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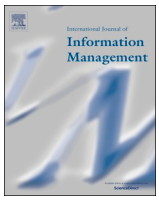

Social commerce adoption using TOE framework: An empirical investigation of Saudi Arabian SMEs

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ABSTRACT

Social commerce is becoming an important hub for product sourcing, which helps companies to connect with customers and to gain competitive advantages. However, very little empirical research that focuses on small-and medium-sized enterprises (SMEs) has been conducted to date. This study examines factors that affect social commerce adoption by SMEs. Using the Technology-Organisation-Environment (TOE) as the theoretical framework, the researchers tested the model and related hypotheses, employing structural equation modelling. The results from a survey of 181 SMEs in Saudi Arabia indicate that trading partner pressure in the environmental context, followed by top management support in the organisational context, and perceived usefulness in the technological context, have the most significant influence on behavioural intention to use social commerce. The research contributions and conclusion as well as limitations and future research directions are presented.

1. Introduction

Social media is increasingly adopted by enterprises, as it is a new phenomenon that has transformed online communication and transactions (Hawkins & Vel, 2013). For example, web blogs, online forums and podcasts are rapidly becoming major sources of customer information and prime channels of communication as well as an important part of personal, social and business life (Abed, 2018). Furthermore, Saudi Arabia has witnessed the biggest diffusion of social media platforms, which are the largest enabling factor to e-commerce adoption in the Kingdom (Radcliffe & Bruni, 2018). Various large companies, as well as small enterprises and new ventures, have set up their business profiles on Facebook, LinkedIn and other related websites. In fact, Saudi Arabia has the highest annual growth rate for social media users worldwide. Furthermore, it continues to be one of the biggest national markets for social media, specifically, Snapchat and YouTube, in the world. There are about 12 million daily Snapchat users in the Gulf Cooperation Council (GCC), 9.4 million of which use Snapchat every day in Saudi Arabia (out of the total population of 32 million). Moreover, in 2018, YouTube became the most popular social media platform in Saudi Arabia, in the process displacing the long-time leader Facebook (Radcliffe & Bruni, 2018). These significant facts have formed a new channel for business owners, managers and marketers to reach their potential customers.

On the other hand, small-and medium-sized enterprises (SMEs) are very important to the economic growth of any country (Rana, Barnard, Baabdullah, Rees, & Roderick, 2019), as they play a critical role in most world economies and represent the largest sector of companies. This is because they are flexible, innovative and can generate income (Taylor, 2019). As a result, their existence and growth have been the main issues (Grant, Edgar, Sukumar, & Meyer, 2014). They play a key role in growing the production base, assisting large-scale manufacturing companies and providing regional and national employment opportunities.

SMEs are unlike large companies in several significant ways, including the lack of financial resources, lack of information system management (Cerchione & Esposito, 2017), lack of expert knowledge management (Casidy, Nyadzayo, & Mohan, 2019), and lower levels of available resources (Senarathna, Wilkin, Warren, Yeoh, & Salzman, 2018). Moreover, just one or two individuals are responsible for the most common responsibilities, rather than the specialised top management executives (Gray, 2017). In addition, SMEs face various challenges, including globalisation of markets, economic change, increasing competition, decreasing product lifecycle, changes in consumer needs and rapid technological development (Puklavec, Oliveira, & Popovič, 2018). However, SMEs need to be more innovative in all their operation areas, including planning, finance, production, marketing and human resource management to overcome these challenges (Yen, Le, & Tran, 2019).

Social media is very suitable for Saudi Arabian SMEs as it provides several opportunities, including low cost, minimal level of IT skills required to use it, and low barriers to participation (Abed, Dwivedi, &

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Williams, 2017). Furthermore, SMEs can promote their products and services and build brand communities, and reach different market niches by using social media (Guha, Harrigan, & Soutar, 2018). Social media is a simple and low-cost solution for SMEs to reach prospective customers, create wide business networks, listen to customers' voices (Ghezzi, Gastaldi, Lettieri, Martini, & Corso, 2016), develop customer trust and loyalty, manage reputations and gather marketing intelligence (Han, Min, & Lee, 2016). Currently, many SMEs believe that they 'must' become involved in social media (Abed, 2018).

The increased importance of social media and e-commerce applications has led to new shopping trends, where companies and consumers leverage social networks to make purchases that are more effective. This is called social commerce (Ali, Mukhtar, & Mohamed, 2019). Even though there is no standard definition of social commerce, generally, it refers to the distribution of e-commerce activities in the social media environment, mostly by using Web 2.0 software, and in social networks (Abed, 2018). Therefore, social commerce is considered a subset of e-commerce, which supports social interactions and user content contributions (Ali et al., 2019). It is a combination of commercial and social activities. Stephen and Toubia (2010) defined the concept of social commerce as an Internet-based social media, which enables people to collaborate actively in the marketing and selling of different products and services in online marketplaces. The term social commerce appeared in the literature officially in 2005, in reference to a new way of doing commerce, an emerging phenomenon motivated by the Web 2.0 trend (Akman & Mishra, 2017). Moreover, a social commerce website is a place where individuals can collaborate online and receive advice from other trusted people, find products and services, and purchase them by social networks, podcasts, chat rooms, blogs, tagging, ranking and recommendation systems.

Several efforts have been made to analyse existing knowledge. For example, Derham, Cragg, and Morrish (2011) examined how SMEs gain value from using social media. Michaelidou, Siamagka, and Christodoulides (2011) investigated business-to-business (B2B) SMEs and measured the effectiveness of social networking sites (SNS) as a marketing tool. Moreover, Barnes et al. (2012) considered how SMEs use Web 2.0 for business collaboration, while Stockdale, Ahmed, and Scheepers (2012) discussed how SMEs can gain business value from using social media, and the possibility of using social network tools to implement CRM for SMEs. Meske and Stieglitz (2013) explored the adoption, usage and benefits of social media and SMEs, and the potential concerns that may prevent SMEs from wider adoption of social media. Furthermore, Wamba and Carter (2016) investigated SMEs' adoption of social media tools, in particular, the impact of organisational, environmental and managerial characteristics on SMEs' utilisation of the Facebook events page. Additionally, McCann and Barlow (2015) focused on why SMEs use social media and how they should measure their return on investment. Wang, Pauleen, and Zhang (2016) conducted research on the relationship between the abilities of social media applications and business-to-business communications as well as business performance. Cheng and Shiu (2019) considered how to improve SMEs' customer involvement using social media. Talukder, Quazi, and Djatikusumol (2020) reviewed the literature related to determinants of attitudes and adoption of Facebook in the SMEs' sector in emerging economies, with specific reference to Indonesia. Mamorobela and Buckley (2018) evaluated the effectiveness of social media on knowledge management systems, particularly for SMEs.

However, a detailed examination of existing research suggests that very limited empirical studies have been conducted on social commerce adoption by SMEs. Given the large interest, it is important to explore further this subject. Therefore, the present paper empirically examines social commerce adoption by SMEs. The following sections include the relevant literature review of existing empirical research in the context of social commerce adoption by SMEs. A review of the Technology-Organisation-Environment (TOE) framework and hypothesis development is presented in the third section. This is followed by the methodology and the results in the fourth and fifth sections respectively. Furthermore, the research discussion, contribution, limitations and future research directions are presented in section six. The conclusion is in section seven.

2. Literature review

A very limited number of studies have reviewed social commerce adoption by SMEs. Adam, Jizat, and Nor (2016) examined studies conducted by SME Corp Malaysia and found that the usage of e-commerce and social media in Malaysia is still low. The researchers identified the most used variables in studies related to entrepreneurs and their intention to accept new technology. The study found that attitude and self-efficacy are the most used constructs to identify the internal factors of entrepreneurs who influence the acceptance and use of s-commerce among SMEs in Malaysia. Moreover, Abed, Dwivedi, and Williams (2016) analysed 60 SMEs divided into four main categories: technology, social media tools and platforms used by SMEs; online business strategies used by SMEs; online information provided and shared by SMEs; and consumers' social media tools and platforms usage to connect with SMEs. The analysis indicated that quality of online information affects consumers' adoption, businesses are building online trust using social media, online business strategies influence consumers' perceptions of uncertainty, and innovative businesses lead to innovative consumers.

Jambulingamis, Sumathi, and Rajagopal (2015) examined the barriers to Facebook commerce adoption among SMEs. A total of 134 SMEs were investigated. It was discovered that perceived risk and personal characteristics of the entrepreneurs are the significant factors that prevent small and medium size enterprises from adopting Facebook commerce. This study will guide governments to form additional security policies to provide assurances, which can encourage SMEs to explore Facebook commerce in the international marketplace. Furthermore, Vongsraluang and Bhatiasevi (2017) considered the factors affecting social commerce system success in the Thai SMEs' context. To evaluate the proposed model, a survey questionnaire was used. The empirical results indicated that six hypotheses were supported from the proposed model. System use and user satisfaction significantly affect the success of a social commerce system. Additionally, three factors positively affect system use, namely, service quality, system quality and trust, and all lead to user satisfaction. Ebrahimi, Ahmadi, Gholampour, and Alipour (2019) examined the effect of CRM performance and technological innovation on the performance of media entrepreneurs by small and medium size enterprises. The researchers empirically tested the proposed hypotheses for SEM techniques by using PLS and R packages. They collected 127 questionnaires from SMEs' managers and deputies in Iran. The findings indicated that the influence of CRM performance on SMEs' performance is mediated by media entrepreneurship. Furthermore, the influence of technological innovation on SMEs' performance is also mediated by media entrepreneurship.

Wamba and Carter (2013) reviewed the literature on social media, social commerce and the diffusion of innovation to identify the organisational, managerial and environmental characteristics of SMEs that play a critical role in the adoption of Twitter. To test the model, data was collected by a survey of 453 SME managers in the United States, the United Kingdom, Australia and India. The results indicate that firm innovativeness, age and geographic location have an important impact on Twitter adoption by SMEs. Moreover, Ali et al. (2019) investigated the effects of technological, organisational and trust factors on social commerce adoption by SMEs in Malaysia. The researchers proposed the factors, collected from the literature, that influence the adoption of social commerce, and presented the results of an exploratory pilot study. Moreover, Sharma, Singh, and Aiyub (2020) examined the use of social networking sites by SMEs to connect with their customers. The researchers adopted a quantitative approach and data was collected from 336 respondents, using structural equation modelling; the

empirical results indicate that customer satisfaction has a positive impact on customer loyalty. Furthermore, customer engagement is found to have a positive relationship with customer loyalty. Additionally, Alraja, Khan, Khashab, and Aldaas (2020) identified the factors affecting the adoption of Facebook commerce by SMEs. Data was collected from 342 SMEs in Oman. The findings suggest that Facebook advertisements have a statistically significant effect on SMEs' performance dimensions (efficiency, flexibility and responsiveness).

While reviewing the literature, it became evident that very limited studies conducted empirical research in the context of social commerce adoption by SMEs in different countries including the United States, the United Kingdom, Australia and India (Wamba & Carter, 2013), Malaysia (Adam et al., 2016; Ali et al., 2019; Jambulingamis et al., 2015), Thailand (Vongsraluang & Bhatiasevi, 2017), Fiji (Sharma et al., 2020), Iran (Ebrahimi et al., 2019) and Oman (Alraja et al., 2020). Furthermore, only one empirical study has been conducted in Saudi Arabia (Abed et al., 2016), and that is qualitative in nature. No studies have been identified, in the context of Saudi Arabia, which are theory based and quantitative in nature. This study, which is theory-based, aims to fill this research gap by examining social commerce adoption by SMEs in Saudi Arabia.

3. Theoretical background and hypothesis development

The TOE framework classifies technology, organisation and environment as the three sets of factors that affect an organisation adopting innovations (Baker, 2012). The TOE framework has a strong theoretical basis, solid empirical support, and has been used to study technology adoption of innovations (Oliveira & Martins, 2011). To identify the constructs within the TOE framework for the present study, a literature review of technology adoption in SMEs was conducted. This led to identifying several factors that may influence social commerce adoption by SMEs (Dwivedi et al., 2017). The following describes the factors in each of the three main constructs as well as the hypothesis development.

3.1. Technological context

According to previous IT adoption research studies (Ramdani, Kawalek, & Lorenzo, 2009; Rowe, Truex, & Huynh, 2012; Sparling, Toleman, & Cater-Steel, 2007), which implemented a TOE framework in the context of SMEs, the technological characteristics of an organisation usually explain IT innovation attributes that affect the organisational adoption of IT innovation (Kapoor, Dwivedi, & Williams, 2014; Thong, 1999). This research considers two innovation characteristics in the context of social commerce adoption by SMEs: perceived usefulness and security concern.

3.1.1. Perceived usefulness

Perceived usefulness refers to the degree to which an individual believes that using a specific technology will improve her/his performance (Davis, 1989). In the technology acceptance model (TAM) framework, perceived usefulness is hypothesised to have a direct effect on behavioural intention to use the technology of interest (Rana, Dwivedi, & Williams, 2013). Previous studies indicate that perceived usefulness positively influences behavioural intention to adopt new technology (Elkaseh, Wong, & Fung, 2016; Jamal & Sharifuddin, 2015). Perceived usefulness has been examined widely in the literature with different technologies and found to be significant; for example, in social media adoption by B2B (Siamagka, Christodoulides, Michaelidou, & Valvi, 2015), online travel services (Yuan, Lin, & Zhuo, 2016), mobile service provider (Abbas & Hamdy, 2015), mobile instant messaging (Gloria & Achyar, 2018) and blog learning (Wang, Pauleen et al., 2016), Therefore, the following hypotheses are created:

H1. Perceived usefulness contributes significantly and is positively related to behavioural intention to adopt social commerce.

3.1.2. Security concern

Security is defined as the extent to which an internet platform is assumed to be insecure for conducting online transactions and exchanging data (Clear, 2007). Nowadays, security risks are increasing due to computer networks becoming more complex (Sahandi, Alkhalil, & Opara-Martins, 2012). Several authors consider security issues, for instance, viruses, hacking and data interception, as the major concern is in conducting business over the Internet (Clear, 2007; Sahandi et al., 2012; Salum & Rozan, 2016). A number of studies have examined security concerns in the context of e-commerce and SMEs. Zhu, Dong, Xu, and Kraemer (2006) surveyed 1415 firms in six European countries to investigate the attributes of innovation that may be related to e-business adoption by organisations. The findings indicated a negative relationship between security risks and e-business adoption. Furthermore, Fillis, Johannson, and Wagner (2004) examined 21 UK SMEs and found that security is a possible barrier for future e-commerce adoption. It is commonly believed that security concerns would delay organisational e-commerce adoption (Salum & Rozan, 2016). Security concerns, in relation to e-commerce adoption by SMEs, need special attention in the context of social commerce by SMEs. Based on the above arguments, the following hypothesis is proposed:

H2. Security concerns contribute significantly and are negatively related to behavioural intention to adopt social commerce.

3.2. Organisational context

According to the TOE framework, the organisational adoption of technology could be affected by the organisational context, which defines the organisational characteristics affecting the organisational adoption of new innovative technology (Chau & Tam, 1997). This research examines two innovation characteristics within the organisational context as regards social commerce adoption by SMEs, namely, top management support and organisational readiness.

3.2.1. Top management support

Top management support refers to the level of support received from the higher management to adopt innovative technology for business use (Grover & Goslar, 1993). Jeyaraj, Rottman, and Lacity (2006) suggested that top management support is one of the three most critical predictors for IT innovation adoption on the organisational level. Furthermore, research on technology adoption based on the TOE framework noted that top management support has a significant and positive relationship to the organisational decision to adopt innovative technology (Low, Chen, & Wu, 2011; Ramdani et al., 2009; Wang, Wang, & Yang, 2010). Consequently, it is highly expected that organisations with stronger top management support for new innovative technology would be more likely to adopt social commerce. Based on the previous arguments, the following hypothesis is formulated:

H3. Top management support contributes significantly and is positively related to behavioural intention to adopt social commerce.

3.2.2. Organisational readiness

The second construct within the organisational context is organisational readiness, which refers to the level of available technical and financial resources in the organisation to adopt new innovative technology (Chwelos, Benbasat, & Dexter, 2001). Rogers (1995) proposed that the availability of organisational resources significantly and positively affects the organisational adoption of innovative technology, as suggested by previous studies (Chwelos et al., 2001; Fathian, Akhavan, & Hoorali, 2008; Scupola, 2003). Fathian et al. (2008) reviewed the e-readiness assessment models and identified the critical factors for SMEs'

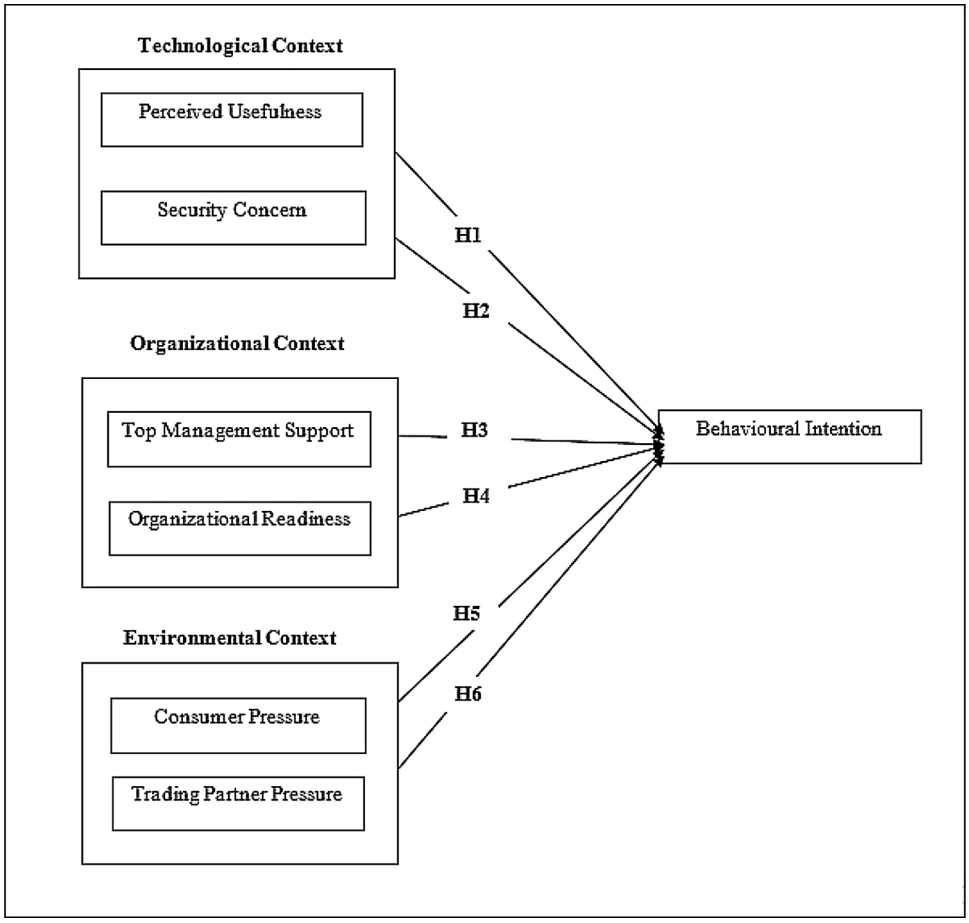

Fig. 1. The proposed conceptual model.

e-readiness assessment. The researchers conducted a factor analysis from the micro perspective of a number of Iranian non-profit ICT SMEs. Organisational readiness was found to be a significant predictor of ICT SMEs' adoption. Gunasekaran, McGaughey, Ngai, and Rai (2009) focused on the current status of e-procurement in SMEs located in Massachusetts, United States. To collect data, a questionnaire-based survey was employed, based on a conceptual model. The study found that organisational readiness is a significant predictor of e-procurement in SMEs' adoption.

Accordingly, the following hypothesis is proposed:

H4. Organisational readiness contributes significantly and is positively related to behavioural intention to adopt social commerce.

3.3. Environmental context

The environmental context in the TOE framework incorporates the structure of the industry, the availability of technology service providers, and the dogmatic environment of the organisation (Awa, Ukoha, & Emecheta, 2016; Baker, 2012; Scupola, 2003). The support infrastructure for technology can influence innovation (Scupola, 2003). In addition, the existence of skilled consultants and workers, as well as other suppliers of technology services, promotes innovation (Baker, 2012). The environmental context of a TOE framework helps in providing better understanding of the influence of external environmental pressures on organisational adoption (Gutierrez, Boukrami, & Lumsden, 2015; Taylor, 2019). This research examines two innovation characteristics within the environmental context to explain social commerce adoption by SMEs: consumer pressure and trading partner pressure.

3.3.1. Consumer pressure

Several relationship characteristics between organisation and consumer have been identified as playing a significant role in organisations' adoption of technologies, such as encouragement, commitment and pressure from customers, in addition to trust between an organisation and its customers. It has been verified that satisfying the different needs and expectations of customers by providing electronic customer services, which allow better interactive communication with customers, is a key driver of technology adoption in businesses (Maduku, Mpinganjira, & Duh, 2016). Companies are adopting new innovative technologies because they believe that their customers expect them to do this. A number of studies have examined the impact of consumer pressure on the adoption of new technology and found it to be significant (Chatzoglou & Chatzoudes, 2016; Kumar, Fenn, & Normala, 2019; Maduku et al., 2016; Nugroho, Susilo, Fajar, & Rahmawati, 2017). Accordingly, meeting customers' expectations can encourage a positive adoption intention among SMEs. The following hypothesis is developed:

H5. Consumer pressure contributes significantly and is positively related to behavioural intention to adopt social commerce.

3.3.2. Trading partner pressure

To implement Internet-based technologies successfully, readiness of firms' suppliers and business partners is a key factor (Gutierrez et al., 2015). This is due to partner relationships where there are critical determinants of inter-organisational systems adoption (Chau & Tam, 1997; Lin & Lin, 2008). Iacovou, Benbasat, and Dexter (1995) proposed that a powerful supplier could pursue IS strategies to boost its trading partners to adopt and use new technology. Additionally, according to

Simatupang and Sridharan (2005), the greater the expertise the business partner and supplier have, the greater the likelihood businesses will engage in technology adoption. Pressure from trading partners is found to be a significant determinant of the adoption of new innovative technology (Chau & Tam, 1997; Gutierrez et al., 2015; Lin & Lin, 2008; Sila, 2013). From the above research findings, the following hypothesis is developed:

H6. Trading partner pressure contributes significantly and is positively related to behavioural intention to adopt social commerce.

Fig. 1 highlights the proposed conceptual model.

4. Methodology

This study used scale items from the technology adoption literature in order to measure the selected constructs based on the TOE theoretical framework: prevised usefulness (PU) and security concern (SC) are Technology constructs; top management support (TMS) and organisational readiness (OR) are also Organisation constructs; and consumer pressure (CP) and trading partner pressure (TPP) are Environment constructs.

A seven-point scale was used to examine the degree of responses ranging from 'strongly agree' to 'strongly disagree'. To overcome cultural and linguistic differences, the questionnaire was translated into Arabic (Brislin, 1976; Dwivedi, Choudrie, & Brinkman, 2006; Weerakkody, Dwivedi, & Kurunananda, 2009). A pilot study was conducted using 15 questionnaires, which were distributed to SMEs' owners and managers in Saudi Arabia. They were asked to provide feedback in case they faced any difficulties in understanding and answering the questionnaire (Hair, Black, Babin, & Anderson, 2013). After that, the items on the questionnaire were rechecked in terms of length, clarity and language simplicity. This study implemented convenience sampling, which is cost-effective (Dwivedi, Choudrie et al., 2006; Franzosi, 2004), and the results can be generalised more appropriately as it allows for the presence of a variety of SME profiles (Franzosi, 2004). The survey questionnaires were distributed as online web links using the online survey software Qualtrics. The web link was sent to different Saudi Arabian SMEs on LinkedIn as this was the most popular professional social networking site. Qualtrics provides a feature that presents the total number of respondents who started the survey but did not complete it, which was 270. However, the total number of respondents who completed the survey was 181. Accordingly, 181 web-based surveys were suitable for further analysis. Table 1 presents the scale items adopted in the present study to examine the selected constructs.

5. Results

In Table 2, the SMEs demonstrate that 66.3 % of the respondents are employees, 19.9 % business owners and 8.3 % managers. The largest number of the SMEs in the sample have been in the current area of the business for more than 10 years (39.8 %), and 13.3 % for less than two years. As regards the number of employees in the sample, 57.5 % have 2–49 employees, while 42.5 % have 50–200 employees. The main business sector types can thus be categorised: 58.0 % service sector, 25.4 % manufacturing sector and 16.6 % retail/wholesale sector. Moreover, 86.7 % of the SMEs in the sample have a website, the company website of 63.0 % is connected to social media with buttons/icons. while 13.3 % do not have a website.

Descriptive statistics are used to measure the variable items, means and standard deviations. Normality explains the shape of normal distribution of metric variables (Hair et al., 2013; Kline, 2015). In fact, failure to attain normality can cause an invalid statistical test. This study also tested skewness and kurtosis. Skewness refers to the balance of distribution, while kurtosis refers to how peak is the distribution (Tabachnick, Fidell, & Ullman, 2007). When variables have normal distributions, the values of skewness and kurtosis will be zeroes. In addition, positive or negative values show a deviation from normality. The sample size affects the range of values for suitable deviations. In small samples (less than 30), minor deviations can be serious, while in large sample sizes (more than 200), it can be ignored (Hair et al., 2013). The most generally acceptable distribution of critical value for kurtosis and skewness is ± 2.58 (Hair et al., 2013). The results show that skewness and kurtosis fall within the acceptable range.

Reliability assessment examines the degree of internal consistency between measurement items of variables and its freedom of error at any point in time (Kline, 2015). Cronbach's alpha is the most common measure to evaluate reliability (Hair et al., 2013). In this study, the results of the Cronbach's alpha test are presented in Table 3 with the total items used to examine each construct. In fact, all the constructs have highly reliable measures. The values of Cronbach's alpha ranged from 0.895, with behavioural intention as the highest, to 0.817, with security concern as the lowest, in high reliability constructs. All the constructs, therefore, are within high range (Hair, Babin, Money, & Samouel, 2003), all the constructs are suitable for further analysis.

The degree of common method bias was examined using Harman's one-factor test. The test was conducted by including all examined items in a principal components factor analysis (Podsakoff, 2003) using the SPSS 22.0 tool. The common method bias happens when one factor accounts for most of the covariance (Pavlou & Fygenson, 2006). The data does not show evidence of a common method bias because each factor explains roughly equal variance and no single variable is recorded for most of the variances. The beginning set for most of the variances is at 50 % (Podsakoff, 2003). The testified value for the proposed model is a variance of 44.389 %, well within the 50 % mark. As a result, the common method bias is not a concern in this study (Table 4).

5.1. Measurement model

The measurement model was evaluated with the maximum likelihood (ML) valuation techniques, provided in AMOS 22.0. To measure the model fit for the confirmatory factor analysis, the goodness-of-fit indices (GOF) were testified for this study. This includes chi-square, degrees of freedom, normed chi-square, goodness-of-fit index, adjusted goodness-of-fit index, comparative fit index, normed fit index and root mean square error of approximation; each describes the model fit from a different perspective. Table 5 proposes the fit indices for the presented measurement model. GFI, AGFI, CFI, NFI and RAMSEA results are within the accepted measures.

A number of items were correlated to improve the model fit based on modification indices recommendations in AMOS.22. The fit indices for the final measurement model are presented in Table 6. The revised measurement model fits within the acceptable standards (Dwivedi & Williams, 2008; Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019; Shareef, Dwivedi, Kumar, & Kumar, 2017).

All the items' estimate loadings are above the range of 0.50 (Hair et al., 2013), and the standard errors are less than ± 2.5, which is acceptable. Moreover, the critical ratios for all items are more than 1.96, as suggested by Hair et al. (2013). All loadings are in the expected direction and statistically significant (Table 7).

The measurement model results show that all factor loadings are higher than 0.5, the lowest value equal to 0.624. Furthermore, all critical ratios are significantly above the starting point of ± 1.96 ($p < 0.001$). An indication of a good average variance extracted (AVE) starts from the value of 0.5 (Hair et al., 2013). The AVE is above 0.5 for all constructs, representing an adequate convergence ranging from 0.654 to 0.864. A reliability result of 0.70 or more is considered good (Hair et al., 2013). The construct reliability (CR) is above 0.70, ranging from 0.776 to 0.896, demonstrating acceptable reliability (Table 8).

Constructs are expected to have discriminant validity when the correlations of the AVE between any two constructs are more than the

Table 1
Scale items of the selected constructs.

Constructs	Measuring items	Source
Technological characteristics		
Preserved Usefulness	PU1: I would find social commerce useful in my job. PU2: Using social commerce enables me to accomplish tasks more quickly. PU3: Using social commerce increases my productivity. PU4: If I use social commerce, I will increase my chances to raise my income.	Davis and Venkatesh (1996)
Security Concern (SC)	SC1: We believe that there are effective laws to protect consumer privacy. SC2: We believe that there are effective laws to combat cybercrime. SC3: Secure electronic transaction and/or secure electronic commerce environment services are easily available and affordable. SC4: The nature of the business data regularly exchanged requires a secured communication medium.	- SC1, SC2 and SC3 are adopted from Molla and Licker (2005) - SC4 is adopted from Soliman and Janz (2004)
Organisational Characteristics		
Top Management Support (TMS)	TMS1: Our top management is willing to take risks involved in the adoption of social commerce. TMS2: Our top management is likely to consider the implementation of social commerce applications as strategically important. TMS3: According to top managers in our firm, incorporating social commerce practices is a very important way to gain competitive advantage. TMS4: Top managers in our firm keep telling employees that they must bring more of their business practices online in order to meet customers' future needs. TMS5: Top managers often advise employees to keep track of the latest developments in Internet technologies and Internet-related business practices.	- TMS1, TMS2 and TMS3 are adopted from Soliman and Janz (2004) - TMS4 and TMS5 are adopted from Wu et al. (2003)
Organisational Readiness (OR)	OR1: Our organisation has the financial resources to adopt social commerce. OR2: Our organisation has the technological resources to adopt social commerce. OR3: We have high connectivity to the Internet. OR4: Most of our employees have unrestricted access to computers. OR5: Most of our employees are computer literate.	- OR1 and OR2 are adopted from Grandon and Pearson (2004) - OR3, OR4 and OR5 are adopted from Molla and Licker (2005)
Environmental Characteristics		
Consumer Pressure (CP)	CP1: Many of our customers are keen that we should implement social commerce practices. CP2: Our relationship with our major customers would have suffered if we had not implemented social commerce practices. CP3: Our customers may consider us as backward if we do not implement social commerce initiatives. CP4: A majority of our customers demand that we establish strong relationships with them on social media.	- CONP1, CONP2, CONP3 and CONP4 are adopted from Wu et al. (2003)
Trading Partner Pressure (TPP)	TPP1: A majority of our trading partners have requested implementation of social commerce. TPP2: A majority of our trading partners have recommended implementation of social commerce. TPP3: Trading partners are generally very knowledgeable regarding social commerce practices. TPP4: A large number of our suppliers and trading partners have already adopted social commerce practices. TPP5: Our trading partners and suppliers usually set the mode of communication (e.g., fax, e-mail, online collaboration on forums and social media, etc.) TPP6: We depend on other firms that are already using social commerce.	- TPP1, TPP2 and TPP3 are adopted from Lin and Lin (2008) - TPP4 is adopted from Wu et al. (2003) - TPP5 is adopted from Soliman and Janz (2004) - TPP6 is adopted from Grandon and Pearson (2004)
Questioner Items Related to the Dependent Variable		
Behavioural Intention (BI)	BI1: I intend to use social commerce in the future. BI2: I predict that I will use social commerce in the future. BI3: I plan to use social commerce in the future.	Davis and Venkatesh (1996)

squared correlation estimate (Hair et al., 2013). Table 9 displays the square root of the average variance extracted from each of the constructs and the correlations. The results indicate that the value of the square root of the average variance extracted for all the examined constructs is greater than its correlations with all other constructs.

5.2. Structural model and hypothesis testing

The measurement model is converted to the structural model to test the relationships between the hypothesised constructs (Hair et al., 2013). The results present an acceptable level of fit; the chi-square (χ^2 = 236.009) with degrees of freedom (df = 168) specifies a suitable normed chi-square (χ^2/df = 1.405) of less than 3, as suggested by Tabachnick et al. (2007). The other goodness-of-fit indices results are within the accepted measures (Table 10).

The hypotheses are examined through analysing the path estimates by a critical t-value (Hair et al., 2013). The hypotheses testing results indicate that all six examined hypotheses are supported by the data. Table 11 presents the hypothesis testing results.

The squared multiple correlations (R^2) measure statistically how well a regression line estimates the real data points between zero and one, which specifies how good one construct is at predicting another (Hair et al., 2013). Practically, the closer the R^2 value is to one, the better the model's ability to predict that technology (Kline, 2015). The proposed model is able to explain 46 % of the variance of behavioural intention, as presented in Fig. 2.

6. Discussion

This paper empirically examined social commerce adoption by SMEs, using the TOE framework. The related literature was reviewed and a suitable theoretical model based on the TOE framework proposed. Then, the model was examined using structural equation modelling. Six hypotheses were proposed to test the model, all of which were found to be significant.

In the technological context, two hypotheses were examined: H1

Table 2
Respondents' SMEs profile.

Variable	Group	Frequency	Percent
What is your position in the business?	Owner	36	19.9
	Manager	15	8.3
	Employee	120	66.3
	Other	10	5.5
	Total	**181**	**100.0**
What is the length of time of the business in the current area?	Less than 2 years	24	13.3
	2-5 years	47	26.0
	6-10 years	38	21.0
	More than 10 years	72	39.8
	Total	**181**	**100.0**
What is the number of employees in the business?	2–49 employees	104	57.5
	50- 200 employees	77	42.5
	Total	**181**	**100.0**
What is your main business sector type?	Manufacturing	46	25.4
	Retail/wholesale	30	16.6
	Services	105	58.0
	Total	**181**	**100.0**
Does your company have a website?	Yes	157	86.7
	No	24	13.3
	Total	181	100.0
If yes, is your company website connected to social media with buttons/icons?	Yes	115	63.0
	No	42	22.7
	Answered no in the previous question	24	13.3
	Total	**181**	**100.0**

investigated the impact of perceived usefulness (PU) on behaviour intention (BI) to use social commerce by SMEs. The relationship between PU and BI was supported (β = .27, p = .004). Three items were occupied from Davis and Venkatesh (1996) to measure perceived usefulness. PU is considered one of the major predictors of intention to use a form of technology (Davis, 1989). As in most studies, the hypothesis findings provide evidence that PU has a significant influence on BI to adopt social commerce by SMEs. This is consistent with the TAM (Davis, 1989). The findings are also consistent with studies examining the technology adoption context (Abbas & Hamdy, 2015; Elkaseh et al., 2016; Gloria & Achyar, 2018; Jamal & Sharifuddin, 2015; Siamagka et al., 2015; Wang, Pauleen et al., 2016; Yuan et al., 2016). H2 investigated the impact of security concerns (SC) on behaviour intention (BI) to use social commerce by SMEs. The relationship between SC and BI is supported (β = −.21, p = .021). Four items were occupied from Molla and Licker (2005) and Soliman and Janz (2004) to measure security concerns. As in most studies in the technology adoption context, which examined the influence of SC on BI (Clear, 2007; Fillis et al., 2004; Salum & Rozan, 2016; Sahandi et al., 2012; Zhu et al., 2006), the hypothesis findings provide evidence that SC has a significant effect on BI to adopt social commerce by SMEs.

In the organisational context, two hypotheses were investigated: H3 explored the effect of top management support (TMS) on behaviour intention (BI) to use social commerce by SMEs. The relationship between TMS and BI was supported (β = .32, p = .001). Five items were occupied from Soliman and Janz (2004) and from Wu, Mahajan, and Balasubramanian (2003) to measure top management support. This finding is in line with most studies in the technology adoption context, which examined the influence of TMS on BI (Low et al., 2011; Ramdani et al., 2009; Wang et al., 2010). The hypothesis findings provide evidence that TMS has a significant effect on BI to adopt social commerce by SMEs. H4 investigated the effect of organisational readiness (OR) on behaviour intention (BI) to use social commerce by SMEs. The relationship between OR and BI was supported (β = .20, p = .034). Five items were occupied from Soliman and Janz (2004) and Wu et al. (2003) to measure organisational readiness. As with most studies in the technology adoption context (Ramdani et al., 2009; Wang et al., 2010; Low et al., 2011), the hypothesis findings provide evidence that OR has a significant effect on BI to adopt social commerce by SMEs.

In the environmental context, two hypotheses were investigated: H5 explored the effect of consumer pressure (CP) on behaviour intention (BI) to use social commerce by SMEs. The relationship between CP and BI was supported (β = .21, p = .045). Four items were occupied from Wu et al. (2003) to measure consumer pressure. As with most studies in the technology adoption context (Chatzoglou & Chatzoudes, 2016; Kumar et al., 2019; Maduku et al., 2016; Nugroho et al., 2017), the hypothesis findings provide evidence that CP has a significant effect on BI to adopt social commerce by SMEs. H6 explored the effect of trading partner pressure (TPP) on behaviour intention (BI) to use social commerce by SMEs. The relationship between TPP and BI was supported (β = .40, p = .000). Six items were occupied from Lin and Lin (2008); Wu et al. (2003); Soliman and Janz (2004) and Grandon and Pearson (2004) to measure trading partner pressure. As with most studies in the technology adoption context (Chau & Tam, 1997; Gutierrez et al., 2015; Lin & Lin, 2008; Sila, 2013), the hypothesis findings provide evidence that TPP has a significant influence on BI to adopt social commerce by SMEs.

6.1. Theoretical contributions

For researchers, this study provides an important theoretical contribution by investigating the adoption of the innovative modern technology of social commerce by SMEs and utilising the TOE framework. Based on the Tornatzky and Fleischer (1990) framework, our research model investigated the factors affecting the social commerce adoption by SMEs. This was achieved by combining the most critical constructs examined in the literature in each of the three dimensions of the TOE framework, namely, Technology (perceived usefulness and security concern), Organisation (top management support and organisational readiness) and Environment (consumer pressure and treading partner pressure). To the best of our knowledge, this research is one of the first to examine the adoption of social commerce by SMEs, as most studies consider social commerce in the consumer context (Abed, 2016; Akman & Mishra, 2017; Hajli, 2015; Teh & Ahmed, 2012), rather than organisational context. Using empirical data from 181 small firms in Saudi Arabia, we found strong support for our research model, and the three dimensions proposed (Technology-Organisation-Environment) are significant for SMEs adoption. This is one of the first research efforts to provide concrete empirical support for social commerce adoption by small and medium size enterprises.

Table 3
Reliability test for investigated constructs (Cronbach's alpha).

Constructs	Sample	Total Items	Items after Deleting	Cronbach's alpha	Reliability (as per Hair et al., 2003:172)
Perceived Usefulness	181	4	3 (PU2)	.856	High
Security Concern	181	4	3 (SC4)	.817	High
Top Management Support	181	5	3 (TMS4-TMS5)	.863	High
Organisational Readiness	181	5	3 (OR4-OR5)	.880	High
Consumer Pressure	181	4	3 (CONP4)	.843	High
Trading Partner Pressure	181	6	3 (TPP1-TPP5-TPP6)	.823	High
Behavioural Intention	181	3	3	.895	High

Table 4
Common method bias.

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.322	44.389	44.389	9.322	44.389	44.389
2	1.970	9.379	53.768			
3	1.495	7.119	60.888			

Extraction Method: Principal Component Analysis.

Table 5
Chi-square results and GOF indices for the measurement model (first run).

	X^2	df	X^2/df	GFI	AGFI	CFI	NFI	RMSEA
Criteria			3:1	≥0.9	≥0.8	≥0.95	≥0.9	< 0.07
Model GOF	814.940	413	1.973	.780	.736	.891	.803	.074

χ^2: chi-square, df: degrees of freedom, χ^2/df: normed chi-square, GFI: goodness-of-fit index, AGFI: adjust goodness-of-fit index, CFI: comparative fit index, NFI: normed fit index, RMSEA: root mean square error of approximation.

Table 6
Chi-square results and GOF indices for the revised measurement models (second run).

	X^2	df	X^2/df	GFI	AGFI	CFI	NFI	RMSEA
Criteria			3:1	≥0.9	≥0.8	≥0.95	≥0.9	< 0.07
Model GOF	236.009	168	1.405	.892	.852	.969	.901	.047

χ^2: chi-square, df: degrees of freedom, χ^2/df: normed chi-square, GFI: goodness-of-fit index, AGFI: adjust goodness-of-fit index, CFI: comparative fit index, NFI: normed fit index, RMSEA: root mean square error of approximation.

Table 7
Item loadings.

		Estimate	S.E.	C.R.	P-value
PU1	Perceived Usefulness	.861			
PU3	Perceived Usefulness	.823	.090	11.521	***
PU4	Perceived Usefulness	.808	.087	11.437	***
SC1	Security Concern	.810			
SC2	Security Concern	.828	.095	10.747	***
SC3	Security Concern	.689	.089	9.013	***
TMS1	Top Management Support	.781			
TMS2	Top Management Support	.839	.086	11.501	***
TMS3	Top Management Support	.856	.085	11.925	***
OR1	Organisational Readiness	.794			
OR2	Organisational Readiness	.773	.107	9.138	***
OR3	Organisational Readiness	.624	.102	7.761	***
CP1	Consumer Pressure	.847			
CP2	Consumer Pressure	.779	.079	11.351	***
CP3	Consumer Pressure	.768	.080	10.719	***
TPP2	Trading Partner Pressure	.833			
TPP3	Trading Partner Pressure	.725	.084	10.297	***
TPP4	Trading Partner Pressure	.790	.078	11.948	***
BI1	Behavioural Intention	.881			
BI2	Behavioural Intention	.854	.067	14.692	***
BI3	Behavioural Intention	.847	.066	14.683	***

6.2. Implications for practice

This research contributes to the growing literature on social commerce adoption from the business perspective by highlighting that trading partner pressure is the most significant adoption driver of social commerce in the environmental context, followed by top management support in the organisational context, and the perceived usefulness in the technological context. This indicates that although technology and organisational factors have been found to be key drivers for adoption,

Table 8
Validity assessments.

Items	L	CR	AVE	SQRT(AVE)
Perceived Usefulness		0.870	0.822	0.907
PU1	0.861			
PU3	0.823			
PU4	0.808			
Security Concern		0.821	0.736	0.858
SC1	0.810			
SC2	0.828			
SC3	0.689			
Top Management Support		0.865	0.815	0.903
TMS1	0.781			
TMS2	0.839			
TMS3	0.856			
Organisational Readiness		0.776	0.654	0.809
OR1	0.794			
OR2	0.773			
OR3	0.624			
Consumer Pressure		0.841	0.771	0.878
CP1	0.847			
CP2	0.779			
CP3	0.768			
Trading Partner Pressure		0.827	0.746	0.864
TPP2	0.833			
TPP3	0.725			
TPP4	0.790			
Behavioural Intention		0.896	0.864	0.930
BI1	0.881			
BI2	0.854			
BI3	0.847			

Note: CR: composite reliability; L: factor loading; AVE: average variance extracted.

Table 9
Squared pairwise correlation.

	PU	SC	TMS	OR	CONP	BPP	BI
PU	**0.907**						
SC	.334**	**0.858**					
TMS	.504**	.500**	**0.903**				
OR	.491**	.294**	.460**	**0.809**			
CP	.525**	.412**	.528**	.432**	**0.878**		
TPP	.554**	.560**	.612**	.403**	.650**	**0.864**	
BI	.569**	.298**	.572**	.468**	.566**	.616**	**0.930**

Note: Square root of AVE is shown on the diagonal in **bold.**
** Correlation is significant at the 0.01 level (2-tailed).

Table 10
Chi-square results and GOF indices for the structural model.

	X^2	df	X^2/df	GFI	AGFI	CFI	NFI	RMSEA
Criteria			3:1	≥0.9	≥0.8	≥0.95	≥0.9	< 0.07
Model GOF	236.009	168	1.405	.892	.852	.969	.901	.047

χ^2: chi-square, df: degrees of freedom, χ^2/df: normed chi-square, GFI: goodness-of-fit index, AGFI: adjust goodness-of-fit index, CFI: comparative fit index, NFI: normed fit index, RMSEA: root mean square error of approximation.

Table 11
Results of hypotheses testing.

Independent Variable	Dependent Variable	Estimate	S.E.	C.R.	P	Sig.
Perceived Usefulness	Behavioural Intention	.27	.080	2.850	.004	YES
Security Concern	Behavioural Intention	−.21	.088	−2.315	.021	YES
Top Management Support	Behavioural Intention	.32	.080	3.184	.001	YES
Organisational Readiness	Behavioural Intention	.20	.079	2.119	.034	YES
Consumer Pressure	Behavioural Intention	.21	.086	2.005	.045	YES
Treading Partner Pressure	Behavioural Intention	.40	.092	3.373	***	YES

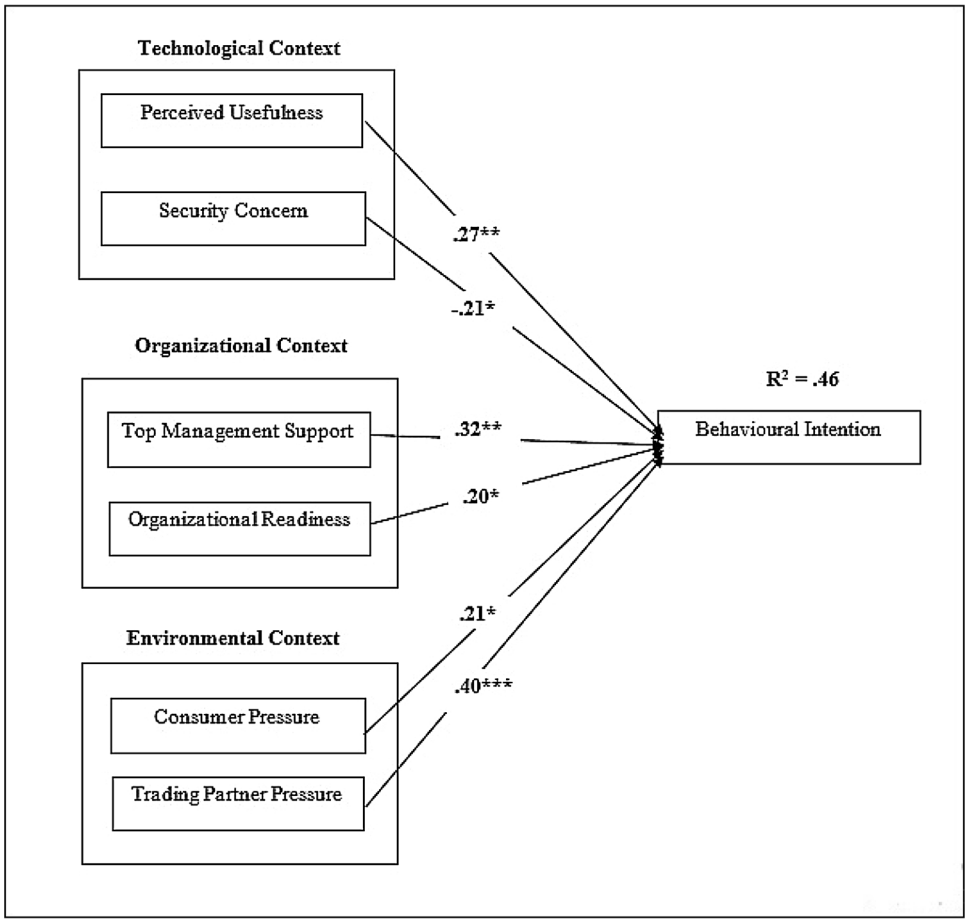

Fig. 2. Structural model with standardised path estimate.

environmental factors are the most significant drivers of social commerce adoption.

The results indicate that all three dimensions are significant drivers of social commerce adoption by SMEs. In the technological context, SMEs need to understand that social commerce is useful to business, helps in completing tasks more quickly, increases productivity, and increases the chance of raising the companies' income. Furthermore, SMEs owners and managers need to realise that there are effective laws to protect consumer privacy; secure electronic transaction services are easily available and affordable, and the nature of the business data requires a secured communication medium.

In the organisational context, SMEs owners and managers should be willing to take risks involved in the adoption of social commerce. They need to consider the implementation of social commerce applications as a key strategy, and to understand that incorporating social commerce practices is a very important approach to gain competitive advantage. SMEs owners and managers need to keep track of the latest developments in Internet technologies and Internet-related business practices. Furthermore, SMEs should make available financial and technological resources to adopt social commerce, have high connectivity to the Internet, and provide their employees with computers.

In the environmental context, SMEs owners and managers should respond to customers' pressure by adopting social commerce practices to have a strong relationship with consumers. Therefore, customers would not consider SMEs as backward if they do not implement social commerce initiatives. Furthermore, SMEs owners and managers need to respond to trading partners' request of implementing social commerce practices, especially if their suppliers and trading partners have already adopted social commerce practices. This is because most trading partners and suppliers usually set the mode of communication (e.g., fax, e-mail, social media, online collaboration on forums).

6.3. Limitations and future research direction

There are some limitations to the current study. First, it is limited in that it examines behavioural intention, rather than actual use. Future research should examine actual usage in the context of social commerce. Second, this study examined SMEs' intention of social

commerce, rather than consumers. Future research could observe consumer adoption of social commerce. Third, the findings of the present study might not be generalisable, as the examined population is in Saudi Arabia. Therefore, future research should explore other populations and cultures. Finally, the study used convenience sample of 181 SMEs. This creates difficulties in generalising to a large population. Future research should examine larger sample size or use random sample.

7. Conclusion

This study aimed to identify factors that affect SMEs' behavioural intention to adopt social commerce. The TOE framework was used as a suitable theoretical foundation for the suggested conceptual model. In order to accomplish the study's aims, a quantitative field survey was conducted using a self-administered questionnaire, which was distributed to obtain data from a convenience sample. The data analysis and results were presented, including the details of the SMEs' respondents in the survey sample, descriptive analysis and normality assumption, reliability assessment, measurement model, validity assessment and common method bias. After that, the hypothesis testing results were carried out. The results from a survey of 181 SMEs indicated that all six examined hypotheses are significant. Specifically, trading partner pressure in the environmental context, followed by top management support in the organisational context, and perceived usefulness in the technological context, has the most significant influence on behavioural intention to use social commerce by SMEs.

Author statement

This letter to inform you that all work for this research was conducted by me, as I am the sole author. This includes conducting the concept, design, analysis, writing, and revising of the manuscript. Furthermore, the author certifies that this material has not been submitted or published in any other publication before its appearance in the international journal of information management (IJEVI).

The author is the only person who have made substantial contributions to the submitted paper in the manuscript. This research have not included Acknowledgements, this is because the author have not received substantial contributions from other non-authors who reviewed the paper.

References

Abbas, H. A., & Hamdy, H. I. (2015). Determinants of continuance intention factor in Kuwait communication market: Case study of Zain-Kuwait. *Computers in Human Behavior, 49*, 648–657.

Abed, S. S. (2016). An empirical examination of factors affecting continuance intention towards social networking sites. September *Conference on e-Business, e-Services and e-Society* (pp. 228–239).

Abed, S. S. (2018). A critical review of empirical research examining SMEs adoption from selected journals. October *Conference on e-Business, e-Services and e-Society* (pp. 577–587).

Abed, S. S., Dwivedi, Y. K., & Williams, M. D. (2016). Social commerce as a business tool in Saudi Arabian SMEs. *International Journal of Indian Culture and Business Management, 13*(1), 1–19.

Abed, S. S., Dwivedi, Y. K., & Williams, M. D. (2017). Social commerce adoption research from the consumer context: A literature review. *International Journal of Business Information Systems, 25*(4), 510–525.

Adam, A. B., Jizat, J. E. B. M., & Nor, M. A. B. M. (2016). Internal factors within entrepreneurs that influence the acceptance and use of social commerce among SMEs in Malaysia. *DeReMa (Development Research of Management): Jurnal Manajemen, 11*(1), 35–45.

Akman, I., & Mishra, A. (2017). Factors influencing consumer intention in social commerce adoption. *Information Technology & People, 30*(2), 356–370.

Ali, W. A., Mukhtar, M., & Mohamed, I. (2019). Validating the factors influencing social commerce adoption in small and medium enterprise in Malaysia. *Indonesian Journal of Electrical Engineering and Computer Science, 17*(1), 440–447.

Alraja, M. N., Khan, S. F., Khashab, B., & Aldaas, R. (2020). Does Facebook commerce enhance SMEs performance? A structural equation analysis of Omani SMEs. *SAGE Open, 10*(1), 2158244019900186.

Awa, H. O., Ukoha, O., & Emecheta, B. C. (2016). Using TOE theoretical framework to study the adoption of ERP solution. *Cogent Business & Management, 3*(1), 1196571.

Baker, J. (2012). *The technology–organization–environment framework. Information systems theory*. New York, NY: Springer231–245.

Barnes, D., Clear, F., Dyerson, R., Harindranath, G., Harris, L., & Rae, A. (2012). Web 2.0 and micro-businesses: An exploratory investigation. *Journal of Small Business and Enterprise Development, 19*(4), 687–711.

Brislin, R. (1976). Comparative research methodology: Cross-cultural studies. *International Journal of Psychology, 11*(3), 215–229.

Casidy, R., Nyadzayo, M., & Mohan, M. (2019). Service innovation and adoption in industrial markets: An SME perspective. *Industrial Marketing Management*.

Cerchione, R., & Esposito, E. (2017). Using knowledge management systems: A taxonomy of SME strategies. *International Journal of Information Management, 37*(1), 1551–1562.

Chatzoglou, P., & Chatzoudes, D. (2016). Factors affecting e-business adoption in SMEs: An empirical research. *Journal of Enterprise Information Management, 29*(3), 327–358.

Chau, P. Y., & Tam, K. Y. (1997). Factors affecting the adoption of open systems: An exploratory study. *MIS Quarterly,* 1–24.

Cheng, C. C., & Shiu, E. C. (2019). How to enhance SMEs customer involvement using social media: The role of Social CRM. *International Small Business Journal, 37*(1), 22–42.

Chwelos, P., Benbasat, I., & Dexter, A. S. (2001). Empirical test of an electronic data interchange adoption model. *Information Systems Research, 12*(3), 304–321.

Clear, F. (2007). SMEs, electronically-mediated working and data security: Cause for concern? *International Journal of Business Science & Applied Management (IJBSAM), 2*(2), 1–20.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly,* 319–340.

Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal of Human-Computer Studies, 45*(1), 19–45.

Derham, R., Cragg, P., & Morrish, S. (2011). Creating value: An SME and social media. *PACIS, 53*, 1–9.

Dwivedi, Y. K., & Williams, M. D. (2008). Demographic influence on UK citizens' e-government adoption. *Electronic Government, an International Journal, 5*(3), 261–274.

Dwivedi, Y. K., Rana, N. P., Janssen, M., Lal, B., Williams, M. D., & Clement, M. (2017). An empirical validation of a unified model of electronic government adoption (UMEGA). *Government Information Quarterly, 34*(2), 211–230.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers, 21*(3), 719–734.

Dwivedi, Y. K., Choudrie, J., & Brinkman, W. P. (2006). Development of a survey instrument to examine consumer adoption of broadband. *Industrial Management and Data Systems, 106*(5), 700–718 2006.

Ebrahimi, P., Ahmadi, M., Gholampour, A., & Alipour, H. (2019). CRM performance and development of media entrepreneurship in digital, social media and mobile commerce. *International Journal of Emerging Markets*.

Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: A structural equation modeling analysis. *International Journal of Information and Education Technology, 6*(3), 192.

Fathian, M., Akhavan, P., & Hoorali, M. (2008). E-readiness assessment of non-profit ICT SMEs in a developing country: The case of Iran. *Technovation, 28*(9), 578–590.

Fillis, I., Johannson, U., & Wagner, B. (2004). Factors impacting on e-business adoption and development in the smaller firm. *International Journal of Entrepreneurial Behavior & Research, 10*(3), 178–191.

Franzosi, R. (2004). *From words to numbers: Narrative, data, and social science.* Cambridge University Press22.

Ghezzi, A., Gastaldi, L., Lettieri, E., Martini, A., & Corso, M. (2016). A role for startups in unleashing the disruptive power of social media. *International Journal of Information Management, 36*(6), 1152–1159.

Gloria, T. V., & Achyar, A. (2018). Effects of externalities and flow on perceived usefulness, satisfaction, and loyalty in mobile instant messaging promotion. *ASEAN Marketing Journal,* 96–110.

Grandon, E. E., & Pearson, J. M. (2004). Electronic commerce adoption: An empirical study of small and medium US businesses. *Information & Management, 42*(1), 197–216.

Grant, K., Edgar, D., Sukumar, A., & Meyer, M. (2014). 'Risky business': Perceptions of e-business risk by UK small and medium sized enterprises (SMEs). *International Journal of Information Management, 34*(2), 99–122.

Gray, C. (2017). *Stage models of ICT adoption in small firms. Impact of E-Commerce on consumers and small firms*. Routledge3–20.

Grover, V., & Goslar, M. D. (1993). The initiation, adoption, and implementation of telecommunications technologies in US organizations. *Journal of Management Information Systems, 10*(1), 141–164.

Guha, S., Harrigan, P., & Soutar, G. (2018). Linking social media to customer relationship management (CRM): A qualitative study on SMEs. *Journal of Small Business & Entrepreneurship, 30*(3), 193–214.

Gunasekaran, A., McGaughey, R. E., Ngai, E. W., & Rai, B. K. (2009). E-procurement adoption in the southcoast SMEs. *International Journal of Production Economics, 122*(1), 161–175.

Gutierrez, A., Boukrami, E., & Lumsden, R. (2015). Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of Enterprise Information Management, 28*(6), 788–807.

Hair, J. F., Babin, B., Money, A. H., & Samouel, P. (2003). *Essentials of business research methods.* New Jersey, USA: John Wiley & Sons Inc.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2013). *Multivariate Data Analysis. Pearson New International Edition.* Pearson Higher Ed.

Hajli, N. (2015). Social commerce constructs and consumer's intention to buy. *International Journal of Information Management, 35*(2), 183–191.
Han, S., Min, J., & Lee, H. (2016). Building relationships within corporate SNS accounts through social presence formation. *International Journal of Information Management, 36*(6), 945–962.
Hawkins, K., & Vel, P. (2013). Attitudinal loyalty, behavioural loyalty and social media: An introspection. *The Marketing Review, 13*(2), 125–141.
Iacovou, C. L., Benbasat, I., & Dexter, A. S. (1995). Electronic data interchange and small organizations: Adoption and impact of technology. *MIS Quarterly,* 465–485.
Jamal, A., & Sharifuddin, J. (2015). Perceived value and perceived usefulness of Halal labeling: The role of religion and culture. *Journal of Business Research, 68*(5), 933–941.
Jambulingamis, M., Sumathi, C., & Rajagopal, G. R. (2015). Barriers of venturing into Facebook commerce among SMEs. *The Journal of Internet Banking and Commerce*.
Jeyaraj, A., Rottman, J. W., & Lacity, M. C. (2006). A review of the predictors, linkages, and biases in IT innovation adoption research. *Journal of Information Technology, 21*(1), 1–23.
Kapoor, K. K., Dwivedi, Y. K., & Williams, M. D. (2014). Innovation adoption attributes: A review and synthesis of research findings. *European Journal of Innovation Management, 17*(3), 327–348.
Kline, R. B. (2015). *Principles and practice of structural equation modeling.* Guilford Publications.
Kumar, D., Fenn, C. J., & Normala, S. G. (2019). Technology disruption and business performance in SMEs. *Religación. Revista de Ciencias Sociales y Humanidades, 4*(17).
Lin, H. F., & Lin, S. M. (2008). Determinants of e-business diffusion: A test of the technology diffusion perspective. *Technovation, 28*(3), 135–145.
Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems, 111*(7), 1006–1023.
Maduku, D. K., Mpinganjira, M., & Duh, H. (2016). Understanding mobile marketing adoption intention by South African SMEs: A multi-perspective framework. *International Journal of Information Management, 36*(5), 711–723.
Mamorobela, S., & Buckley, S. (2018). Evaluating the effectiveness of social media on knowledge management systems for SMEs. September *European Conference on Knowledge Management* (pp. 1064–1072).
McCann, M., & Barlow, A. (2015). Use and measurement of social media for SMEs. *Journal of Small Business and Enterprise Development, 22*(2), 273–287.
Meske, C., & Stieglitz, S. (2013). Adoption and use of social media in small and medium-sized enterprises. June *Working Conference on Practice-Driven Research on Enterprise Transformation* (pp. 61–75).
Michaelidou, N., Siamagka, N. T., & Christodoulides, G. (2011). Usage, barriers and measurement of social media marketing: An exploratory investigation of small and medium B2B brands. *Industrial Marketing Management, 40*(7), 1153–1159.
Molla, A., & Licker, P. S. (2005). Ecommerce adoption in developing countries: A model and instrument. *Information and Management, 42*, 877–899.
Nugroho, M. A., Susilo, A. Z., Fajar, M. A., & Rahmawati, D. (2017). Exploratory study of SMEs technology adoption readiness factors. *Procedia Computer Science, 124*, 329–336.
Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. *Electronic Journal of Information Systems Evaluation, 14*(1), 110.
Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly,* 115–143.
Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903.
Puklavec, B., Oliveira, T., & Popovič, A. (2018). Understanding the determinants of business intelligence system adoption stages: An empirical study of SMEs. *Industrial Management & Data Systems, 118*(1), 236–261.
Radcliffe, D., & Bruni, P. (2018). *State of social media, Middle East: 2018.* Middle Easthttps://doi.org/10.7264/ft8n-w076.
Ramdani, B., Kawalek, P., & Lorenzo, O. (2009). Predicting SMEs' adoption of enterprise systems. *Management, 22*(1/2), 10–24.
Rana, N. P., Barnard, D. J., Baabdullah, A. M., Rees, D., & Roderick, S. (2019). Exploring barriers of m-commerce adoption in SMEs in the UK: Developing a framework using ISM. *International Journal of Information Management, 44*, 141–153.
Rana, N. P., Dwivedi, Y. K., & Williams, M. D. (2013). Evaluating alternative theoretical models for examining citizen centric adoption of e-government. Transforming Government: People. *Process and Policy, 7*(1), 27–49.
Rogers, E. M. (1995). *The diffusion of innovations* (4th edition). New York: Free Press.
Rowe, F., Truex, D., & Huynh, M. Q. (2012). An empirical study of determinants of e-commerce adoption in SMEs in Vietnam: An economy in transition. *Journal of Global Information Management (JGIM), 20*(3), 23–54.
Sahandi, R., Alkhalil, A., & Opara-Martins, J. (2012). SMEs' perception of cloud computing: Potential and security. October *Working Conference on Virtual Enterprises* (pp. 186–195).
Salum, K. H., & Rozan, M. Z. A. (2016). Exploring the challenge impacted SMEs to adopt cloud ERP. *Indian Journal of Science and Technology, 9*(45).
Scupola, A. (2003). The adoption of Internet commerce by SMEs in the south of Italy: An environmental, technological and organizational perspective. *Journal of Global Information Technology Management, 6*(1), 52–71.
Senarathna, I., Wilkin, C., Warren, M., Yeoh, W., & Salzman, S. (2018). Factors that influence adoption of cloud computing: An empirical study of Australian SMEs. *Australasian Journal of Information Systems,* 22.
Shareef, M. A., Dwivedi, Y. K., Kumar, V., & Kumar, U. (2017). Content design of advertisement for consumer exposure: Mobile marketing through short messaging service. *International Journal of Information Management, 37*(4), 257–268.
Sharma, S., Singh, G., & Aiyub, A. S. (2020). Use of social networking sites by SMEs to engage with their customers: A developing country perspective. *Journal of Internet Commerce, 19*(1), 62–81.
Siamagka, N. T., Christodoulides, G., Michaelidou, N., & Valvi, A. (2015). Determinants of social media adoption by B2B organizations. *Industrial Marketing Management, 51*, 89–99.
Sila, I. (2013). Factors affecting the adoption of B2B e-commerce technologies. *Electronic Commerce Research, 13*(2), 199–236.
Simatupang, T. M., & Sridharan, R. (2005). An integrative framework for supply chain collaboration. *The International Journal of Logistics Management, 16*(2), 257–274.
Soliman, K. S., & Janz, B. D. (2004). An exploratory study to identify the critical factors affecting the decision to establish Internet-based interorganizational information systems. *Information & Management, 41*(6), 697–706.
Sparling, L., Toleman, M., & Cater-Steel, A. (2007). SME adoption of e-commerce in the Central Okanagan region of Canada. *ACIS 2007 Proceedings,* 95.
Stephen, A. T., & Toubia, O. (2010). Deriving value from social commerce networks. *Journal of Marketing Research, 47*(2), 215–228.
Stockdale, R., Ahmed, A., & Scheepers, H. (2012). Identifying business value from the use of social media: An SME perspective. July *PACIS,* 169.
Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics*, *Vol. 5*. Boston, MA: Pearson.
Talukder, M., Quazi, A., & Djatikusumol, D. (2020). *Social media and SMEs: A study of drivers of adoption of innovation in organizational setting. Disruptive technology: Concepts, methodologies, tools, and applications*. IGI Global878–908.
Taylor, P. (2019). Information and Communication Technology (ICT) adoption by small and medium enterprises in developing countries: The effects of leader, organizational and market environment factors. *International Journal of Economics, Commerce and Management United Kingdom, 7*(5).
Teh, P. L., & Ahmed, P. K. (2012). Understanding social commerce adoption: An extension of the Technology Acceptance Model. June *2012 IEEE International Conference on Management of Innovation & Technology (ICMIT)* (pp. 359–364).
Thong, J. Y. (1999). An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems, 15*(4), 187–214.
Tornatzky, L., & Fleischer, M. (1990). *The process of technology innovation.* Lexington, MA: Lexington Books.
Vongsraluang, N., & Bhatiasevi, V. (2017). The determinants of social commerce system success for SMEs in Thailand. *Information Development, 33*(1), 80–96.
Wamba, S. F., & Carter, L. (2013). Twitter adoption and use by SMEs: An empirical study. January *2013 46th Hawaii International Conference on System Sciences* (pp. 2042–2049).
Wamba, S. F., & Carter, L. (2016). *Social media tools adoption and use by SMEs: An empirical study. Social media and networking: Concepts, methodologies, tools, and applications*. IGI Global791–806.
Wang, Y. M., Wang, Y. S., & Yang, Y. F. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. *Technological Forecasting and Social Change, 77*(5), 803–815.
Wang, W. Y., Pauleen, D. J., & Zhang, T. (2016). How social media applications affect B2B communication and improve business performance in SMEs. *Industrial Marketing Management, 54*, 4–14.
Weerakkody, V., Dwivedi, Y. K., & Kurunananda, A. (2009). Implementing e-government in Sri Lanka: Lessons from the UK. *Information Technology for Development, 15*(3), 171–192.
Wu, F., Mahajan, V., & Balasubramanian, S. (2003). An analysis of e-business adoption and its impact on business performance. *Journal of the Academy of Marketing Science, 31*(4), 425–447.
Yen, T. T. B., Le, B. M., & Tran, T. H. (2019). Analyzing the barriers to innovation development in emerging economies: Vietnamese small and medium enterprises (SMEs) as an empirical case. *Asian Economic and Financial Review, 9*(1), 64.
Yuan, D., Lin, Z., & Zhuo, R. (2016). What drives consumer knowledge sharing in online travel communities? Personal attributes or e-service factors? *Computers in Human Behavior, 63*, 68–74.
Zhu, K., Dong, S., Xu, S. X., & Kraemer, K. L. (2006). Innovation diffusion in global contexts: Determinants of post-adoption digital transformation of European companies. *European Journal of Information Systems, 15*(6), 601–616.