoption behavior of new technology. Such perspective lacks the complicated dependencies of variables which was reported and tested by previous research. The following sections will depict the diverse variables adopted in this study and their assumed conceptual relationship with behavioral intentions. The set of variables used in the UTAUT2 are listed with their definitions in Table 1.

### 2.2.1 Perceived Value

The concept of perceived value (PV) was widely discussed through the literature to examine its influence on the consumers' behavioral intention after its original proposal by Monroe and Krishnan (1985) (as reported by: Chen, Hsiao, & Wu, 2018; Civelek & Ertemel, 2019; Gan & Wang, 2017). The definition of PV included different dimensions from consumers' point of view. It is related to price, effort, or quality. One of the widely used definitions of PV is the perceived valuable overall benefits that consumers get compared to what they give or sacrifice (Zeithaml, 1988). The term "sacrifice" is related to various components like money, effort, and time, while the term "acquired benefits" is related to different components like volume, quality, and other satisfactory items.

Perceived value has two major components; first, the perceived benefits including utilitarian value, hedonic value, social value (Gan & Wang, 2017). The utilitarian side is related to the associated benefits of the action like price, time and other factors. Another study tried to investigate the relationship of

Table 1. Definitions of variables

Variable	Definition	Sources
Performance Expectancy (PE)	The degree to which using social media will provide benefits to consumers in performing certain activities	Venkatesh et al. (2003)
Effort Expectancy (EE)	The degree of ease associated with consumers' use of social media	Venkatesh et al. (2003)
Social Influence (SI)	The extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology	Venkatesh et al. (2003)
Facilitating Conditions (FC)	Refer to consumers' perceptions of the resources and support available to perform a behavior	Venkatesh et al. (2003)
Hedonic Motivation (HM)	The fun or pleasure derived from using a technology.	Brown & Venkatesh (2005); Venkatesh et al. (2012)
Price Value	Consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them	Dodds et al. (1991); Venkatesh et al (2012)
Habit (HT)	The extent to which people tend to perform behaviors automatically because of learning	Limayem et al. (2007)
Trust (TR)	Consumers' expectations about vendors to deal ethically, with integrity, fulfilling commitments, and not opportunistically in buyer-seller relationship	Gefen et al. (2003); Hammouri & Abu-Shanab (2017)
Social Commerce Constructs (SCC)	The components of social commerce that support consumers like forums and communities, sharing, recommendations, and ratings and reviews. They help consumers to take decisions easier with the online social supports that they get from the former consumers.	Hajli (2015)
Perceived Value (PV)	The perceived valuable overall benefits that consumers get compared to what they give or sacrifice.	Zeithaml (1988)

PV, brand association, and brand loyalty on the purchase intentions. Results indicated that managers should not treat them as separate variables or independent factors, but it is better to deal with them as an integrated construct (Civelek & Ertemel, 2019).

Furthermore, researchers were interested in exploring the impact of PV on the intention to use the technology (Liébana-Cabanillas & Alonso-Dos-Santos, 2017). Results showed a positive relationship between PV and the intention to use technology. Another study disclosed that PV has a different influence on the behavioral intention and the use behavior in relation to the influence of gender (Hall, Shaw, Lascheit & Robertson, 2019). Another study stated that there was no difference between males and females in this aspect when they examined the construct in a different context (Hsiu-Yuan & Shwu-Huey, 2010)

Based on the previous studies and for the purpose of this research, PV is the final assessment of the value that the consumer will acquire and realize from using a service or a product such as quality, functionality, after-sale service, and brand, in return with what he will sacrifice like the price and time he will incur. From the previous definition, we can see the redundancy of price value included in the UTAUT2, when we introduce PV. Furthermore, we adopt an integrated proposition from previous studies by incorporating price savings orientation (Sheikh et al., 2017); like PV of low prices, which increase the online purchase intention (Han & Kim, 2009). Based on that we assume the following hypothesis:

H1: Perceived value will have a positive and significant influence on behavioral intentions.

### 2.2.2 Social Commerce Constructs

Consumers are sharing their own experience and information about the products or services, where they influence the purchase decision of potential consumers (Han & Windsor, 2011). This kind of third-party review is becoming a common practice in today's online platforms. It gives more credibility to new consumers about the published information, and thus it could reduce the firms spending on advertising (Chen & Xie, 2005). Whereas, there is a lack of physical interaction between potential consumers and the products which they like to acquire through the social media websites, they are likely to rely on the former recommendations and referrals of previous users (customers) who already had the feel and touch advantage after the actual use of the products (Senecal & Nantel, 2004).

Using social media enables customers to benefit from the ratings, reviews, recommendations, and referrals available on the social communities. Customers are using the word-of-mouth (WOM) to communicate the required information that can help others to get proper knowledge about the products. WOM has a substantial influence on future consumer's decision to buy a particular product. This kind of social support is one of the unique benefits of web 2.0 applications and technologies (Hajli, 2015). Such construct (SCC) is expected to influence the PV of social commerce. SCCs enable consumers to take decisions easier with the online social support that they get from the former consumers. Previous research supported its role in influencing trust and service provider reputation (Al-Adwan & Al-Horani, 2019). In this study, we conceptualize a two-factor influence on PV. One dimension is the PE, and the second is the feedback from others (social commerce constructs). The two factors will improve the PV of social commerce. We assume the following hypotheses:

H2: Performance expectancy will have a positive and significant influence on perceived value.

H3: Social commerce constructs will have a positive and significant influence on perceived value.

### 2.2.3 Trust

The role of trust in e-commerce or social commerce is crucial, where many studies in different contexts emphasized the role of trust in influencing the intention to buy or use a technology (Hammouri & Abu-Shanab, 2017; Al-Adwan & Kokash, 2019). Trust is defined by previous studies as consumers' expectations about vendors to deal ethically, with integrity, fulfilling commitments, and not opportunistically in the buyer-seller relationship of exchange (Gefen et al., 2003). The ambiguity of trust increases with the absence of face-to-face interaction (Yahia et al., 2018), where the balance between trusting social community and vender's commitment is critical.

The reported literature included many facets for trust and decomposed the construct into different factors. Research mainly focused on the confidence in vender's ability and desire to keep his promises (Ozanne & Schurr, 1985). Another direction is the vender's attitude and behavior toward online transaction and business (Suh & Han, 2003). Research also focused on consumers' expectations rather than the goodwill and image of vendors (Ba & Pavlou, 2002; McKnight et al., 2002). Another direction was to decompose the trust construct into two distinct constructs: trust in vender and trust in technology or the Internet (Abu-Shanab, 2014), or even more decomposition of the construct (Al-Dwairi et al., 2018).

Previous research also explored the antecedents of initial trust, where it included word of mouth, positive reviews, effective influence, brand influence, perception of others, advertising value, social presence of web (Hammouri & Abu-Shanab, 2017; Talwar et al., 2020), reputation, size, information quality, transaction safety, communication, and economic feasibility (Kim & Park, 2013). In addition, perceived usefulness and ease of use were major predictors of trust in social commerce (Al-Adwan, 2019). Many researchers investigated the effect of trust on the consumers' intention to buy through social commerce. The results reported positive and significant impact of trust on consumers' intention to buy through social commerce websites (Chen & Shen, 2015; Hajli, 2014; Yahia et al., 2018; Alkailani & Abu-Shanab, 2021). The following hypothesis is stated:

H4: Trust will have a positive and significant influence on behavioral intentions.

#### *2.2.4 Facilitating Conditions and Hedonic Motivation*

Perceived facilitating conditions (FC) was introduced in the UTAUT (Venkatesh et al., 2003). Furthermore, the UTAUT2 kept facilitating conditions construct as a predictor of BI (Venkatesh et al., 2012). the study defined FC as consumers' perceptions of the resources and support available to perform a behavior (Venkatesh et al., 2003). This study will also keep FC as a significant predictor of BI.

Hedonic motivation (HM) is defined as the fun or pleasure derived from using a technology (Brown & Venkatesh, 2005; Venkatesh et al., 2012). Previous research reported significant prediction of HM toward BI (Venkatesh et al., 2016). Other research used enjoyment construct to represent the level of joy a user perceives from using an application (El-Masri & Tarhini, 2017; Abu-Shanab & Al-Sayed, 2019). The UTAUT2 included hedonic motivation as a significant direct predictor of BI (Venkatesh et al. 2012). Based on that we assume the following two hypotheses:

H5: Facilitating conditions will have a positive and significant influence on behavioral intentions.

H6: Hedonic motivation will have a positive and significant influence on behavioral intentions.

#### *2.2.5 Effort Expectancy and Habit*

The last two variables included in this study were also included in the UTAUT2, namely habit (HT) and effort expectancy (EE). The only difference between the UTAUT2 proposition is the the mediating role of hedonic motivation. The parsimonious nature of the UTAUT and UTAUT2 is disputed by previous research. the literature reports in few studies the mediating role of perceived ease of use and perceived usefulness (Abu-Shanab & Knight, 2009). Social influence, job relevance, image, output quality, and perceived ease of use are assumed to predict perceived usefulness (Venkatesh & Davis, 2000). Also, the same study proposed that subjective norms influenced image.

Based on the previous attempts, we based our adaptation of the UTAUT on the definitions of variables listed in Table 1. The use of the application based on "ease of use nature" or the "habitual practices" of users, will grant higher levels of joy. Such proposition is new to the area up to the knowledge of the authors, and includes a mediation effect of HM between BI and habit and effort expectancy. based on this mediation effect, we state the following two hypotheses.

H7: Habit will have a positive and significant influence on hedonic motivation.

H8: Effort expectancy will have a positive and significant influence on hedonic motivation.

The previous review of the literature and the assumptions made by the existing research concluded to the following research model shown in Figure 1. Our premise includes a direct influence of PV, HM, facilitating conditions, and trust on BI. Second, habit and effort expectancy will have a direct influence on HM. Finally, performance expectancy and social commerce constructs will have a direct influence on PV. One of our major contributions in this study is to offer the research community a new direction and typology of predictors of BI. Such proposition depends on the logical buildup of adoption drive. Previous research supported strongly the direct effect of PE, EE, FC, and social influence on BI (the UTAUT argument). It is not an odd proposition to see PE and SCC build a thrust for perceived value (a new restructured variable from price value). In addition, EE and habit fit more with enjoyment nature. Based on that we build our argument on a process-based set of relationships, where users of social commerce believe in the benefit and value of social commerce transactions (based on the performance improvement and social commerce measures) and then build their value thrust. Such thrust would influence BI. The same with the second leg of the model, where users start

enjoying the use of social commerce based on their experience, habit, and the level of ease they face. This will improve their enjoyment and then their BI.

Figure 1. Proposed research model

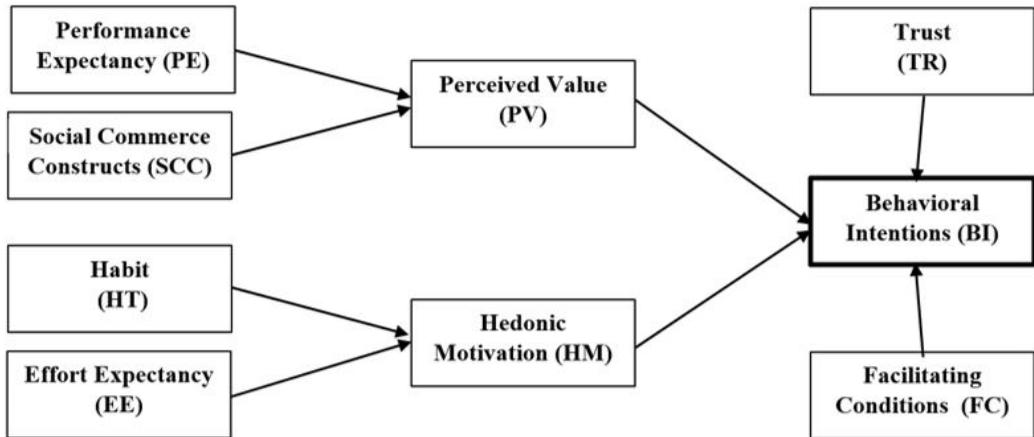


Figure 1: Proposed Research Model

### 3. RESEARCH METHOD

The main objective of this study is to investigate the factors influencing the BI to use social commerce. Social media has its special characteristics like being open, collaborative, users can content creators, and it is free. To test the research model, we adopted an empirical exploratory research utilizing a cross-sectional data collection. The research instrument used for data collection included three sections. First a description of the research context. Second, demographic questions related to subjects. Finally, 37 items to measure the research variables. Details and source of the research items are shown in Table 2. The authors adopted the Arabic items from the Arabic sources (Abu-Shanab & Pearson, 2007; Sheikh et al., 2017). The original items were used in the English version (Venkatesh et al., 2003; Venkatesh et al., 2012). Three academicians reviewed the items after adapting them to social commerce environment to conquer content validity.

The study targeted all Qatari residents, where the inclusion process was limited to active Internet users who has at least one or more social media website accounts. Second, subjects were over the age of 18 years old to expect some level of rationality in the decision-making process. Third, subjects need to speak Arabic or English at least (other languages were excluded). The development of instrument included applying Brislin’s backward translation method (1976), which ensures the valid translation process. Data was collected using an online application and the link was available from March 20 to April 10, 2019. Participant were asked to distribute the link to their lists (Snowball sampling technique).

The sample demographics are necessary to describe the sample, and to report any limitations regarding the final sample used for analysis. Table 3 includes the frequencies of each category of the sample. The sample distribution is similar to the Qatari residents’ distribution with respect to nationality, and age, but violated the distribution for education, gender and age. The Qatari population would include 75% males vs. 25% females, and less educated based on the percentage of blue-

Table 2. Research items and source

#	Construct	Number of items	Source
1	Behavioral Intentions (BI)	3	Venkatesh et al. (2003); Venkatesh et al (2012); Abu-Shanab & Pearson (2007)
2	Trust (TR)	5	Sheikh et al. (2017); Al-Dwairi et al. (2018)
3	Social Commerce Constructs (SCC)	6	Sheikh et al. (2017); Al-Dwairi et al. (2018)
4	Perceived Value (PV)	5	Sheikh et al. (2017); Al-Dwairi et al. (2018)
5	Habit (HT)	4	Sheikh et al. (2017); Al-Dwairi et al. (2018)
6	Hedonic Motivation (HM)	3	Sheikh et al. (2017); Al-Dwairi et al. (2018)
7	Facilitating Conditions (FC)	3	Venkatesh et al. (2003); Venkatesh et al (2012)
8	Performance Expectancy (PE)	4	Venkatesh et al. (2003); Venkatesh et al (2012); Abu-Shanab & Pearson (2007)
9	Effort Expectancy (EE)	4	Venkatesh et al. (2003); Venkatesh et al (2012); Abu-Shanab & Pearson (2007)

Table 3. Sample demographics

Age			Language		
Category	Freq.	%	Category	Freq.	%
18 - 20	18	3.9	Arabic	323	69.8
21 - 30	173	37.4	English	140	30.2
31 - 40	223	48.2	<b>Nationality</b>		
41- 50	44	9.5	Category	Freq.	%
>50	3	0.6	Qatari	68	14.7
<b>Education</b>			Non-Qatari	393	84.9
Category	Freq.	%	<b>Social Media Use*</b>		
High school or less	36	7.8	Category	Freq.	%
Diploma	52	11.2	Facebook	413	89%
Bachelor	262	56.6	Instagram	262	57%
Postgraduate	112	24.2	Twitter	87	19%
<b>Gender</b>			Snapchat	127	27%
Category	Freq.	%	Others	60	13%
Male	144	31.1	<i>*Exceeds total sample</i>		
Female	319	68.9	<b>Total Sample size</b>	<b>463</b>	<b>100%</b>

collar workers. In addition, respondents were given the option to select all applicable social media applications used. Such option will make the percentages not-conclusive, where the total number of users will exceed the total sample size (463). Data showed that Facebook was the most popular platform among our sample, followed by Instagram and then Snapchat. Finally, other platforms were not specified but resulted in 60 selections.

#### 4. DATA ANALYSIS & DISCUSSION

The first step in the analysis was to validate the instrument, where two measures were used for that purpose. First, Cronbach's alpha was used to test for internal consistency and reliability of constructs. Acceptable values should exceed 0.6, and recommended values should exceed 0.8 (Hair et al., 1998). Table 4 shows the estimated values for Cronbach's alpha, where all values exceeded the acceptable threshold (>0.6), and most of them exceeded the recommended one (> 0.8).

Table 4. Cronbach's alpha values for the main variables

Constructs	N	Number of items	Cronbach's alpha
Performance Expectancy (PE)	463	4	0.757
Effort Expectancy (EE)	463	4	0.851
Facilitating Condition (FC)	463	3	0.740
Hedonic Motivations (HM)	463	3	0.913
Habit (HT)	463	4	0.909
Perceived Value (PV)	463	5	0.838
Social Commerce Constructs (SCC)	463	6	0.870
Trust (TR)	463	5	0.894
Behavioral Intention (BI)	463	3	0.916

The item-level descriptive analysis is required to explore the respondents' level of evaluation of each dimension and sub-dimension. The estimation of means represents a tentative level of evaluation as each construct includes few dimensions that represent the face validity of the variable and represents its core concepts. Discrepancies between the items might be a limitation toward selecting them, and higher standard deviations represent a dispute between subjects on the value of such item. We reported the item means in Appendix A and B, where Appendix A is related to the UTAUT constructs (BI, PE, EE & FC). Appendix B included items related to UTAUT2 constructs and PV and trust variables.

Results indicate that all items were highly or moderately perceived by respondents, with item HT2 (I am dedicated to use SMWS for purchasing) as the lowest (mean=2.56) and item PE3 (Using SMWS helps me accomplish things) as the highest (mean=4.09). The standard deviations of the items ranged from 0.855 to 1.191. On the variables level, the estimated means of PE, EE, FC, and SCC were high, and the estimated means of BI, HM, HT, PV and TR were moderate. EE reported the highest mean (3.910), and HT reported the lowest mean (2.875).

On the relational level, a Pearson's correlation matrix was generated for two reasons. First, the correlation matrix is a suitable tool for testing for the existence of multicollinearity between the independent variables, where severely high correlations indicate a multicollinearity issue (> 0.85). Results shown in Table 5 indicate that the highest correlation among the independent variables was

the correlation between EE and FC or TR and PV (0.657). Such result indicates that all variables are distinct and are safe with respect to divergent validity. The second benefit of the correlation matrix is to support the rationale behind selecting the variables. In our specific model, we have two layers of independent variables. regardless of the layer, all variables were significantly correlated to each other on the 0.01 level. Such results support all assumed hypotheses on the bivariate level (i.e. PE @ PV = 0.412; SCC@ PV = 0.502; HT @ HM = 0.627; EE @ HM = 0.526). On the first degree independent variables, the following data was estimated respectively (PV @ BI = 0.766; TR @ BI = 0.731; HM @ BI = 0.627; FC @ BI = 0.583). We also noticed that the correlations with BI were always higher than the same correlation with other variables.

**Table 5. Pearson's correlation matrix**

Construct	PE	EE	FC	HM	HT	PV	SCC	TR
Performance Expectancy (PE)	.763							
Effort Expectancy (EE)	.457**	.721						
Facilitating Condition (FC)	.367**	<b>.657**</b>	.817					
Hedonic Motivations (HM)	.425**	.526**	.497**	.923				
Habit (HT)	.437**	.543**	.546**	<b>.627**</b>	.877			
Perceived Value (PV)	.412**	.567**	.543**	.580**	<b>.618**</b>	.780		
Social Commerce Constructs (SCC)	.370**	.425**	.384**	.501**	.472**	.502**	.812	
Trust (TR)	.395**	.480**	.462**	.532**	.587**	<b>.657**</b>	.485**	.848
<b>Behavioral Intention (BI)</b>	<b>.417**</b>	<b>.562**</b>	<b>.583**</b>	<b>.627**</b>	<b>.679**</b>	<b>.766**</b>	<b>.536**</b>	<b>.731**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

The correlations matrix is a good tool to investigate probable relationships between the included set of variables. The strongest bivariate relationship reported in Table 5 is (PV @ BI) with 0.766 beta value. Such explanation of BI (58.7%) by only one variable invites researchers to think of the utility of technology adoption research, where focusing on PV might be useful for future adoption of users. The same applies to certain extent to the relationships (TR @ BI, 0.731) and (HM @ BI, Beta = 0.627). Other cases that might be relevant are shown in Table 6. Finally, to test for discriminant validity, we used Fornell Larcker criterion, where we added the estimates in the diagonal of Table 5. The values exceeded all corresponding values related to the associated variables. This result supports discriminant validity.

The Final step in the analysis stage requires the use of structural equation modeling for testing the model. For that purpose, we used SmartPLS 2.0 tool. The tool estimates the structural model betas and item loadings on each variable. It also tests the relationship through a bootstrapping estimation. The model was tested twice, the first run aimed at inspecting the item loading, where we excluded one items from the analysis (SCC1) as the loading value was less than 0.6. We ran the estimation again, where the second run yielded a better fit. Figure 2 represents the final structural model, while Figure 3 represents the bootstrapping technique results. All “t” values shown in Figure 3, and above 1.96 are considered significant at the 0.05 level (Values more than 2.)

(t values above 1.96 represent a p<0.05 & t values above 2.56 represent a p<0.01)

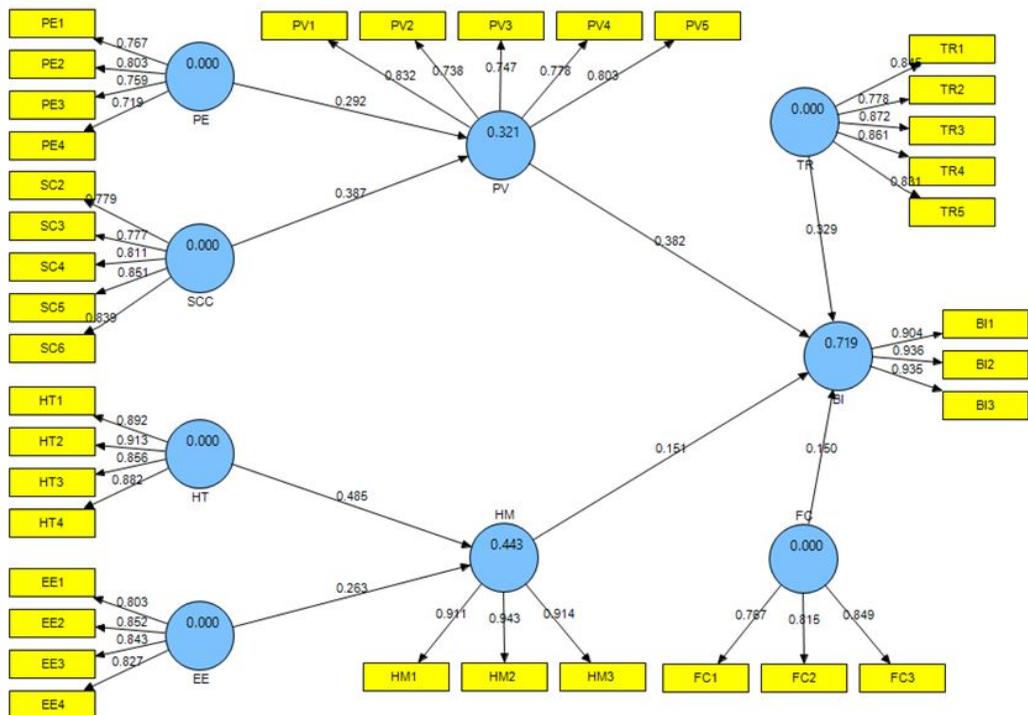
The model shown in Figure 2 indicates an explanation of the variance in BI approximately equals to 72% (Coefficient of determination R<sup>2</sup> = 0.719). Such explanation is close to the value estimated in the UTAUT2 (74%, Venkatesh et al., 2012), and exceeds the value estimated in the UTAUT (70%,

Table 6. Significant correlations with supporting argument

Relationship	Beta	Argument
PV $\delta$ BI	0.766	Included (no rationale for the opposite)
TR $\delta$ BI	0.731	Included (no rationale for the opposite)
HT $\delta$ BI	0.679	Using an application on habitual bases will yield more use
FC $\delta$ EE	0.657	Receiving the right support improves the perceptions that system is easy to use (no rationale for the opposite)
PV $\delta$ TR	0.657	Perceived value is a prerequisite for trust in social commerce.
HM $\delta$ BI	0.627	Included (no rationale for the opposite)
HM $\delta$ HT	0.627	Can be reciprocal and analyzed as a dynamic vicious circle. Habit will lead to enjoyment, and the more you enjoy, it leads to a habitual behavior
HT $\delta$ PV	0.618	Habit will make effort less and thus improves value.

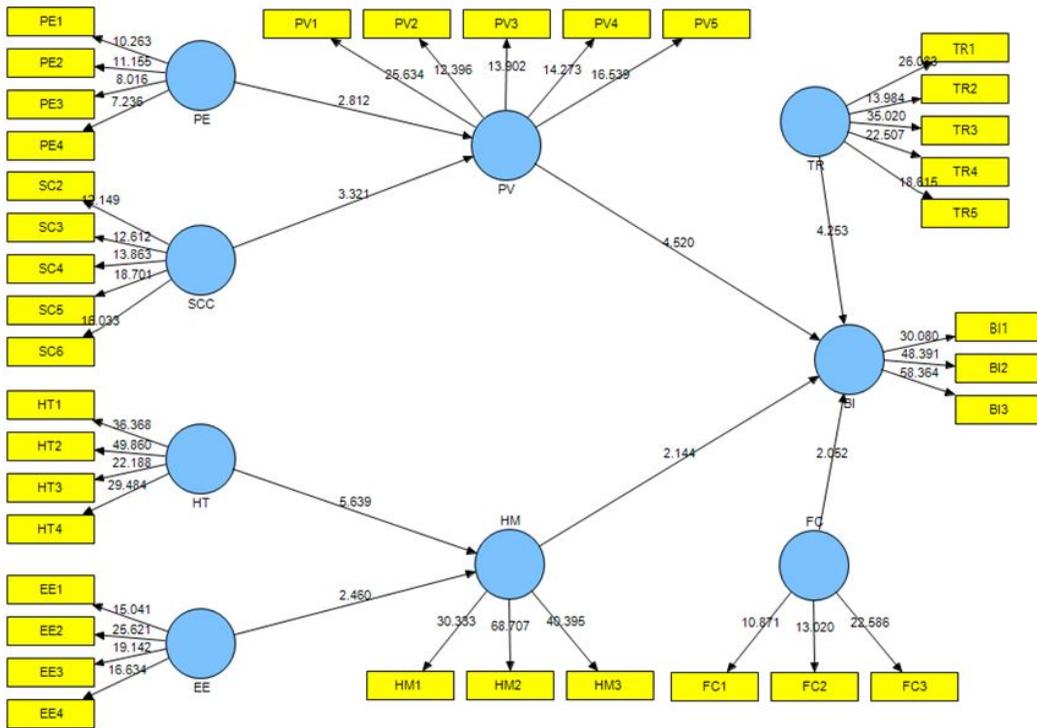
Only for Beta values > 0.6, R<sup>2</sup> = 0.36. Rows are ranked based on beta values from high to low

Figure 2. The structural model results



Venkatesh et al., 2003). Such result supports our premise and opens a new direction in the technology adoption area. The other important result is the prediction of perceived value and hedonic motivation. The coefficient of determination for predicting HM was 0.443, which explains 44.3% of the variance in HM. Also, the estimated coefficient of determination for predicting perceived value was 0.321, which explains 32.1% of the variance in PV.

Figure 3. The bootstrapping technique for the final structural model



This study focused on changing the structure of the UTAUT2, where we assumed a mediation effect by the variables perceived value (PV) and hedonic motivation (HM). One of the objectives of this study is to estimate the mediation effect of PV and HM. To conduct such analysis, we added relationships from the second degree variables directly to the BI. Such step indicated the following direct beta values shown in Table 7.

Table 7. Direct and indirect effects analysis

Relationship	Beta	t	Result
PE @ BI	0.018	0.276	Insignificant
SCC @ BI	0.078	1.007	Insignificant
HT @ BI	0.148	1.561	Insignificant, and influenced HM @ BI
EE @ BI	0.001	0.010	Insignificant, and influenced HM @ BI

Results did not show any significant direct effect from all second-degree independent variables with BI. The Data shown in Table 7 indicates also an influence of the direct effect added on the original model relationships between BI and PV/HM. This result shows that no mediation effect is estimated based on the influence of the two variables PV/HM. This result supports our new perspective, where users of social commerce build a thrust for using SM (intention to use) based on four predictors only

(HM, PV, Trust & FC). Still, the history of technology adoption literature supports the role of PE, EE, and other important factors in predicting technology adoption. This study supported the role of PE, EE, SCC, and Habit in predicting PV or HM. The logical and nature of variables (as discussed earlier when building this model at the end of section 2) and their relationships depicts a strong and significant prediction of BI. This result strongly competes with the results generated by many studies and specifically the UTAUT and UTAUT2 (i.e. the  $R^2$  magnitude generated by the model structure).

## 5. CONCLUSIONS

This study adapted the UTAUT2 for social commerce environment by implementing three steps. First, we adopted the construct *social commerce constructs (SCC)* instead of social influence based on the similar influence within social media. In social media environment, users are influenced by other users (friends, community and network) likes, shares, feedback, and comments. Such step avoids the redundancy between predictors and guard for multicollinearity issues. The second step included an extension on the UTAUT2 model by adding trust and perceived value constructs and dropping price value based on its inclusion within the PV construct. Finally, the relationships between variables included some convincing mediation propositions (based on previous literature and the definitions of variables), where a two layered model was proposed and tested.

Results included a good support for the proposed model with full support for the 8 hypotheses included in the model and an explanation of variance slightly better than the one reported by the UTAUT, and slightly less than the one reported by the UTAUT2. The results of hypotheses testing and the details are shown in Table 8. Regarding the mediation effect of PV and HM, no significant effect was estimated and the structural model was influenced by the incorporation of direct effect of the second degree independent variables and BI. Finally, the hypotheses testing results are shown in Table 8.

Table 8. Hypotheses results

Hyp.	Relationship	Beta	t	Sig.	Result
H1	Perceived Value ® Behavioral Intentions	0.382	4.52	< 0.01	Supported
H2	Performance Expectancy ® Perceived Value	0.292	2.81	< 0.01	Supported
H3	Social Commerce Constructs ® Perceived Value	0.387	3.32	< 0.01	Supported
H4	Trust ® Behavioral Intentions	0.329	4.25	< 0.01	Supported
H5	Facilitating Conditions ® Behavioral Intentions	0.150	2.05	< 0.05	Supported
H6	Hedonic Motivation ® Behavioral Intentions	0.151	2.14	< 0.05	Supported
H7	Habit ® Hedonic Motivation	0.485	5.64	< 0.01	Supported
H8	Effort Expectancy ® Hedonic Motivation	0.263	2.46	< 0.05	Supported

### 5.1 Implications and Recommendations

This study provided important insights to the technology adoption domain, where it utilized a well-established set of constructs (based on the UTAUT & UTAUT2) to predict BI. The UTAUT2 was re-structured to gain better insights and adapt the model to social commerce environment. The results of this study represent a new contribution with respect to social commerce and Qatari environment. The first important implication from this study is related to PV, where businesses utilizing social media need to provide value to their users. But, social media provides huge entertainment aspect and

provides users with high levels of satisfaction through the enjoyment of using technology, belonging to a community, and interacting with others. Results also strongly supported the role of enjoyment in the purchasing process. Businesses need not to neglect the basics of social networks and balance the entertainment and fun against the transaction's value.

Trust came as a robust and important extension to the model. The trust construct focused on the overall trust by mixing the providers image and the social webpage characteristics. Such proposition calls for businesses to try their best to keep trust levels with their customers high by keeping their image and the webpage characteristics up to the expectations of users. Businesses also need to keep their pages simple and easy to use, useful for users, and watch for using the most of social media tools. Business data analytics now can provide businesses with great and useful insights regarding users' visits to social webpages.

## **5.2 Limitations and Future Work**

The study explored a conceptual model based on a rational argument and a logical flow of reasoning. Researchers can explore other options for restructuring the model based on our proposed set of arguments in Table 6. Future work can decompose the trust dimension to trust in social page/social media, and trust in vender. Such decomposition is common in the literature.

This study did not follow the UTAUT premise in moderating the relationships with demographic factors. The major reason for that is the sample limitation regarding the demographic distribution of the Qatari society, where Qatari nationality constitute a minor portion of society and sample. Such limitation makes it difficult to claim generalizability of results. This study gives researchers an option for future validation with wider scale representative samples. Future work can focus on the demographic factors and set the stage for the moderation influence on the set of relationships depicted in the model. This direction might improve the estimated coefficient of determination when compared to UTAUT & UTAUT2. This study adopted a conceptual argument more than a statistical achievement, where we could have added moderation to improve the coefficient of determination on the expense of the influence of major predictors.

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## APPENDIX A: ITEMS FOR CONSTRUCTS ADOPTED FROM THE UTAUT

Item short description	Mean	Std. Deviation
PE_1: I find social media websites very useful.	3.96	0.921
PE_2: Using SMWS increase chances of achieving things	3.88	0.902
PE_3: Using SMWS help me accomplish things	4.09	0.891
PE_4: I can save time when I use SMWS	3.65	1.203
<b>PE_AVG: Performance Expectancy</b>	<b>3.895</b>	<b>0.751</b>
EE_1: Learning to use SMWS is easy	4.02	0.856
EE_2: interaction with SMWS is understandable	3.78	0.952
EE_3: I find SMWS for purchase are easy	3.89	0.897
EE_4: I can be skill fill in using SMWS for purchases	3.95	0.855
<b>EE_AVG: Effort Expectancy</b>	<b>3.910</b>	<b>0.741</b>
FC_1: I have the resources to use SMWS for purchasing	3.93	0.925
FC_2: I have the knowledge to use SMWS for purchasing	3.96	0.894
FC_3: I feel comfortable using SMWS for purchasing	3.42	1.084
<b>FC_AVG: Facilitating Conditions</b>	<b>3.768</b>	<b>0.788</b>
BI_1: I will continue using SMWS for future purchases	3.47	0.946
BI_2: I will always try SMWS for purchasing	3.29	1.003
BI_3: I will frequently use SMWS for purchasing	3.31	1.011
<b>BI_AVG: Behavioral Intention</b>	<b>3.356</b>	<b>0.913</b>

## APPENDIX B: OTHER ITEMS

Item short description	Mean	Std. Deviation
HM_: using SMWS for purchasing is fun	3.48	1.029
HM_2: using SMWS for purchasing is enjoyable	3.56	1.004
HM_3: using SMWS for purchasing is entertaining	3.52	1.023
<b>HM_AVG: Hedonic Motivation</b>	<b>3.519</b>	<b>0.940</b>
HT_1: purchasing through SMWS is habit for me	2.97	1.157
HT_2: I am dedicated to use SMWS for purchasing	2.56	1.170
HT_3: I must use SMWS for purchasing	2.90	1.181
HT_4: it is natural for me to purchase through SMWS	3.07	1.191
<b>HT_AVG: Habit</b>	<b>2.875</b>	<b>1.041</b>
PV_1: SMWS offer better value for money for purchasing	3.18	1.077
PV_2: shopping on SMWS take reasonable time	3.56	0.976
PV_3: Shopping on SMWS improve the way I am perceived	2.91	1.117
PV_4: Prices on SMWS are reasonable	3.35	1.046
PV_5: overall, shopping on SMWS is worthwhile	3.61	0.924
<b>PV_AVG: Perceived Value</b>	<b>3.323</b>	<b>0.802</b>
SC_1: I will ask for suggestions online before I do shopping on SMWS	3.83	0.920
SC_2: I am using others recommendations to buy a product	3.99	0.906
SC_3: I am willing to buy products that have more like and shares	3.87	1.017
SC_4: I am recommending products to others on SMWS	3.93	0.908
SC_5: I am sharing my shopping experience to others on SMWS	3.81	0.977
SC_6: I am using ratings and reviews to share my shopping experience	3.88	0.962
<b>SC_AVG Social Commerce Constructs</b>	<b>3.885</b>	<b>0.739</b>
TR_1: providers on SMWS are trustworthy	2.95	0.972
TR_2: Providers on SMWS keep promises and commitments	3.28	0.959
TR_3: I trust providers on SMWS as they keep my interest in mind	3.00	0.955
TR_4: providers on SMWS are honest	2.96	0.955
TR_5: providers on SMWS care about consumers	3.22	0.988
<b>TR_AVG: Trust</b>	<b>3.082</b>	<b>0.809</b>

Zaki Shoheib is the general manager of Al Taadhod Group in Qatar. He finished his MBA from Qatar University, and he is interested in social and e-business research in the service industry.

Emad A. Abu-Shanab earned his PhD in business administration in the MIS area from Southern Illinois University – Carbondale, USA, his MBA from Wilfrid Laurier University in Canada, and his Bachelor degree in civil engineering from Yarmouk University (YU) in Jordan. His research interest in areas like E-government, technology acceptance, E-marketing, E-CRM, Digital divide, e-CRM, IT project management, and E-learning. Published many articles in journals and conferences, and authored three books in e-government, and few book chapters. Dr. Abu-Shanab worked as an assistant dean for students' affairs, quality assurance officer in Oman, and the director of Faculty Development Center at YU. He is a professor in the MIS Department and was the department chair. Now Prof. Abu-Shanab works at Qatar University in the accounting and Information Systems Department.