

# Modeling e-commerce adoption factors among Gen-Z in a developing country: the case of Ghana

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## THE AIM OF THE PAPER

This study aims to investigate the factors that influence e-commerce adoption among Gen Z in a developing country.

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## METHODOLOGY

A cross-sectional data were gathered from 522 Gen Z population in the most populous and industrious regions in Ghana. Partial Least Square- Structural Equation Modelling (PLS-SEM) was employed to assess the hypothesized relationships.

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## MOST IMPORTANT RESULTS

The findings indicate that effort expectancy, facilitating conditions, information quality, and system quality significantly affect the behavioral intention to adopt e-commerce among gen Z in Ghana. However, performance expectancy, social influence, and service quality had an insignificant effect on behavioral intention. This study is one of the few that have integrated the UTAUT model with DeLone and McLean IS success model to investigate e-commerce adoption. In a developing country context, and to the best of the author's knowledge, this is the first research to investigate the e-commerce adoption of a particular generation (Gen Z) in Ghana.

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## RECOMMENDATIONS

The paper concludes that the ease of using online shopping applications, the readiness and availability of support service for online purchases, information quality, and the efficiency and reliability of e-commerce systems significantly influence gen Z adoption of e-commerce. As a result, e-vendors and website business designers should ensure that the design and layout of e-commerce websites must be easy for consumers to navigate, provide a 24-hour consumer support system, and ensure efficiency and reliability of the e-commerce system.

*Keywords:* e-commerce adoption, gen Z, information quality, effort expectancy, systems quality

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## INTRODUCTION

E-commerce, according to Awiagah *et al.* (2015), refers to an exchange of value (buying and selling) over the internet via computer networks. Over the years, developed countries have realized the economic and social benefits of e-commerce because they have successfully implemented and utilized e-commerce platforms. According to UNCTAD (2020), the global e-commerce revenue hits 25.6 trillion dollars, with America dominating the e-commerce market, alongside China and the United Kingdom. These countries have had the most e-commerce sales since 2017. UNCTAD (2019) business-to-customer (B2C) e-commerce index shows that the least developing countries, such as Guinea, Congo, Burundi, Chad, and Niger, have the lowest e-commerce index in the world. Even though there has been an increase in the awareness and benefits of e-commerce in developing countries, budget and technological constraints have prevented most developing countries from implementing and achieve the benefits that accompany e-commerce. Some studies have reported inadequate national policies for e-commerce development, inadequate investment in telecommunication infrastructure, high cost of internet data, and lack of legal and economic regulatory climate as factors that impede e-commerce adoption in developing countries (Agwu & Emeti 2014, Eraslan *et al.* 2016, Heang & Khan 2015). Khan *et al.* (2017) indicate that a lot is being done by implementing good digital policies to influence e-commerce adoption irrespective of the challenges facing developing countries. Prior studies have explored e-commerce in developing countries from different perspectives (Rahayu & Day 2015, Awiagah *et al.* 2015, Boateng 2016, Chitiya *et al.* 2011, Gorla *et al.* 2017, Pobe & Opoku 2018b); however, research that focuses on a particular generation in developing countries have been shunned and overlooked by scholars. E-commerce adopters differ in generation, and each generation bears distinct technological characteristics that influence their perception of technology adoption. Until now, no research, arguably, has explored the e-commerce adoption behavior of generation Z, popularly known as gen Z in Ghana. This current research, therefore, fills the gap in the e-commerce literature by modeling the factors that influence gen Z in developing countries, particularly, Ghana to adopt e-commerce

Generation Z, popularly referred to as Gen-Z, comprises the people born between 1995 and the mid-2000s. This epoch is characterized by ext-

ensive exposure to the world wide web (Wood 2013). Most of gen-Z comprises of children of generation X. Generation X was born between 1965 to 1979. Research has shown (Wood 2013) that gen Z is perceived as a technology-savvy generation and has a comfort level with the global world. Attributes such as a focus on innovation, desire for security, and insistence on convenience have been attached to Generation Z (Wood 2013). Gen Z inherently feels comfortable with the virtual world. This is because the internet has been with them since they were born. Therefore, an investigation into e-commerce adoption among gen Z in developing countries where technology adoption is relatively low compared to developed countries cannot be overemphasized.

## LITERATURE AND HYPOTHESIS DEVELOPMENT

This study integrates the unified theory of acceptance and use of technology (UTAUT) and the DeLone and McLean IS success model factors to propose a research model that would serve as a theoretical lens to investigate e-commerce adoption. In adopting a multi-theory approach, this research uncovers the factors influencing Ghana's gen Z e-commerce adoption. Venkatesh *et al.* (2003) developed the UTAUT model to better understand user acceptance and use of technology. The UTAUT is made up of four primary constructs, namely, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). The model holds that PE, EE, SI, and FC directly influence behavioral intention (BI). Many studies, including Alrajawy *et al.* (2016), Tarhini *et al.* (2018), and Pobe & Opoku (2018), have used the UTAUT to investigate user acceptance of technologies.

DeLone and McLean's IS success model measures the success factors influencing the adoption of information systems (DeLone & McLean, 2003). Researchers have used the model, including Li & Wang (2018) and Moorthy *et al.* (2017), to measure e-commerce success. While UTAUT measures the technology and social factors influencing technology adoption, DeLone & McLean (2003) success model focuses on factors challenging information systems adoption. As a result, the author combined the UTAUT and DeLone and McLean IS success model in this research because each of these models has its own unique set of variables. Consequently, combining these models provides a compelling

framework for uncovering the factors influencing e-commerce adoption. According to Fichman (2004) and Lyttinen & Rose (2003), it is important to merge models to obtain a holistic understanding of a phenomenon. For this research, the antecedents of ATAUT, namely, performance expectancy, effort expectancy, social influence, and facilitating conditions, are combined with the DeLone and McLean IS success model's antecedents, namely, information, systems quality, and service quality.

## HYPOTHESES DEVELOPMENT

### *Performance Expectancy (PE)*

Performance expectancy measures the perceived gain associated with using a technology (Venkatesh *et al.* 2003). Prior studies have shown that performance expectancy plays a significant role in predicting behavior intention to adopt a system (Alrajawy *et al.* 2016, Tarhini *et al.* 2018, Venkatesh *et al.* 2011). Studies have proven that when performance expectancy increases, system usage also increases (Faaeq *et al.* 2014, Wu *et al.* 2007, Zhou *et al.* 2010). Extant studies have also suggested a significant relationship between performance expectancy and user behavior (Datta 2011, Lin & Anol 2008, Moghawemi *et al.* 2012; Raman & Don 2013, Raman *et al.* 2014). However, findings of Faraliza *et al.* (2014), Lian (2015), Singeh *et al.* (2013), and Yueh *et al.* (2015) reported an insignificant effect of performance expectancy on behavioral intention. For this study, PE is conceptualized as the gain associated with adopting e-commerce. The author assumed a significant relationship; hence, this study hypothesized:

*H1: Performance expectancy significantly influences the behavioral intention of gen Z in Ghana to adopt e-commerce.*

### *Effort Expectancy (EE)*

Effort expectancy measures the perceived ease associated with using a technology (Venkatesh *et al.* 2003). Prior studies have reported a significant effect of effort expectancy on behavioral intention (Madigan *et al.* 2016, Khalilzadeh *et al.* 2017, Aditya & Pemadi 2018, Escobar-Rodríguez & Carvajal-Trujillo 2014, Fang 2014, Hoque & Sower 2017). In contrast, findings of Guo (2015), Taiwo & Mahmood (2012), Toh (2013), Yang (2013), Zhou *et al.* (2010) indicate an insignificant impact of effort expectancy on behavioral intention. For this study,

EE is conceptualized as the ease of using e-commerce applications. As such, the author assumed a significant relationship between EE and behavioral intention; hence, this study hypothesized:

*H2: Effort expectancy significantly influences the behavioral intention of gen Z in Ghana to adopt e-commerce.*

### *Social Influence (SI)*

According to Venkatesh *et al.* (2003), social influence measures the extent to which significant others such as family, friends, and media influence a person's intention to adopt the technology. Gonzalez *et al.* (2012) indicated that social influence has a significant effect on behavioral intention. This is consistent with the findings of Venkatesh *et al.* (2011), Escobar-Rodríguez & Carvajal-Trujillo (2014), Hendarman and Tjakraatmadja (2014), Ifinedo (2012), Isaac *et al.* (2017), Martins *et al.* (2014). Contrariwise, the findings of Addo (2014), Faaeq *et al.* (2014), Faraliza *et al.* (2014), Nassuora (2013), and Nysveen & Pedersen (2014) reported that social influence has an insignificant impact on behavioral intention. In the context of e-commerce, if close associates' perceptions play a role in users' decision to adopt or not adopt e-commerce, it is regarded as a social influence (SI). For this study, the author assumed a significant relationship between SI and behavioral intention, hence hypothesized;

*H3: Social influence significantly influences the behavioral intention of gen Z in Ghana to adopt e-commerce.*

### *Facilitating Conditions (FC)*

As opined by Venkatesh *et al.* (2003), facilitating conditions measure the availability of organizational and technological support to help users use technology. Guo (2015) suggested facilitating conditions significantly influence system use. Extant studies have also reported a significant effect of facilitating conditions on behavioral intention (Lin & Anol 2018, Moghawemi *et al.* 2012, Sanchez *et al.* 2014, Wu *et al.* 2007, Chang 2013). Conversely, findings from Fang (2014), Lian (2015), Martins *et al.* (2014), Singeh *et al.* (2013), Yueh *et al.* (2015) indicate that behavioral intention is insignificantly influenced by facilitating conditions. For this study, FC is conceptualized as the availability of support services to users of e-commerce applications. The author assumed a significant relationship between FC and behavioral intention, therefore, hypothesized that:

H4: Facilitating conditions significantly influence the behavioral intention of gen Z in Ghana to adopt e-commerce.

### Information Quality (IQ)

According to Liu & Forsythe (2011), information quality refers to the information about products offered to consumers clearly and precisely. Findings of prior studies have suggested that information quality significantly influences e-commerce adoption. (Vasileiadis 2014, Abdennebi & Debabi 2017, Liébana-Cabanillas *et al.* 2017). Similarly, Liu & Forsythe (2011) suggested that information quality builds trust, influencing consumers to adopt e-commerce. In the context of e-commerce, information quality is measured by the clarity and precision of information displayed on the e-commerce website. The author perceived a significant relationship between IQ and behavioral intention, therefore hypothesized:

H5: Information quality significantly influence the behavioral intention of gen Z in Ghana to adopt e-commerce

### Systems Quality (SQ)

E-commerce system quality, according to Tarhini *et al.* (2018), refers to the availability, efficiency, reliability, and security of e-commerce websites. According to Vasileiadis (2014), buying products online is influenced by the online shopping platform's quality. Li & Wang (2018) and Madan &

Yadav (2018) suggested that system quality affects consumers' e-commerce adoption decisions. Similarly, Choi (2017) indicates that systems quality significantly impacts e-commerce adoption. This is consistent with Vasileiadis (2014) and Abdennebi & Debabi (2017). In this research, systems quality is conceptualized as the reliability, efficiency, and security of an e-commerce website. The author assumed a significant relationship between SQ and behavioral intention, hence hypothesized:

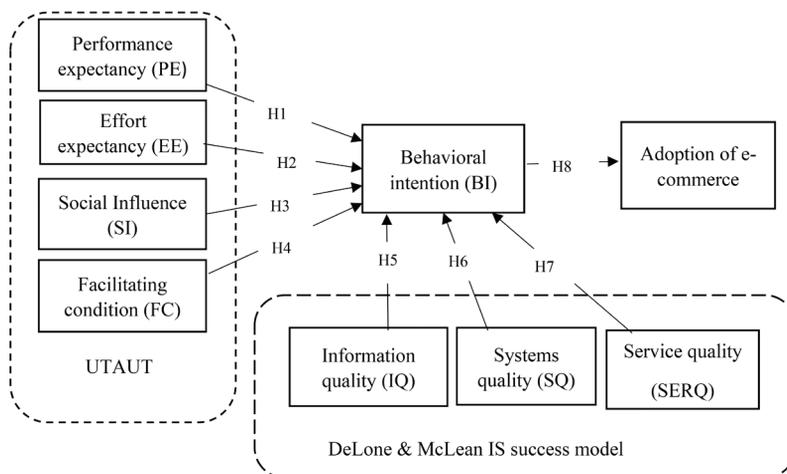
H6: Systems quality positively influence the behavioral intention of gen Z in Ghana to adopt e-commerce

### Systems Quality (SERQ)

As opined by DeLone & McLean (2003), service quality measures the organizational and technical support delivered by the e-vendor to the customers. Moorthy *et al.* (2017) and Hsu & Yeh (2018) indicate service quality is a significant predictor of behavioral intention to adopt e-commerce. This is consistent with the findings of Heinze *et al.* (2017). Therefore, this study hypothesized:

H7: Service quality significantly influence the behavioral intention of gen Z in Ghana to adopt e-commerce

Figure 1. Research model



Author's construction

## ***Behavioral Intention (BI)***

Behavioral intention is defined as “an individual subjective probability that he or she would like to engage in using a system (Fishbein & Ajzen 1975). In this research, BI is contextualized as gen Z’s subjective probability of using e-commerce. Many factors, as discussed earlier, can influence behavioral intention to adopt e-commerce. Furthermore, the impact of behavioral intention on the actual use of systems have also been reported in studies carried out in different disciplines (Hogue & Sowar 2017, Madigan *et al.* 2016, Tarhini *et al.* (2018), Rahi *et al.* 2018, Raza *et al.* 2019, Savic & Pesterac 2019). This study hypothesized:

*H8: Behavioral intention positively influence the behavioral intention of gen Z in Ghana to adopt e-commerce.*

## **METHODOLOGY**

### ***Participants and survey instrument***

The convenience data sampling technique was employed to collect data. An online survey questionnaire of 31 measuring items was used to gather data from Ghana’s gen Z e-commerce users from September to November 2020. The questionnaire was divided into two sessions. The first session gathered data on the respondents’ demographics, and

the second session was on the questions related to the hypothesized variables. The survey was initially tested with two professors at the University of Pecs. Their feedback led the researcher to refine some of the questionnaire items to communicate well with respondents. An online survey was distributed to 630 gen Z e-commerce users in Ghana on a convenience sampling basis. Out of this number, 522 were fully completed and returned. This represents a response rate of eighty-three percent.

### ***Variables and measurement***

The research framework comprised variables from the UTAUT model (Venkatesh *et al.* 2003) and the DeLone and McLean IS model. The measurement items used were adapted from previous studies. Performance expectancy, effort expectancy, social influence was measured with four items each and facilitating conditions were measured with three items, and behavioral intention was measured with three items. These items were adapted from Venkatesh *et al.* (2003). Also, four items were used to measure information quality, systems quality, and service quality. These items were adapted from DeLone & McLean (2003) and Tarhini *et al.* (2018). All items in the survey were measured on a five-point Likert scale ranging from 5 “strongly agree” to 1 “strongly disagree.” The data was analyzed using PLS-Structural equation modeling.

**Table 1. Survey questionnaire**

<b>Construct</b>	<b>Item</b>	<b>Item text</b>	<b>Source</b>
Performance expectancy	PE1	I would find e-commerce useful in my purchases	Venkatesh <i>et al.</i> (2003)
	PE2	Using e-commerce enables me to accomplish my purchases quickly	
	PE3	Adopting e-commerce would add value to my purchasing process	
	PE4	Adopting e-commerce will increase my productivity	
Effort expectancy	EE1	My interaction with the e-commerce platform would be clear and understandable	
	EE2	It will be easy for me to become skillful at using e-commerce	
	EE3	I would find e-commerce easy to adopt	
	EE4	Learning to operate an e-commerce platform would be easy for me	

Social influence	SI1	People who influence my behavior think I should adopt e-commerce	
	SI2	People who are important to me think I should adopt e-commerce	
	SI3	Friends suggestions and recommendations would influence my adoption	
	SI4	I will adopt e-commerce because other entrepreneurs have adopted	
Facilitating conditions	FC1	I can get help from others when I have difficulty using e-commerce	
	FC2	I have the necessary knowledge to adopt e-commerce	
	FC3	I have the resources necessary to adopt e-commerce	
	FC4	A specific person (group) is available for assistance with difficulties in using e-commerce platforms	
Information quality	IQ1	The information generated by the e-commerce website is correct	DeLone and McLean (2003)
	IQ2	The information generated by the e-commerce website is useful for its purpose	
	IQ3	The e-commerce website generates information on time	
	IQ4	I trust the information output of the e-commerce website	
Systems quality	SQ1	Interaction with the e-commerce website is reliable	
	SQ2	I find it secure to put my personal information on the e-commerce website	
	SQ3	The e-commerce system is efficient	
	SQ4	The e-commerce website has a quick response time	
Service quality	SERQ1	There is adequate technical support from the system's provider	
	SERQ2	The overall infrastructure in place is adequate to support me	
	SERQ3	The e-commerce website can be relied on to provide information as to when needed	
	SERQ4	The output of the e-commerce website is complete for purchasing processes	
Behavioral intention	BI1	I intend to adopt and use e-commerce going forward	Venkatesh et al. (2003)
	BI2	I would recommend my friends adopt e-commerce	
	BI3	I would say positive things about adopting and using e-commerce	

*Author's construction*

## Data analysis

The two-stage approach of structural equation modeling was employed. First was the measurement model assessment, and second, the structural model assessment. The measurement items were tested with CFA using the maximum likelihood estimation method to assess the items' reliability. All standardized factor loadings emerged high and significant. Factor loadings exceeded Hair et al. (2006) threshold of 0.70. The constructs showed an acceptable range of inter-

nal consistency with Cronbach's alpha from 0.799 to 0.884. The composite reliabilities revealed an internal consistency of each construct's items with composite reliability above 0.70 (Hair et al. 2006). According to Bagozzi & Yi (2012) and Hair et al. (2006), the average variance extracted (AVE) of all constructs must be greater than or equal to 0.50. Table 2 shows that the AVE of all the constructs is above 0.50, explaining a large portion of the variance. The reliability analysis is shown in Table 2.

**Table 2. Loadings of each variable and reliability analysis**

Constructs	Items	Loading	Cronbach's alpha	CR	AVE
Performance expectancy	PE1	0.82	0.802	0.823	0.689
	PE2	0.792			
	PE3	0.852			
	PE4	0.845			
Effort expectancy	EE1	0.787	0.821	0.878	0.653
	EE2	0.721			
	EE3	0.802			
	EE4	0.824			
Social influence	SI1	0.788	0.799	0.781	0.601
	SI2	0.881			
	SI3	0.771			
	SI4	0.843			
Facilitating conditions	FC1	0.795	0.856	0.884	0.723
	FC2	0.894			
	FC3	0.843			
	FC4	0.798			
Information quality	IQ1	0.876	0.84	0.834	0.678
	IQ2	0.862			
	IQ3	0.832			
	IQ4	0.842			
Systems quality	SQ1	0.821	0.872	0.865	0.711
	SQ2	0.748			
	SQ3	0.798			
	SQ4	0.839			
Service quality	SVQ1	0.885	0.884	0.842	0.721
	SVQ2	0.885			
	SVQ3	0.833			
	SVQ4	0.862			
Behavioral intention	BI1	0.882	0.837	0.879	0.649
	BI2	0.846			
	BI3	0.881			

*Author's construction*

More so, the AVE values for the constructs exceeded the squared correlation of the construct and other constructs in the model (Chin et al. 2003), indicating a good discriminant validity (Table 3).

**Table 3. Discriminant analysis**

	PE	EE	SI	FC	IQ	SQ	SERQ	BI
PE	<b>0.83</b>							
EE	0.519	<b>0.808</b>						
SI	0.37	0.467	<b>0.775</b>					
FC	0.455	0.519	0.419	<b>0.85</b>				
IQ	0.421	0.439	0.565	0.451	<b>0.823</b>			
SQ	0.573	0.606	0.372	0.431	0.454	<b>0.843</b>		
SERQ	0.422	0.585	0.482	0.482	0.521	0.422	<b>0.85</b>	
BI	0.529	0.631	0.468	0.517	0.31	0.543	0.439	<b>0.806</b>

*Diagonal elements (italics) in the matrix represent the square root of AVE*

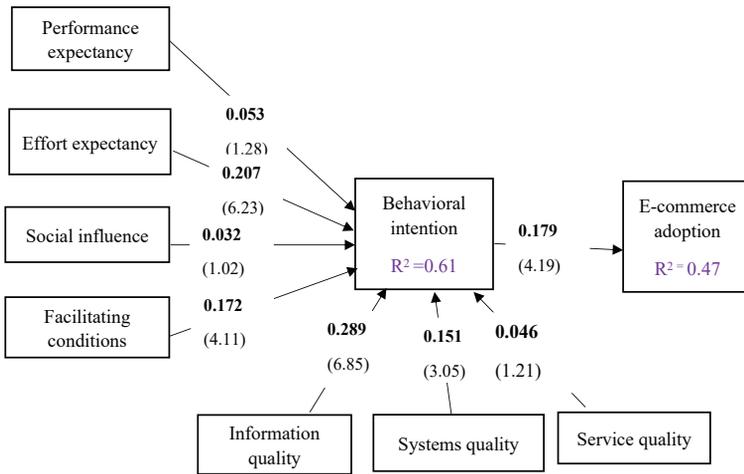
*Source: Author's construction*

### **Structural model estimation**

The structural model was estimated to test H1 to H8. The model estimation indicates the path coefficients, as shown in Figure 2. The bootstrapping method was used to estimate the statistical significance of the parameter estimates. Performance expectancy showed an insignificant influence on behavioral intention ( $\beta = 0.053$ ,  $t\text{-value} = 1.28$ ) thereby, H1 was rejected. Effort expectancy showed a significant relationship with behavioral intention ( $\beta = 0.207$ ,  $t\text{-value} = 6.23$ ), hence, H2 is supported. Social influence showed an insignificant association with behavioral intention ( $\beta = 0.032$ ,  $t\text{-value} = 1.02$ ); therefore, H3 was not supported. Facilitating conditions showed a significant association with

behavioral intention ( $\beta = 0.172$ ,  $t\text{-value} = 4.11$ ); hence, H4 was supported. Information quality showed a significant influence on behavioral intention ( $\beta = 0.289$ ,  $t\text{-value} = 6.85$ ). Hence, H5 was supported. System quality had a positive and significant influence on behavioral intention ( $\beta = 0.151$ ,  $t\text{-value} = 3.05$ ). Hence, H6 was supported. Service quality showed an insignificant influence on behavioral intention ( $\beta = 0.046$ ,  $t\text{-value} = 1.21$ ). therefore, H7 was not supported. Finally, behavioral intention showed a positive and significant influence on e-commerce adoption ( $\beta = 0.179$ ,  $t\text{-value} = 4.19$ ). Hence, H8 was supported. Figure 2 shows the path analysis and the beta coefficients and  $t$ -values of the variables.

**Figure 2. Empirical model**



Note: figures in bold are beta coefficients, and figures in () are t-values  
 Source: Author's construction

The summary of the results is presented in Table 4.

**Table 4. Summary of Results**

Hypothesis	Relationship	$\beta$ estimate	t-values	Supported?
H1	PE → BI	0.053	1.28	No
H2	EE → BI	0.207	6.23	Yes
H3	SI → BI	0.032	1.02	No
H4	FC → BI	0.172	4.11	Yes
H5	IQ → BI	0.289	6.85	Yes
H6	SQ → BI	0.151	3.05	Yes
H7	SERQ → BI	0.046	1.21	No
H8	BI → Adopt	0.179	4.19	Yes

Source: Author's construction

## DISCUSSION

Hypothesis 1 suggested a significant influence of performance expectancy on behavioral intention. However, this study could not support this hypothesis. This study found an insignificant association between performance expectancy and behavioral intention to adopt e-commerce among gen Z in Ghana. This finding contradicts the findings of other studies that have found a significant relationship between performance

expectancy and behavioral intention (Datta 2011, Lin & Anol 2008, Moghawemi *et al.* 2012, Raman & Don 2013, Raman *et al.* 2014, Ramayah *et al.* 2005), but supports the findings of Faraliza *et al.* (2014), Lian (2015), Singeh *et al.* (2013), and Yueh *et al.* (2015). This finding suggests that the perceived gains of using e-commerce platforms for purchases do not regress significantly on gen Z's behavioral intention to adopt e-commerce. It concludes that gen Z in Ghana is not interested in the utilitarian aspect of e-commerce.

This study also found a positive and significant relationship between effort expectancy and behavioral intention to adopt e-commerce among gen Z in Ghana. This finding supports hypothesis 2. This finding is consistent with Madigan *et al.* (2016), Hogue & Sowar (2017), Escobar-Rodríguez & Carvajal-Trujillo (2014), Fang (2014), Hsu *et al.* (2017), Im *et al.* (2011), Venkatesh *et al.* (2011). According to this study, effort expectancy was the second major factor that predicts behavioral intention to use e-commerce by gen Z in Ghana. Studies show that when the ease of using a system increases, behavioral intention to use the system also increases, which has been proven by Gen Z in Ghana.

Hypothesis 3 suggested a significant association between social influence and behavioral intention. However, the findings of this study could not provide support for this hypothesis. This study found social influence to have an insignificant influence on behavioral intention to adopt e-commerce among gen Z in Ghana. This finding is in line with studies such as Addo (2014), Faaeq *et al.* (2014), Faraliza *et al.* (2014), Nassuora (2013), Nysveen & Pedersen (2014). This result means the perception of others does not influence the gen Z's adoption behavior in Ghana. This study also found a significant relationship between facilitating conditions and e-commerce adoption among gen Z. This confirms hypothesis 4. This supports the findings of Lin & Anol (2008), Moghawemi *et al.* (2012), Sanchez *et al.* (2014), Wu *et al.* (2007), Chang (2013), Guo (2015).

Information quality predicted the largest variance in the intention to adopt e-commerce among gen Z in Ghana. This finding supports hypothesis 5. This finding supports Abdennebi & Debabi (2017) and Liébana- Cabanillas *et al.* (2017), who found that information quality positively influenced e-commerce adoption. This suggests that information quality is a significant factor in e-commerce adoption among gen Z in Ghana. This study also found a significant association between system quality and behavioral intention. This finding is consistent with DeLone and Mclean (2004), Shergill & Chen (2005), Elliott & Speck (2015). Furthermore, service quality showed an insignificant relationship with behavioral intention to adopt e-commerce among gen Z. therefore, this study could not support hypothesis 7. This finding is similar to Hogue & Sowar (2017), Madigan *et al.* (2016), Tarhini *et al.* (2018), Rahi *et al.* (2018), Raza *et al.* (2019), Savic & Pesterac (2019). However, this finding contradicts Moorthy *et al.* (2017) and Hsu & Yeh (2018). Finally, this study reported a significant relationship between behavioral intention and actual adoption

of e-commerce by Ghanaian gen Z. this confirms hypothesis 8. This supports studies such as Hogue & Sowar (2017), Madigan *et al.* (2016), Tarhini *et al.* (2018), Rahi *et al.* (2018), Raza *et al.* (2019), Savic & Pesterac (2019)

## CONCLUSION

### *Theoretical implications*

This research makes significant contributions to the literature on e-commerce. It extends the literature on e-commerce adoption in developing countries (in this case, Ghana) by modeling the factors that influence gen Z to adopt e-commerce. Most of the literature that investigated e-commerce adoption focused on macro and meso perspectives of e-commerce adoption. Research into a micro perspective, especially among gen Z and e-commerce adoption, has been overlooked and unattended by researchers. This study is, arguably, the first of its kind to study the e-commerce adoption behavior among gen Z in Ghana. This current study enriches and provides a better understanding of the determinants of e-commerce adoption among gen Z in Ghana.

### *Practical implications*

The paper concludes that the ease of using online shopping applications, the readiness and availability of support service for online purchases, information quality, and the efficiency and reliability of e-commerce systems significantly influence gen Z adoption of e-commerce. As a result, e-vendors and website business designers should ensure that the design and layout of e-commerce websites must be easy for consumers to navigate, provide a 24-hour consumer support system, and ensure efficiency and reliability of the e-commerce system.

### *Limitations and future research directions*

Besides the contribution this research brings to e-commerce literature, it is not without limitations. First, the study modeled the factors that influence the adoption of e-commerce among gen Z in Ghana. There is a need for support of findings with data from other developing countries. Another limitation lies in the methodology. Data were collected using a cross-sectional survey which does not permit the interpretation of causal inferences between const-

ructs. Some studies, such as Zmud (1982), indicate that diffusion of innovation is a social process whereby behavioral intention to adopt a technology develops over time. Therefore, the cross-sectional survey data may not give a better picture of the adoption behavior. Longitudinal research to systematically investigate the adoption behavior over some time may reveal exciting insights and provide a better understanding of e-commerce adoption among gen Z. Finally, future studies can incorporate constructs such as perceived online security and perceived online trust into the research model to investigate their effect on gen Z adoption of e-commerce.

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