



Moderating Effect of Innovativeness on Attitudes Toward E-Commerce Adoption by Small and Medium Enterprises in Kuwait

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ABSTRACT

Many studies indicated that technological, organizational, and environmental organizational predictors as the key determinants for attitudes toward the adoption of E-commerce. However, a few studies focus on the innovativeness of these relationships. This study focuses on the moderating effect of innovativeness on the relationship between attitude toward the adoption of E-commerce and its determinants. Data were collected from 259 SME owners/managers through a self-administered questionnaire, and structural equation modeling was used to analyze the data. The results identified perceived relative advantage, compatibility, complexity, organizational readiness, IT knowledge, competitive pressure, and supplier and customer pressure as important drivers of managers' attitudes toward E-commerce adoption. Furthermore, the findings indicated a stronger positive relationship between compatibility, competitive pressure, and attitude for managers with high innovativeness as opposed to low levels of innovativeness. These results supported the view that innovativeness can shape managers' attitudes toward E-commerce adoption. The results will help SME owners/managers to plan and promote E-commerce adoption and grow their businesses. Governments can use the results of this research to develop more focused policies to encourage more favourable E-commerce adoption attitudes among managers of SMEs.

JEL Classification: M15, M16

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INTRODUCTION

Nowadays, customers are increasingly dependent on the E-commerce platform for their basic survival needs due to the unavailability of products and services in various outlets and stores, especially during the COVID-19 pandemic worldwide (Donthu and Gustafsson, 2020). Small and medium-sized enterprises (SMEs) can later transform this development in customer behaviour and expand their technical capabilities to adopt E-commerce technology. E-commerce provides several advantages for SMEs such as improvement in product and service delivery, reduction of costs, and time-saving (Al-Alawi and Al-Ali, 2015). However, the effectiveness of the E-commerce system might be implemented successfully from a technical perspective but success depends on the attitudes of owners/managers (Ahmad et al., 2015; Hamad et al., 2018).

Previous research indicated that increasing awareness of the benefits of E-commerce, compatibility system, knowledge, innovativeness, and other resources are effective means of bringing more favourable managers' attitudes toward E-commerce and its adoption (Ahmed et al., 2015; Mohtaramzadeh et al., 2017; Ramayah et al., 2016). Other researchers have widely focused on understanding the factors that lead to positive or negative attitudes toward technology is important because it helps the management in implementing new technology with less attrition (Al-Hujran et al., 2015; John, 2015; Sinha and Verma, 2018; Silva et al., 2019).

Furthermore, it should be noted that the findings of previous research conducted in developed nations cannot necessarily be extrapolated or applied to developing nations. This is primarily because developing nations face various obstacles, such as internet connectivity issues, concerns regarding trust, and security issues about online payment systems, which hinder the widespread adoption of E-commerce (Hendricks and Mwapwele, 2023). Koe and Sakir (2020) assert that the outcomes of E-commerce adoption in advanced nations merely pertain to themselves and cannot be extended to encompass developing nations due to divergence in their contexts. Nevertheless, despite these aforementioned obstacles, the principal aim of this particular investigation was to gain a comprehensive understanding of the factors that influence and shape the attitude of SMEs in developing regions, notably in Kuwait, towards the adoption of E-commerce, thereby bridging the existing knowledge gap.

The situation outlined above is the reason for this study to investigate those factors that influence SMEs in developing countries to adopt E-commerce. In this regard, Kuwait was chosen as the place in which the research was conducted. Firstly, Kuwait is one of the developing countries in Asia and is an oil resource-rich country where the oil and gas sector offers about 40% of GDP and about 92% of export revenues (OPEC, 2019). Therefore, Kuwait might reflect other oil production countries in the world, particularly in the Arbiac region. Like any other country in the world, SMEs form over 90% of all businesses in Kuwait. Despite the attention and significant effort and investment from the Kuwait government to promote technology use, the attitude of SMEs towards E-commerce adoption is generally low, with many SMEs still using conventional methods to sell goods and services. However, as commonly found in most developing countries, the adoption of E-commerce by Kuwait SMEs is still lagging when compared to SMEs in developed countries.

In innovation research, empirical results on the association between the attributes of innovations and attitude toward E-commerce and its adoption are often contradictory (Boateng et al., 2016; Mohtaramzadeh et al., 2017; Yousafzai and Yani-de-Soriano, 2012). Moreover, some studies suggested that the relationship between attitude toward technology adoption and its determinants is also influenced by inherent features of individuals such as innovativeness (Boateng et al., 2016; Jang and Lee, 2018; Vagnani et al., 2019). We must note that although extant empirical studies on the main effect of the attributes of innovations on E-commerce adoption, we found only a few studies that tested the moderation effects of the innovativeness of managers on the attributes of innovations-adoption decisions linkage in organizations (Grandón and Ramírez-Correa, 2018).

Consequently, the present research seeks to respond to recommendations for more comprehensive research to investigate the moderating effect of innovativeness on the factors influencing attitudes toward E-commerce adoption (Herrero Crespo et al., 2008; Vagnani et al., 2019). One contribution of our paper therefore already lies in focusing on the the moderating effect of innovativeness on the relationship between technological, organizational, and environmental factors on the attitude toward E-commerce adoption in SMEs. To accomplish this goal, the present study tries to offer answers to the two following research questions.

1. What factors influence the attitude of SMEs towards E-commerce adoption by SMEs in Kuwait?
2. Does the innovativeness of the owner/manager moderate the relationship between the influencing factors and attitude of SMEs towards E-commerce adoption by SMEs in Kuwait

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

TAM has also been proven successful in predicting the attitude toward various fields of technologies such as t-commerce (Yu et al., 2005), E-commerce (To and Ngai, 2007), virtual try-on (Kim and Forsyth, 2008), ERP systems (Escobar-Rodriguez and Bartual-Sopena, 2013), E-marketing (Kanchanatane et al., 2014), e-government adoption (Al-Hujran et al., 2015), m-advertising (Jiménez and San-Martín, 2017), telework (Silva et al., 2019), and m-wallet (Singh et al., 2020). The TAM seems to be particularly well-fitted to be used as the theoretical base for studying the influence of technological attributes and organizational resources on decision-makers attitudes toward a particular technology (Silva et al., 2019; Venkatesh et al., 2008). Table 1 summarizes prior literature on the attitude toward innovation.

Table 1 Review of prior literature on the attitude towards innovation adoption

Study	Year	County	Theory Used	Dependent variable	Independent variables
Yu et al.	2005	Korea	TAM	Attitude toward t-commerce	-Perceived ease of use -Perceived usefulness, -Perceived enjoyment -Trust, attitude -subjective norm
To and Ngai	2007	Hong Kong	DOI	Attitude toward E-commerce adoption	-Relative advantage -Compatibility -Competitive pressure
Talukder and Gido Mapunda	2008	Australia	TAM, TRA	Attitude toward innovation; Individual adoption of innovation	-Training -Managerial support -Incentives -Perceived usefulness -Personal innovativeness -Prior experience -Image -Enjoyment of innovation -Peers -Social network
Escobar-Rodriguez and Bartual-Sopena Kanchanatane et al.	2013	Spain	TAM	Attitude towards using ERP systems	-Prior experience with IT -User' age -Training Support
Al-Jabri and Roztocki	2014	Thailand	TAM DOI	Attitude towards E-marketing	-Perceived usefulness -Compatibility -Perceived information transparency -Perceived ease of use - Perceived usefulness
John	2014	Saudi Arabia	TAM	Attitude toward system use; Symbolic adoption	-Perceived ease of use -Compatibility -Computer self-efficiency -Computer experience
Al-Hujran et al.	2015	New Zealand	TAM DOI	Attitude towards IT adoption	-Perceived ease of use -Perceived public value
Jiménez and San-Martín	2015	Jordan	TAM	Attitude toward e-government adoption and use	-Propensity to use technology -Perceived control -Social influence -Compatibility -Country of the mobile shopper
Williams et al.	2017	Spain and Mexico	Theory of shopping preference	Attitude toward m-advertising	- Performance - Expectancy - Effort Expectancy - Social Influence - Facilitating - Conditions - Anxiety
Sinha and Verma	2016	India	UTAUT	Attitude toward e-government systems	- Relative advantage - Trialability - Compatibility - Perceived risk - Complexity
Silva et al.	2018	India	DOI	Attitude towards adoption of mobile application	- Compatibility - Self-efficacy - Anxiety - Importance of work - Subjective norm - Experience
Silva et al.	2019	Colombia	TAM	Attitude toward telework	- Compatibility - Self-efficacy - Anxiety - Importance of work - Subjective norm - Experience

The determinants of attitude toward innovation can be classified into four categories: individual, technological, organizational, and environmental factors (John, 2015; Talukderi et al., 2008). Individual factors include demographic characteristics, personal innovativeness, knowledge, prior experience, and personal values that influence the attitude toward innovation adoption (Escobar-Rodriguez and Bartual-Sopena, 2013; Jiménez and San-Martín, 2017; Talukderi et al., 2008). Technological such as relative advantage, compatibility, and complexity can play a significant role in forming a positive attitude toward the adoption of technology (Al-Jabri and Roztocki, 2014; Kanchanatane et al., 2014; Kim and Forsyth, 2008; Silva et al., 2019; Sinha and Verma, 2018; Vagnani et al., 2019; Vagnani and Volpe, 2017). Organizational factors including managerial support and organizational culture have a positive association with attitude toward the adoption of technology (Mohtaramzadeh et al., 2017; Talukderi et al., 2008). Environmental factors affect the way organizations conduct their business such as customer and supplier pressure, among others (To and Ngai, 2007). Figure 1 shows a research model and sheds light on the influence of technology, organizational, and environmental variables on the attitude toward E-commerce adoption.

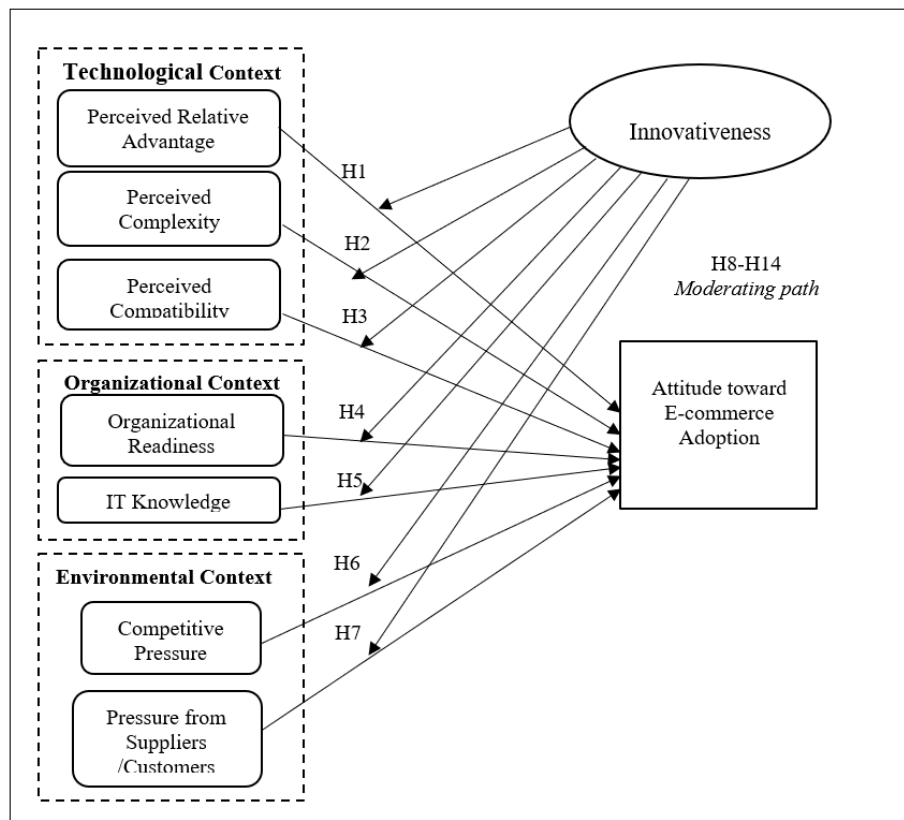


Figure 1 Research model

Perceived Relative Advantage

The perceived advantages of E-commerce systems can be productivity enhancement, reliable connection quality improvement, and simplification of function (Ahmad et al., 2015; Wanyoike et al., 2012). The relative advantage tends to positively influence the managers' attitude toward using the technology (Yeap et al., 2016). Specifically, the higher the relative advantage recognized by individuals the higher the possibility that they will adopt the innovation (Sinha and Verma, 2018). Hence, the following hypothesis was derived:

H1: Perceived relative advantages positively affect the attitude

Perceived Compatibility

Previous studies identified compatibility as an important antecedent of the attitude toward using the system (John, 2015; Jiménez and San-Martín, 2017; Sinha and Verma, 2018). Silva et al. (2019) suggest that compatibility is associated with the relative advantage of technology use, which is related to the attitude of managers toward telework. Thus, it can be said that when E-commerce technology shows compatibility with a firm's culture and technology

infrastructure, may managers develop a positive attitude toward its adoption. Hence, the following hypothesis was derived:

H2: Compatibility positively affects the attitude

Perceived Complexity

Managers have not embraced e-commerce technology when they realize the difficulty of implementing it and the need for many efforts to use it (AlBar and Hoque, 2017; Ekong et al., 2012). Researchers about complexity agree that perceived complexity leads to resistance to the adoption of technology (Rogers, 2003; Yeap et al., 2016). Likewise, some argued that perceived complexity discourages innovation, which in turn reduces the attitude of the decision-maker regarding its adoption in the organization (Vagnani et al, 2019). Hence, the following hypothesis was derived:

H3: Complexity negatively affects the attitude

Organizational Readiness

Organizational readiness measures the availability of the organization's financial resources and technical capabilities which are required if the enterprise needs to make the E-commerce system (Mahroeian, 2012). Organizational readiness can contribute to a positive manager attitude and provide expectations of an acceptable level for approval (Chong et al., 2009). When an organization has a higher level of financial and technical resources, the manager is more likely to develop a positive attitude toward the use of technology (Šebjan et al., 2016). Hence, the following hypothesis was derived:

H4: Organizational readiness positively affects the attitude

IT Knowledge

Knowledge of IT refers to a set of knowledge, skills, and abilities specific to uses, whether from internal IT or non-IT entities (Ramayah et al., 2016). Managers with more IT knowledge can gain and learn more about technology and increase their willingness to adopt innovation (Escobar-Rodriguez and Bartual-Sopena, 2013). Specifically, the higher the IT knowledge of the managers, the higher the attitude toward E-commerce adoption. Hence, the following hypothesis was derived:

H5: IT knowledge positively affects the attitude

Competitive Pressure

Previous studies show that when an owner/manager realizes that more firms in the industry are adopting the E-commerce system, they have a higher possibility of accepting it (AlBar and Hoque, 2017; Ahmad et al., 2015). Chong et al. (2009) and To and Ngai (2007) suggested that the increased pressure of competition would enhance the decision of the firm to adopt an E-commerce system. Thus, the higher the pressure from the competition of business seen by the SMEs' managers, they are likely to develop a positive attitude toward the adoption of E-commerce technology. Hence, the following hypothesis was derived:

H6: Competitive pressure positively affects the attitude

Pressure from Suppliers/Customers

The pressure from suppliers/customers is defined as the degree of pressure from suppliers/customers perceived by SMEs to adopt a particular kind of technology (Rahayua and Day, 2015). Huy et al. (2012) showed that the readiness of customers and suppliers to conduct business will likely influence SMEs' adoption of E-commerce. When owners/managers have a high perception of pressure from customers, they may tend to adopt E-commerce. As such, owners/managers will strive to embrace E-commerce services to meet the requirements of suppliers and customers. Hence, the following hypothesis was derived:

H7: Pressure from suppliers and customers positively affects the attitude

The moderating influence of innovativeness

Innovativeness is related to the individual's attitude toward new ideas and innovative decisions regardless of the experience of others (Herrero Crespo et al., 2008; Talukder et al., 2008). Yousafzai and Yani-de-Soriano (2012) suggested that innovativeness impacts the perceived ease of use toward the intention to embrace online banking services. Grandón and Ramírez-Correa (2018) showed that low-level innovators believe that E-commerce is neither secure nor suited to the tool the company operates with and is too complex to implement and thus negatively affects their attitude toward its adoption. Personal innovativeness can be considered a moderator of the relationship between technology attributes and attitudes toward innovation (Jang and Lee, 2018; Kim and Forsyth, 2008). Thus, innovativeness has different effects on the level of a manager's attitude toward E-commerce adoption. Table 2 summarizes the prior literature on the moderating influence of innovativeness.

Table 2 Review of prior literature on the moderating influence of innovativeness

Source & of study	Year	County	Theory Used	Dependent variable	Key finding
Herrero Crespo et al.	2008	Spain	TPB	Intention to use electronic commerce.	Innovativeness-attitude proved stronger in more innovative individuals than in less innovative individuals
Kim and Forsyth	2008	USA	TAM	Adoption of Virtual Try-on	Innovativeness had significant moderating effects on the relationship between attitude and use of Virtual Try-on technology
Yousafzai and Yani-de-Soriano	2012	UK	TAM	Intention to adopt Internet banking	The link between perceived ease of use, perceived usefulness, and the intention to adopt Internet banking with a high level of innovativeness
Borrero et al.	2014	Spain	UTAUT	Intention to use social network sites	User's innovativeness significantly moderate social and psychological factors.
Boateng et al.	2016	Australia	-	Attitudes towards mobile advertising	Innovative individuals have the potential for reducing the negative effect of irritation on attitudes towards mobile advertising
Mohtaramzadeh et al.	2017	Iran	TOE	Business-to-Business E-commerce adoption	Organizational culture (innovativeness) was found to negatively moderate the relationship between top management support and E-commerce adoption
Grandón and Ramírez-Correa	2018	Chile	TPB	Intention to use E-commerce	Less innovative managers/owners do not take into account the drivers of e-commerce adoption and more innovative managers/owners do not take into account the obstacles of e-commerce adoption.
Jang and Lee	2018	Korea	TAM	Attitudes toward location-based services technologies	Personal innovativeness moderates the relationship between reputation, trust, entertainment, and user attitudes.
Singh et al.	2020	India	UTAUT	Perceived satisfaction with the mobile wallet	Innovativeness moderates perceived satisfaction on user's recommendations,

It has been suggested that innovativeness is critical to gaining insights into individuals' attitudes toward technology adoption (Herrero Crespo et al., 2008; Jang and Lee, 2018; Kim and Sandra, 2008). Mohtaramzadeh et al. (2017) have shown that organizations with innovative managers are more inclined to adopt an integrated E-commerce system. Herrero Crespo et al. (2008) argued that the more innovative individuals are in the area of new technology, the more likely they are to have a positive attitude toward E-commerce. Boateng et al (2016) have argued that innovation is critical to gaining insight into individuals' attitudes toward the use of technical innovation or the application of E-commerce because it can lead to acceptance of new technology developments that could enhance adherence to it. This means that individuals with a high level of innovativeness are inclined to adopt innovation and can be expected to develop more positive perceptions than individuals with a low level of innovativeness (Singh et al., 2020).

As such managers with "high innovativeness" and "low innovativeness" have different effects on the drivers and obstacles of managers' attitudes toward E-commerce (Grandón and Ramírez-Correa, 2018). A meta-analysis by

Vagnani et al. (2019) argued the effect of the traits of innovations (compatibility, complexity, and comparative advantage) on behavioural preferences and the attitude of decision-makers depending on the stage of the innovation life cycle in which the adoption decision is made. Hence, the following hypotheses were derived:

H8: Innovativeness moderates the relationship between perceived relative advantage and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness

H9: Innovativeness moderates the relationship between perceived compatibility and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

H10: Innovativeness moderates the relationship between perceived complexity and attitude. Specifically, this relationship is weaker (i.e. less negative) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

H11: Innovativeness moderates the relationship between organizational readiness and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

H12: Innovativeness moderates the relationship between IT knowledge and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

H13: Innovativeness moderates the relationship between competitive pressure and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

H14: Innovativeness moderates the relationship between pressure from suppliers/ customers and attitude. Specifically, this relationship is stronger (i.e. more positive) for managers/owners with high innovativeness than for managers/owners with low innovativeness.

RESEARCH METHODOLOGY

Population, Sample, and Data Collection

The intended population was the small and medium enterprises in the service, manufacturing, construction, agriculture, and wholesale and retail sectors in Kuwait in 2019 when the data were collected. These mainly included the managers, owners, and CEOs of SMEs who had the ultimate decision-making authority on matters related to E-commerce. To obtain accurate subjects for the study and also due to other limitations in obtaining random data, the data were collected through a purposeful sampling method. Purposeful sampling is a method used in research to select information-rich cases related to the phenomenon of interest. It involves the deliberate selection of participants based on specific criteria to provide in-depth and valuable insights for the study (Naderifar et al., 2017). Thus, this method was used to reach rights owners/managers who possessed relevant experience with E-commerce adoption and who had sufficient time and were willing to participate. The list of SMEs and their locations are obtained from the website of the Chamber of Commerce and Industry in Kuwait. A total of 272 responses were obtained from SMEs using the Google Drive app and face-to-face, out of which 259 responses were usable. Out of the 259 sample respondents that were obtained, most of the SMEs (42.1%) were service businesses. About 52.1 percent of the respondents have bachelor's degrees.

Measurements

The perceived relative advantage was measured using the 5 items developed by Wanyoike et al. (2012) and Ifinedo (2011). Five items to measure compatibility (Ekong et al., 2012; Ifinedo, 2011; Wanyoike et al., 2012), three items for complexity (Ekong et al., 2012; AlBar and Hoque, 2017), four items for organizational readiness (Kurnia et al., 2015), four items for IT (Ekong et al., 2012; Garg and Choeu, 2015), four items for competitive pressure (Garg and Choeu, 2015; AlBar and Hoque, 2017), four items for the pressure from suppliers/customers (Ekong et al., 2012; Huy et al., 2012), and four items for attitude (Al-Jabri and Roztock, 2014).

Data Analysis Method

The data analysis for the study was carried out using SPSS version 22 and the partial least squares path modeling (PLS-SEM) technique version 3.2.7. Before PLS-SEM analysis, the descriptive statistics, inter-correlations score, and collinearity were examined. Based on the results, it show that all variables' mean scores exceeded the mid-point of 2.5 except the complexity. Further, all the VIF values are less than 4.00 indicating that data for this study are free from the multicollinearity issue (Garson, 2016). Next, we performed data analysis following a two-stage methodology using SmartPLS 3.2.7 involves (a) assessment of the measurement model, including the individual reliability to confirm loading items, composite reliability (CR) to assess internal consistency, and average variance extracted (AVE) to assess convergent validity, and Heterotrait Monotrait Ratio (HTMT) to assess discriminatory validity, and (b) assessment of the structural model.

RESULTS

Assessment of Measurement Model

In general, the best practice is to retain item loadings that do not fall below 0.70 (Hair et al., 2017). The factor loading for each construct item surpassed the minimum cut-off value of 0.700, except for one item from compatibility (PCO5) which falls between 0.600 and 0.700 (Table 3). As the AVE of each construct was at least at the 0.500 threshold value, recommended by Hair et al. (2017), the one item (PCO5) with less than 0.700 was retained. Table 3 also indicates that the composite reliability for all latent variables in the measurement model exceeded the cut-off value of 0.700 (Hair et al., 2017). The discriminant validity was checked using HTMT (Hair et al., 2017).

Table 3 Measurement model results

	Item	ATT	CA	CR	AVE
Attitude (ATT)	ATT1	0.800	0.902	0.928	0.720
	ATT2	0.871			
	ATT3	0.863			
	ATT4	0.866			
	ATT5	0.839			
Competitive pressure (COP)	COP1	0.838	0.858	0.904	0.702
	COP2	0.825			
	COP3	0.867			
	COP4	0.819			
Innovativeness (INV)	INN1	0.808	0.820	0.881	0.650
	INN2	0.817			
	INN3	0.774			
	INN4	0.825			
IT knowledge(ITK)	ITK1	0.774	0.830	0.885	0.659
	ITK2	0.851			
	ITK3	0.848			
	ITK4	0.771			
Organizational readiness(ORG)	OGR1	0.879	0.888	0.923	0.750
	OGR2	0.910			
	OGR3	0.846			
	OGR4	0.828			
Perceived compatibility(PCO)	PCO1	0.834	0.837	0.885	0.610
	PCO2	0.841			
	PCO3	0.843			
	PCO4	0.744			
	PCO5	0.620			
	PCX1	0.787	0.743	0.854	0.661
	PCX2	0.848			
Perceived relative advantage(PRA)	PCX3	0.803			
	PRA1	0.788	0.886	0.916	0.687
	PRA2	0.817			
	PRA3	0.853			
	PRA4	0.852			
Suppliers and customers pressure (SCP)	PRA5	0.832			
	SCP1	0.887	0.898	0.927	0.762
	SCP2	0.854			
	SCP3	0.877			
	SCP4	0.872			

Table 4 shows that the inter-construct correlation was less than any of the HTMT criterion standards in terms of specificity HTMT0.85 or HTMT0.90. Hence, based on cross-loading as conventional discriminant analysis and the HTMT ratio of more recent discriminant analyses, it is satisfactory to claim that discriminatory validity is well established.

Table 4 Discriminant validity: HTMT criterion

	ATT	COP	INV	ITK	ORG	PCO	PCX	PRA	SCP
ATT									
COP	0.846								
INV	0.611	0.540							
ITK	0.684	0.708	0.490						
ORG	0.844	0.849	0.664	0.792					
PCO	0.743	0.680	0.490	0.600	0.703				
PCX	0.750	0.765	0.512	0.738	0.749	0.668			
PRA	0.841	0.730	0.565	0.618	0.790	0.633	0.663		
SCP	0.097	0.120	0.052	0.149	0.136	0.280	0.302	0.116	

Assessment of Structural Model

In the second stage of data analysis, a bootstrapping technique was conducted using 5000 re-samples with a one-tailed test on the significance of the proposed path, the variance obtained (R2), predictive relevance (Q2), and effect size (f2) were estimated (see Figure 2).

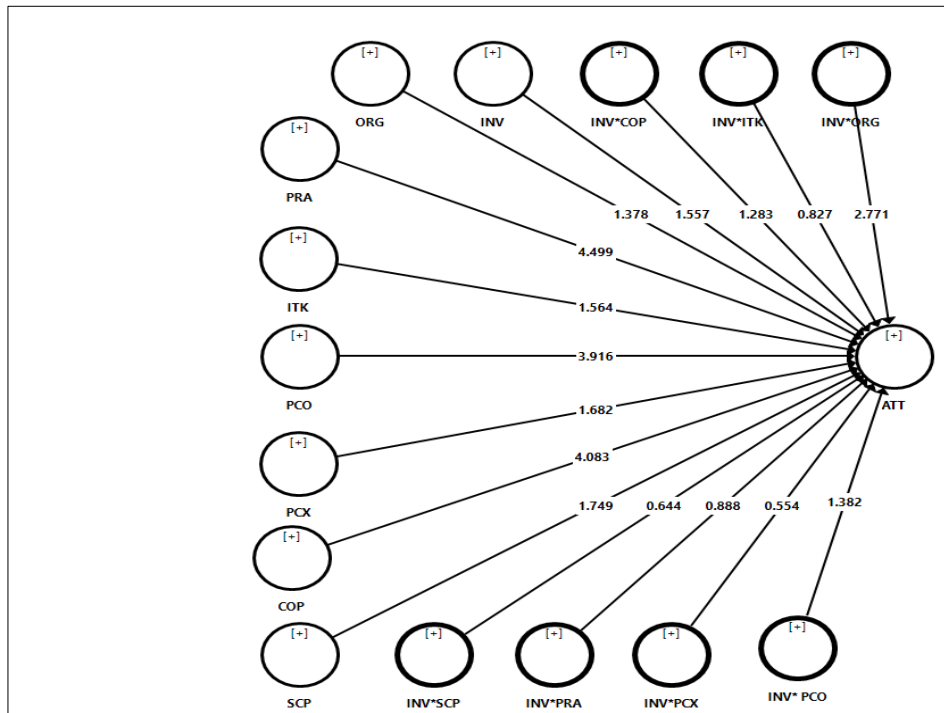


Figure 2 Structure model

Table 5 indicates that perceived relative advantage ($\beta=0.269$, $t=4.499$, $p<0.01$, $f2=0.125$), perceived compatibility ($\beta=0.220$, $t=3.916$, $p<0.01$, $f2=0.086$), organizational readiness ($\beta=0.107$, $t=1.378$, $p<0.10$, $f2=0.012$), IT Knowledge ($\beta=0.075$, $t=1.564$, $p<0.10$, $f2=0.009$), and competitive pressure ($\beta=0.244$, $t=4.083$, $p<0.01$, $f2=0.083$) are positively related to attitude toward E-commerce adoption. Hence, hypotheses H1, H2, H4, H5, and H5 are supported. However, perceived complexity ($\beta=-0.080$, $t=1.682$, $p<0.05$, $f2=0.012$) and supplier/customer’s pressure ($\beta=-0.065$, $t=1.749$, $p<0.05$, $f2=0.015$) are negatively related to attitude toward E-commerce adoption. Therefore, H3 is accepted while H7 is rejected. In this study, the R2 is 0.742, meaning that about 74.2% of the attitude changes toward the adoption of E-commerce by SMEs are due to the examined seven latent variables.

Table 5 Results of hypothesis testing

	Path	Beta (β)	Standard error	t-statistics	P Values	Decision	f ²	5.00%	95.00%
H1	PRA -> ATT	0.269	0.06	4.499***	0.000	Supported	0.125	0.163	0.359
H2	PCO -> ATT	0.220	0.056	3.916***	0.000	Supported	0.086	0.122	0.307
H3	PCX -> ATT	-0.080	0.048	1.682**	0.046	Supported	0.012	-0.154	0.003
H4	ORG -> ATT	0.107	0.078	1.378*	0.084	Supported	0.012	-0.017	0.237
H5	ITK -> ATT	0.075	0.048	1.564*	0.059	Supported	0.009	0.004	0.165
H6	COP -> ATT	0.244	0.06	4.083***	0.000	Supported	0.083	0.14	0.334
H7	SCP -> ATT	-0.065	0.037	1.749**	0.040	Supported	0.015	-0.114	0.005
H8	INV*PRA -> ATT	0.046	0.052	0.888	0.187	No Supported	0.005	-0.021	0.149
H9	INV* PCO -> ATT	0.078	0.056	1.382*	0.083	Supported	0.016	-0.007	0.178
H10	INV*PCX -> ATT	0.031	0.057	0.554	0.290	No Supported	0.003	-0.034	0.152
H11	INV*ORG -> ATT	-0.202	0.073	2.771***	0.003	Supported	0.059	-0.313	-0.074
H12	INV*ITK -> ATT	0.051	0.061	0.827	0.204	No Supported	0.004	-0.043	0.158
H13	INV*COP -> ATT	0.077	0.06	1.283*	0.100	Supported	0.011	-0.034	0.162
H14	INV*SCP -> ATT	-0.024	0.037	0.644	0.260	No Supported	0.002	-0.072	0.049
	INV -> ATT	0.065	0.042	1.557*	0.060		0.01	0.001	0.140

Model fit criteria: R² 0.742; R² Change: 0.759; Q2: 0.528

Note: * p < 0.10. ** p < 0.05. *** p < 0.01 (one-tailed)

Interaction Effects

Table 5 also revealed a statistically significant interaction between perceived compatibility (β=0.078, t=1.382, p<.010, f2 = 0.016) and competitive pressure (β=0.077, t=1.283, p<.0.10, f2 = 0.011) and innovativeness about their effect on the attitude toward E-commerce adoption which provided support only for H8 and H13. To confirm the results, the interaction effects were plotted by using the graph. Figure 3 indicates that the effect of perceived compatibility is greater for highly innovative managers than for managers with low innovativeness. Thus the high innovativeness provides a more profound effect on the relationship between perceived compatibility and the attitude toward E-commerce adoption.

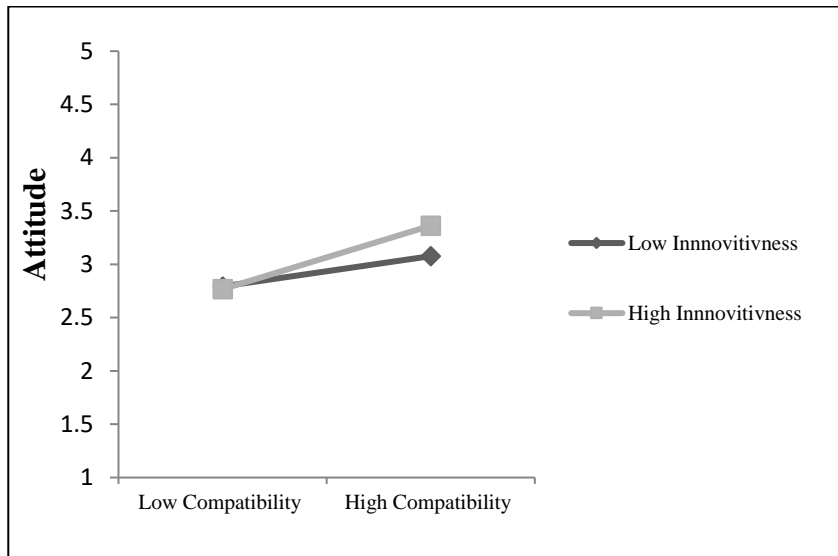


Figure 3 Relationship between compatibility and attitude at two levels of innovativeness

Further, the interaction effect of innovativeness between competitive pressure and the attitude toward E-commerce adoption is plotted graph in as depicted in Figure 4. It has been shown a positive relationship between competitive pressure and the attitude toward E-commerce adoption is stronger among managers with high innovativeness than in the case of respondents with a low level of innovativeness.

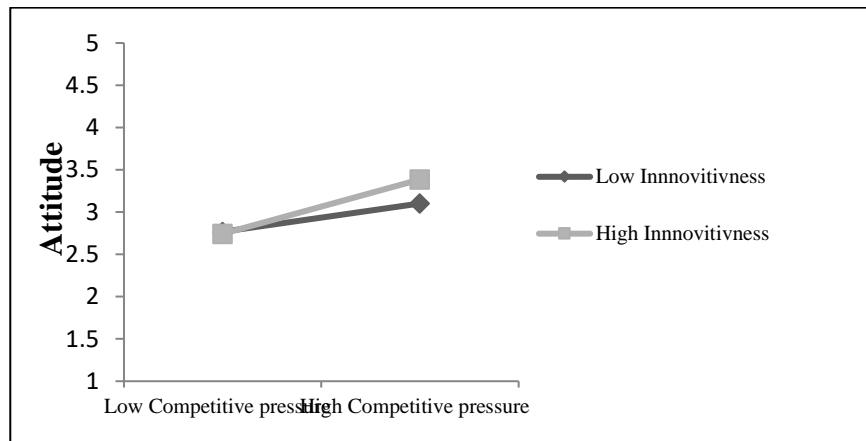


Figure 4 Relationship between competitive pressure and attitude at two levels of innovativeness

On the other hand, the interaction link between organization readiness and innovativeness toward attitude toward E-commerce adoption was significant ($\beta = -0.202$, $t = 2.771$, $p < .001$, $f^2 = 0.059$). However, although the value is not positive, the degree confirms a moderate effect between the variables. This means that the higher the innovativeness, the weaker the positive link between organizational readiness and the attitude toward E-commerce adoption. The results also indicated no significant moderating effects for the rest of the developed hypotheses, as such; hypotheses H9, H10, H11, H12, and H14 were not supported by the data.

As in Table 5, it is noticeable that the seven exogenous variables explained 74.2% of the attitude toward E-commerce adoption variance demonstrate an acceptable prediction level in empirical research. For Q2, the blindfolding procedure requires an omission distance D. A value for the omission distance D between 5 and 12 is recommended in the literature. Thus, the obtained Q2 values, after running the blindfolding procedure with an omission distance $D = 6$, were (0.528) for the attitude which is well above zero; indicating the predictive relevance of the PLS path model. Finally, we measured the f^2 values (i.e. effect size) for exogenous variables on attitude as well as for interaction effects. As shown in Table 5, the effect size (f^2) for the majority of exogenous variables on attitude is small, while the effect size of compatibility and competitive pressure on attitude is small to medium. The effect size of the interaction effect of compatibility and organizational readiness on attitude is small.

DISCUSSION

This study aimed to explore how innovativeness affects technology, organization, and environmental factors on managers' attitudes toward the adoption of E-commerce. The results showed that innovativeness has a moderation effect between perceived compatibility, competitive pressure, and attitudes toward the adoption of E-commerce.

First, concerning the technological factors, our findings found that perceived relative advantage has a significant effect on attitude toward E-commerce adoption in SMEs in Kuwait. This finding is consistent with previous innovation adoption literature which showed that perceived relative advantage is among the strongest predictors of attitude toward the adoption and use of technology (e.g., Yeap et al., 2016). This seems to imply that E-commerce adoption is dependent on the relative advantages when SME managers have a positive attitude toward technology and support the TAM, wherein adoption and implementation of technology are predicted by perceived usefulness.

This research found that attitude toward E-commerce adoption was significantly and positively influenced by E-commerce compatibility in SMEs in Kuwait. In several studies, managers are more likely to have a positive attitude toward innovation if they perceive it to be aligned with their current business operations, business culture, and current IT infrastructure (Kanchanatanee et al., 2014; To and Ngai, 2007; Silva et al., 2019).

Next, a negative relationship was found between perceived complexity and managers' attitudes toward E-commerce adoption. This finding is consistent with previous research which provided evidence that managers are more likely to have a favourable attitude toward adopting an innovation if they perceive it as being easy to understand and use (e.g., Al-Jabri and Roztock, 2014; Yeap et al., 2016; Vagnani and Volpe, 2017). There are studies in different countries where the role of complexity of E-commerce is the major obstacle to using E-commerce in its application which in turn has negative impacts on attitude toward it (Ahmed et al., 2015; Rahayu and Day, 2015).

Second, for the context of organizational factors, an interesting relationship between organizational readiness and the attitude of managers toward the adoption of E-commerce, given the available financial resources and technological support to adopt E-commerce technology. Similar to previous research findings which found that resource availability has a significant positive effect on the attitude of individuals (Šebjan et al., 2016; Sliva et al., 2019). We further confirmed that knowledge of IT had a significant positive effect on managers' attitudes toward adopting E-commerce. Results of previous studies also confirmed these findings and argued that willingness to adopt IT technologies was the result of the IT knowledge of managers (Escobar-Rodriguez and Bartual-Sopena, 2013; Garg and Choeu, 2015).

Third, concerning the influence of environmental context, our results confirmed that there is a positive relationship between competition pressure and the attitude of SME managers toward E-commerce adoption. The possible explanation for that is competitive pressure makes using E-commerce solutions necessary for SMEs to compete better with competitors even when they do not see any benefit in doing so (To and Ngai, 2007).

However, we found no statistically significant positive relationship between suppliers'/customers' pressure and the attitude of SME owners/managers toward the adoption of E-commerce. This implies that greater supplier/customer pressure will not necessarily lead to a higher favourable attitude toward the adoption of E-commerce in SMEs. Similarly, this finding does concur with previous studies. According to Rahayu and Day (2015) have been observed that there is no positive relationship between supplier/customer pressure and the adoption of E-commerce. Additionally, the intention of SMEs to continue website usage does not exhibit any correlation with said pressure (Ramayah et al., 2016). The justification for such a result may be because the applications of E-commerce are still in their immature stages among customers in Kuwait and they are not yet aware of all the concepts related to it, and this may not constitute great pressure on companies to adopt E-commerce.

Fourth, the results of the interaction effect test indicate that higher innovativeness positively and significantly strengthens the relationship between perceived compatibility and attitude toward E-commerce adoption. This result supports the finding of Herrero Crespo et al. (2008), that managers with high innovativeness imply a more positive perception of E-commerce than low innovative managers. Innovative individuals often show a favourable attitude toward new technology, and they are likely to realize that innovation as being congruent with current operating practices can influence (Grandón and Ramírez-Correa, 2018).

On the other hand, the result of the study indicated that the effect of competitive pressure on attitude is stronger in SMEs with a high level of managers' innovativeness. This result is correct because those managers take into account competitive opportunities or threats when they believe that many competitors are using similar technology more than less innovative managers. When competitors start using e-commerce technology, managers may adopt specific technologies to obtain similar advantages.

Moreover, results showed that high innovativeness weakened the association and had a negative impact on organizational readiness toward attitude. Manager with low innovativeness is perceived as having the resources of the technology and infrastructure to support the application of E-commerce systems are available and adequate than a manager with high innovativeness. This negative link may be due to E-commerce providers currently providing different types of E-commerce systems at competitive and cost-effective prices.

However, no significant moderating effect was found on the relationship between relative advantage, perceived complexity, IT knowledge, and pressure from suppliers/customers on attitude toward E-commerce adoption. The reason could be that innovativeness among some SMEs' managers is relatively limited which negatively influences their attitude toward E-commerce (Grandón and Ramírez-Correa, 2018). E-commerce is still in its early stages of adoption in Kuwait; therefore, it can be considered the managers' low innovativeness (Al-Alawi and Al-Ali, 2015).

CONCLUSION

Implications for Theory

This research tested innovativeness as a significant moderator of the model's hypothesized relationships. This is an important contribution to the existing literature on organizational technology adoption because the moderating role of innovativeness has often been overlooked in prior research related to the joint influence of innovation attributes and environmental context on the attitude toward E-commerce adoption in SMEs. Also, this research responded to calls in past research (Vagnani et al., 2019), to investigate how contextual factors such as innovativeness shape the attributes of innovation–attitude–adoption decision chains in an organization. As a result, this research contributes largely to the

existing knowledge base by filling the current literature gap about moderating effects of innovativeness in the attitude toward E-commerce adoption in SMEs in the context of the developing country of Kuwait.

Implications for Managers

SME managers must recognize the differential influences of technical characteristics, while relative advantage and compatibility of E-commerce have a significant positive effect on their attitude to adopt E-commerce and the complexity has a negative effect. Therefore, training and support programs must be properly designed and put into practice to increase the comparative advantage of E-commerce and compatibility or reduce its complexity, thus the attitude toward e-commerce adoption can be increased. Findings also suggest that highly innovative managers have a high potential for e-commerce adoption, so they represent the main opportunities for new entrants to obtain similar competitive advantages in the same industry.

Implications for Government

Government agencies in Kuwait can take appropriate measures to raise awareness among owners/managers about the benefits and use of E-commerce by developing training programs. Also, the complexity needs to be reviewed by government agencies to create a business environment with greater internet speed, interaction capacity, and provision of IT consultants to make E-commerce business a more useful application for SMEs according to the requirements of each area of the organization. On the other hand, it should be noted that the Kuwait government seeks to diversify its economy away from dependence on oil and plans to transform SMEs into significant contributors to job creation and economic output via the 2035 vision. SMEs in Kuwait contribute only 3% of the GDP of the country and the Kuwait government aims to increase economic contribution in this sector. This research suggests that E-commerce solutions for SMEs can be seen as an opportunity to increase the non-oil GDP from this sector.

Limitations and Future Directions

First, this research only investigates the perceptions of owners and managers of the SMEs who most properly possess the needed knowledge about E-commerce activities with particular experiences and reliable sources of information. Such surveys may be subject to respondent bias if the chosen informant does not have sufficient knowledge or has a biased opinion about the phenomenon of interest. Future research could collect data from multiple participants (owners, CEOs, managers, IT engineers, IT managers) separately for each SME, which might reduce cognitive biases. Second, we propose the inclusion of other variables such as perceived value, vendor trust, customer loss risk, and government support that may help to deepen explanations of the attitude toward E-commerce adoption. Third, the study focuses on the pre-adoption phase (e.g., attitudes) so future investigators should take up the E-commerce adoption and post-adoption phases to formulate more comprehensive certification lenses.

REFERENCES

- Ahmad, S. Z., Abu Bakar, A. R., Faziharudean, T. M. and Mohamad Zaki, K. A., 2015. An empirical study of factors affecting e-commerce adoption among small-and medium-sized enterprises in a developing country: Evidence from Malaysian. *Information Technology for Development*, 21(4), pp. 555-572.
- Al-Alawi, A. I. and Al-Ali, F. M., 2015. Factors Affecting e-Commerce Adoption in SMEs in the GCC: An Empirical Study of Kuwait. *Research Journal of Information Technology*, 7(1), pp. 1–21.
- AlBar, A. M. and Hoque, M. R., 2017. Factors affecting the adoption of information and communication technology in small and medium enterprises: a perspective from rural Saudi Arabia. *Information Technology for Development*, 0(0), pp. 1–24.
- Al-Hujran, O., Al-Debei, M. M., Chatfield, A. and Migdadi, M., 2015. The imperative of influencing citizen attitude toward e-government adoption and use. *Computers in Human Behavior*, 53, pp. 189–203.
- Al-Jabri, I. M. and Roztocky, N., 2014. Adoption of ERP systems: does information transparency matter? *Telematics and Informatics*, 32(2), pp. 300–310.
- Arawawala, S. and Gunawardana, K., 2017. Challenges and barriers of implementing E-commerce technology among SMEs in Sri Lanka. *International Journal of Trend in Research and Development*, 4(6).

- Awa, H. O., Ojiabo, O. U., and Emecheta, B. C., 2015. Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science & Technology Policy Management*, 6(1), pp. 76-94.
- Boateng, H., Okoe, A. F. and Omane, A. B., 2016. Does personal innovativeness moderate the effect of irritation on consumers' attitudes toward mobile advertising?. *Journal of Direct, Data and Digital Marketing Practice*, 17(3), pp. 201–210.
- Borrero, J. D., Yousafzai, S. Y., Javed, U. and Page, K. L., 2014. Expressive participation in Internet social movements: Testing the moderating effect of technology readiness and sex on student SNS use. *Computers in Human Behavior*, 30, pp. 39–49.
- Chong, A. Y-L., Ooi, K-B., Lin, B. and Tang, S.Y., 2009. Influence of inter-organizational relationships on SMEs' e-business adoption. *Internet Research*, 19(3), pp. 313-331.
- Davis, F. D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, pp. 319-339.
- Donthu, N., and Gustafsson, A., 2020. Effects of COVID-19 on business and research. *Journal of Business Research*, 117, pp. 284–289.
- Duan, X., Deng, H. and Corbitt, B., 2012. Evaluating the critical determinants for adopting e-market in Australian small-and-medium sized enterprises. *Management Research Review*, 35(3/4), pp. 289–308.
- Ekong, U. O., Ifinedo, P., Ayo, C. K. and Ifinedo, A., 2012. E-Commerce Adoption in Nigerian Businesses. *Small and Medium Enterprises*, (January), pp. 840–861.
- Garson, G. D., 2016. *Partial least squares: Regression and structural equation models*. Asheboro, NC: Statistical Associates Publishers.
- Gatautis, R., Vaiciukynaite, E. and Tarute, A., 2019. Impact of business model innovations on SME's innovativeness and performance. *Baltic Journal of Management*, 14(1).
- Grandón, E. E. and Ramírez-Correa, P., 2018. Managers/owners' innovativeness and electronic commerce acceptance in Chilean SMEs: a multi-group analysis based on a structural equation model. *Journal of theoretical and applied electronic commerce research*, 13(3), pp. 1-16.
- Hair, J., Hollingsworth, C. L., Randolph, A. B. and Chong, A. Y. L., 2017. An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, 117(3), pp. 442–458.
- Hamad, H., Elbeltagi, I. and El-Gohary, H., 2018. An empirical investigation of business-to-business e-commerce adoption and its impact on SMEs competitive advantage: The case of Egyptian manufacturing SMEs. *Strategic Change*, 27(3), pp. 209-229.
- Hendricks, S. and Mwapwele, S. D., 2023. A systematic literature review on the factors influencing e-commerce adoption in developing countries. *Data and Information Management*, p. 100045.
- Herrero Crespo, Á. and Rodríguez del Bosque, I., 2008. The effect of innovativeness on the adoption of B2C e-commerce: A model based on the Theory of Planned Behaviour. *Computers in Human Behavior*, 24(6), pp. 2830–2847.
- Huy, L. E. Van, Rowe, F. and Truex, D., 2012. An Empirical Study of Determinants of E-commerce Adoption in SMEs in Vietnam. an economy in transition. *Journal of Global Information Management*, 20(3).
- Ifinedo, P., 2011. An Empirical Analysis of Factors Influencing Internet/E-Business Technologies Adoption by SMEs in Canada. *International Journal of Information Technology & Decision Making*, 10(04), pp. 731–766.
- Jang, S. H. and Lee, C. W., 2018. The Impact of Location-Based Service Factors on Usage Intentions for Technology Acceptance: The Moderating Effect of Innovativeness. *Sustainability*, 10, pp.1876.
- Jiménez, N. and San-Martín, S., 2017. Attitude toward m-advertising and m-repurchase. *European Research on Management and Business Economics*, 23.
- Kanchanatane, K., Suwanno, N. and Jarernvongrayab, A., 2014. Effects of Attitude toward Using, Perceived Usefulness, Perceived Ease of Use and Perceived Compatibility on Intention to Use E-Marketing. *Journal of Management Research*, 6(3).
- Kim, J., and Forsythe, S., 2008. Adoption of virtual try-on technology for online apparel shopping. *Journal of Interactive Marketing*, 22(2), pp. 45-59.
- Kim, Y. J., Chun, J. U. and Song, J., 2009. Investigating the role of attitude in technology acceptance from an attitude strength perspective. *International Journal of Information Management*, 29(1), pp. 67-77.

- Koe, W. L. and Sakir, N. A., 2020. The motivation to adopt e-commerce among Malaysian entrepreneurs. *Organizations and Markets in Emerging Economies*, 11(1), pp. 189-202.
- Kurnia, S., Choudrie, J., Mahbubur, R. M. and Alzougool, B., 2015. E-commerce technology adoption: A Malaysian grocery SME retail sector study. *Journal of Business Research*, 68(9), pp.1906–1918.
- Mahroeian, H., 2012. A study on the effect of different factors on e-Commerce adoption among SMEs of Malaysia. *Management Science Letters*, 2(7), pp. 2679–2688.
- Mohtaramzadeh, M., Ramayah, T. and Cheah, J. H., 2018. B2B E-Commerce adoption in Iranian manufacturing companies: Analyzing the moderating role of organizational culture. *International Journal of Human-computer Interaction*, 34(7), pp. 621–639.
- Naderifar, M., Goli, H. and Ghaljaie, F., 2017. Snowball sampling: A purposeful method of sampling in qualitative research. *Strides in Development of Medical Education*, 14(3).
- OPEC., 2019. Annual Statistical Bulletin. Retrieve from https://www.opec.org/opec_web/en/publications/202.htm.
- Rahayu, R., and Day, J., 2015. Determinant Factors of E-commerce Adoption by SMEs in Developing Country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences*, 195, pp.142-150.
- Ramayah, T., Ling, N. S., Taghizadeh, S. K. and Rahman, S. A., 2016. Factors influencing SMEs website continuance intention in Malaysia. *Telematics and Informatics*, 33, pp. 150-164.
- Rogers, E.M., 2003. *Diffusion of Innovations*, 5th Ed. The Free Press, New York, NY.
- Sanchez-Torres, J. A. and Juarez-Acosta, F., 2019. Modelling SME e-commerce with IMAES. *Journal of Business and Industrial Marketing*, 34(1), pp. 137–149.
- Šebjan, U., Bobek, S. and Tominc, P., 2016. Factors influencing attitudes toward the use of CRM's analytical tools in organizations. *Organizacija*, 49(1), pp. 28–41.
- Silva, C., Montoya R, I. A. and Valencia A, J. A., 2019. The attitude of managers toward telework, why is it so difficult to adopt it in organizations?. *Technology in Society*, 59.
- Singh, N., Sinha, N. and Liébana-Cabanillas, F. J., 2020. Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence. *International Journal of Information Management*, 50, pp. 191–205.
- Sinha, N. and Verma, P., 2018. The Role of Favoring and Inhibiting Factors in Developing Attitude toward Mobile Application based Agricultural Extension Services: A Structural Relationship. *International Journal of Technology and Human Interaction*, 14(4), pp. 63-80.
- Talukder, M., Harris, H. and Mapunda, G., 2008. Adoption of innovations by individuals within organizations: An Australian study. *Asia Pacific Management Review*, 13(2), pp. 463-480.
- To, M. L. and Ngai, E. W. T., 2007. The Role of Managerial Attitudes in the Adoption of Technological Innovations: An Application to B2C E-Commerce. *International Journal of Enterprise Information Systems*, 3(2), pp. 23-33.
- Vagnani, G. and Volpe, L., 2017. Innovation attributes and managers' decisions about the adoption of innovations in organizations: A meta-analytical review. *International Journal of Innovation Studies*, p. 107e133.
- Vagnani, G., Gatti, C. and Proietti, L., 2019. A conceptual framework of the adoption of innovations in organizations: a meta-analytical review of the literature. *Journal of Management and Governance*, 23(2).
- Venkatesh, V. and Bala, H., 2008. Technology acceptance model 3 and a research agenda on interventions, *Decis. Sci. J.*, 39(2), pp. 273–315.
- Wanyoike, D. M., Mukulu, E. and Waititu, A. G., 2012. ICT Attributes as Determinants of Internet Social Adoption by Formal Small Enterprises in Urban Kenya. *International Journal of Arts and Commerce*, 1(7), pp. 65–75.
- Yeap, J. A. L., Ramayah, T. and Soto-Acosta, P., 2016. Factors propelling the adoption of m-learning among students in higher education. *Electronic Markets*, 26(4), pp. 323–338.
- Zhao, J., Fang, S. and Jin, P., 2018. Modeling and Quantifying User Acceptance of Personalized Business Modes Based on TAM, Trust, and Attitude. *Sustainability*, 10, p. 356.