Digital immigrants' attitudes towards e-reading in Iraq and Pakistan

Purpose - In the digital transformation race, the older generation, called digital immigrants (generation X), encounter various obstacles. The current study investigates the e-reading adoption and cross-cultural differences among generation X.

Design/methodology- We collected survey-based data from generation X e-readers in Iraq and Pakistan (Pakistan, N = 235; Iraq, N =251). Structural equation modeling and multi-group analysis (MGA) were used to arrive at a statistical decision regarding the hypotheses and the study's primary objectives.

Findings - Three hypotheses (H2, H3, and H8) were supported by both datasets. However, there is positive variance based on MGA for two hypotheses (H1, and H3) where the Pakistani sample's path coefficients are greater than the Iraqi sample's path coefficients. In contrast, there is negative variance based on MGA for two hypotheses (H7, and H9) where the Iraqi sample's path coefficients are greater than the Pakistani sample's path coefficients. Finally, these distinctions are examined, along with a few potential research topics.

Originality - Although there is a plethora of literature on digital immigrants and technology adoption in general, and specifically on e-reading uptake. Research on e-reading adoption in a global learning context is still lacking. Therefore, the current study examines the e-reading behavior of digital immigrants from two developing countries (Iraq and Pakistan) and to identify significant cross-cultural differences in e-reading adoption.

Keywords: e-reading, digital immigrants, theory of planned behavior, and cross-cultural study

Introduction

The increasing development of technology in all walks of life and the rapid expansion of using mobile phones, digital games, computers, and different types of social media applications led to deciding on making technology as one of the priorities for all ages. People nowadays are surrounded by technology as they find it everywhere bringing the world to their fingertips (Guernsey and Levine, 2015; Pikhart and Klímová, 2020). One of the major domains that are affected by transforming the world into a digital one is reading which represents an indicator of affective life in future academic fields (Wigfield *et al.*, 2008).

E-reading is one dimension of e-learning that received huge attention nowadays. The varied perceptions of people towards e-reading led to study this term in-depth to estimate the truth. E-reading has a number of associated benefits i.e., saving time, quick and 24/7 access, economic and portability of the contents (Mirza *et al*., 2021; Soroya and Ameen, 2018; Soroya and Ameen, 2020a). Numerous educational institutions and global libraries provide educators and students all over the world with many online services and facilities to cope with the current digital society and to use e-reading. Another related thing is that the reading materials such as books, journals, research periodicals, magazines, newspapers, and other types of reading materials are changed into electronic forms. In this concern, Jones and Brown (2011) opined that the use of printing books represents a wastage of money, materials, and human energy in addition to its expense. During COVID-19 pandemic this phenomenon took a new shape, there was no other choice except adoption of e-reading during lockdown situations. Pandemic (COVID 19) provided a golden chance to all users of the internet whether natives or immigrants to develop their abilities and skills to cope with the time of virtual learning and to enhance their e-reading capabilities. Furthermore, inclusion of the aging population in the information technology-based society is considered essential (Lancu and lancu, 2020).

On the contrary to the enthusiastic adoption of e-reading, there is still a challenging situation with digital literacy among different age readers and developing economies. According to (O'Brien and Scharber, 2008) (p. 66) the term digital literacy indicates "the composition and reading of multimodal texts". So, the new definition of literacy brought new responsibilities on the internet users as they should not only read and understand the texts, but they must be discerning the validity of the online text and be able to understand and read their screen.

The impact of digital paradigm and changing reading habits has been a topic of discussion among researchers since the last two decades (Soroya and Ameen, 2016; Soroya and Ameen, 2018; Soroya and Ameen, 2020b). In this regard generational differences have also been under consideration (Alraja, 2022; Mushtaq *et al.*, 2021). A clear distinction is made between native users and digital immigrants. In the current study, generation X has been taken as digital immigrants. According to Bittman *et al*., (2011, p. 161) native users can be "native speakers of the digital language of computers, video games, and the internet. They are held to be active, experiential learners; natural multitasks, using a range of digital devices and platforms simultaneously to drive their information learning agendas".

On the other hand, the people that have arisen before the time of technology are called "digital immigrants" (Bittman *et al.*, 2011, p. 161). Soroya *et al*. (2022) reported that digital immigrants are less motivated, have health concerns still they are regular users of e-contents due to the associated advantages e.g., access, saver (time and cost), speed and currency of the content. Evidence is there that there are differences in technology adoption behavior among digital immigrants (Generation X), digital natives (Generation Y), and internet generation (Generation Z) (Shams et al., 2020). Indeed, these differences among generations are even greater in the cross-cultural contexts compared with developing and developed countries (Roth-Cohen et al., 2022). Similarly, consumption trends in general and e-reading consumption trends in specific have been affected for generation X e-readers (Soroya *et al*., 2022). Drawing on cultural and generation differences, we use generational cohort theory (Simon, 2016) and focused on generation X e-readers because of the challenges they face in e-reading adoption (Soroya *et al*., 2022). Theoretically, understanding e-reading behavior among Iraq and Pakistan could provide comparative views on e-reading adoption; therefore, the current study use theory of planned behavior as a guiding theoretical framework.

Based on the above discussion, this study endeavors to empirically investigate digital immigrants' attitudes towards e-reading in two different developing country contexts, Iraq and Pakistan. Considering the attitudes of the participants and valuing their experiences is an essential matter that can affect their beliefs about the efficiency and inefficiency of reading materials. An example of this situation is mentioned by Jones and Brown (2011) that a reader who is used to reading printed books will face difficulty in benefiting from e-books. Therefore, this study attempts to explore the factors affecting e-reading adoption intentions and practices. The current study,

therefore, has three primary aims, including *a) To empirically investigate the e-reading behavior of digital immigrants from two developing countries, b) To examine the role of theory of planned behavior in e-reading adoption among digital immigrants, c) To find out any cross-cultural differences in e-reading adoption among Iraq and Pakistan.*

The next section of the paper details theoretical foundations. The results are presented followed by research methods. Finally, discussion and conclusion are added to present core findings, implications, limitations, and future research directions.

Theoretical background

The core objective of the current study revolves around developing an understanding of the e-reading behavior of digital immigrants. Comprehensively, there are two theoretical underpinnings to this research objective, 1) generation X which has been defined as digital immigrants in the study, 2) e-reading behavior. These objectives can be linked with generational cohort theory (Simon, 2016) and theory of planned behavior (Ajzen, 2012), respectively.

From generational cohort theory, generation X can be defined as the individuals born during the years from 1964 to 1980 (Smola and Sutton, 2002). Linking this age bracket to the developing country context where the emergence of technology and innovation is quite at a slower pace than in those of developed countries, developing countries are processing with technology exposure, therefore categorized as digital immigrants. Technology adoption, in general, is harder for digital immigrants (generation X) (Soroya *et al.*, 2022). According to Moorthy *et al*. (2017), there are a couple of factors that affect technology adoption, such as usage barrier, value barrier, risk barrier, tradition barrier, and image barrier for generation X users.

Historically, technology was viewed as the way of the future, and educational technologies lacked a global perspective. However, in light of the current COVID-19 pandemic, technology has established itself as a functional requirement for educators (Hassanpour and Şahin, 2021). Therefore, regardless of generational differences and adoption challenges, e-reading adoption intentions are still hard for digital immigrants in the developing country contexts. In a similar thought stream, (Teo and Divakar, 2021) has established a few thoughts around technology-enabled learning practices in the harder time such as a global pandemic. Undoubtedly, the post-pandemic situation demands continuously observing student learning experiences, and how e-reading adds value to the learning experiences of digital immigrants.

The theory of planned behavior (Ajzen, 2012) has conceptualized behavior through behavioral intentions, and a set of predictors including attitude, subjective norms, and perceived behavioral control. The current study attempted to extend the model using reading purpose as a predictor for e-reading intentions and behavior itself has been used as e-reading behavior (see figure 1). Historically, behavior as a construct has been considered highly complex, having more focus on behavioral intentions in the information processing is crucial (Kidwell and Jewell, 2008). Conceptually, behavioral intention is the likelihood or subjective probability that a person will engage in a specific behavior (Homburg *et al*., 2005).

Generally, the choice behavior is being driven through behavioral intentions. In the current study, these constructs are conceptualized using a conceptual layer of e-reading behaviors among digital immigrants, and reading intentions are linked with the reading purpose as an extended view of TPB theory extension. Accordingly, we conceptualized the 'attitude' construct as to how people make the future decision for e-reading adoption, and how their intentions are being formulated. Likewise, subjective norms are inclined through the descriptive and moral aspects of e-reading adoption. In this manner, we wanted to empirically test how family and friends in the e-reading adoption behave differently. In the context of the current study, we tried to look into how the older generation feels empowered about e-reading adoption given the cultural differences among Iraq and Pakistan which have been detailed in the study setting section of the paper. The construct of reading purpose was uniquely shaping e-readers' attitudes (Goles *et al*., 2008) despite challenges in the e-reading consumption as highlighted by (Soroya *et al.*, 2022).

The theory of planned behavior (Ajzen, 2012) has given a strong base to take it further with the purpose of behavior. The role of rational psychology is significant in the attitudinal and behavioral focuses (Ajzen, 2012). Given in the e-reading adoption efforts, the current study attempted to visualize how different cultural backgrounds might shape reading behaviors in the digital age and finally influence actual e-reading behaviors. The historical advancement from the theory of reasoned action to the theory of planned behavior (Fishbein and Ajzen, 1975), welcomed to explore if the behaviors might be linked with the purpose of behaviors. Based on this, the more favorable the attitude and subjective control, and the higher the perceived control, the more determined the individual is to accomplish the desired behavior. Thus, persons are frequently projected to carry out intentions when the opportunity presents itself, based on the concept of a sufficient degree of actual control.

H1: Perceived behavioral control positively affects digital immigrants' attitudes towards e-reading.

H2: Subjective norms are predictors of positive attitudes towards e-reading among digital immigrants.

H3: Perceived behavioral control predicts positive intention to adopt e-reading among digital immigrants.

H4: E-reading backed by special purposes develops a positive attitude towards e-reading among Digital immigrants.

H5: Positive attitude towards e-reading develops a positive intention to adopt e-reading.

H6: Subjective norms develop a positive intention to adopt e-reading among digital immigrants.

H7: E-reading with a purpose leads to a positive intention to adopt e-reading.

H8: Positive attitude towards e-reading leads to the e-reading behavior of digital immigrants.

H9: Intention to adopt e-reading has a direct impact on digital immigrants' actual behavior/practices.

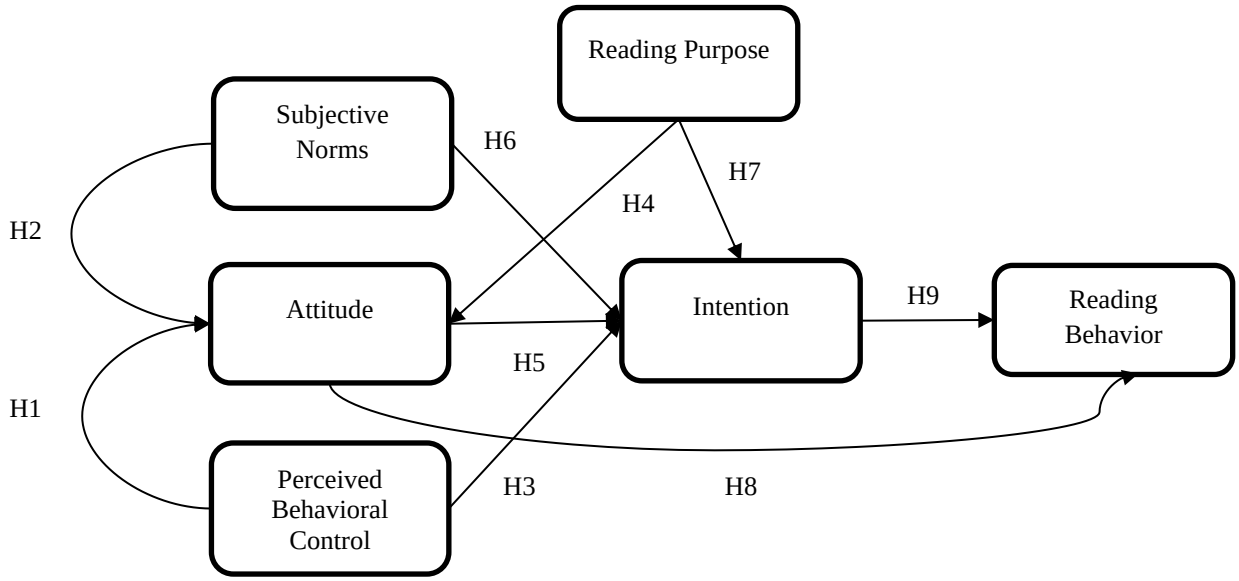

Fig. 1. Proposed conceptual model

Research methods

The study contexts

The current study includes two developing contexts (Iraq and Pakistan) to have a cross-cultural view. The need for using technology is turning the scales around the world. Therefore, the necessity to use it becomes urgent for all ages, specifically for digital immigrants. Thus, studying the situation of e-reading for this specific sample needs careful analysis of the surrounding circumstances in the two environments: Iraq, and Pakistan.

In Iraq, where the living conditions are not stable for the last four decades, colleges and schools do their job in educating students and combating digital literacy by inserting specific computer subjects in secondary, intermediate, and higher education levels. But still, there has been a group of people who do not belong to these stages. They grew up in a period far from the extensive use of technology that we see nowadays. Iraqi digital immigrants consist of doctors, engineers, college instructors, teachers, and many other uneducated people. The use of technology for all these levels depends on its necessity. While some need it in their daily living and work, others are still far from using it.

All people, whether digital natives or immigrants, were motivated to buy these new technologies and learn all the details related to them, which in turn played an essential role in the treatment of the previous era of digital literacy. The turnout to the use of smartphones extensively and the companies race towards producing new and updating copies of phones help to a large extent to change the abilities of people and add more to their knowledge whether about the use of technology or to the content they receive due to the easiness of getting information via phones (Asad *et al*., 2021). One of the main domains affected by the developmental conditions of technology is the spread of e-reading among people.

The situation in Pakistan is also similar; the use of electronic devices is growing. The higher education institutions are adopting the hybrid model of teaching and learning, a recent study from Pakistan has outlined numerous aspects of e-learning adoption in Pakistan in the global pandemic (Rehman *et al.*, 2021), the movement from the physical environment to the digital learning environment is still a challenge. Generation X in developing countries such as Pakistan belong to the digital immigrant group where they got late exposure to technology, reading with digital devices seems more challenging (Mirza *et al*., 2021). The reading behavior in general has numerous implications especially in the digital environment with a diversified choice for digital

reading in Pakistan (Soroya and Ameen, 2020b). Thus, this study puts the finger on the current situation of e-reading among digital immigrants in Iraq compared to Pakistan.

Survey design and sample

The study adopted a quantitative design using survey research methods. Since the purpose of this study was a cross-cultural investigation of the phenomena, data were collected from two developing countries, i.e., Iraq and Pakistan. Public library users born between 1964-1980 made up the population. The research instrument was adopted from (Soroya *et al.*, 2022) (Appendix-A) who developed and validated the scale in the Pakistani context. The instrument had six constructs with 19 statements. The data were collected using two different scales. First, a five-point Likert type scale ranging from 1=Strongly Disagree and 5=Strongly Agree was applied for 'Attitude', 'Normative beliefs', 'Perceived behavioral control, and 'Intention'. Sample size requirements for SEM or path analysis can vary depending on the specific research context and design. While some researchers suggest a minimum ratio of 5 cases per variable, others recommend a higher ratio of 10 or 20 cases per variable. Ultimately, the choice of sample size should be based on a careful consideration of the research question, the complexity of the model, and the desired level of statistical power.

In the case of SmartPLS, Hair *et al*. (2017) suggest a minimum observation-to-variable ratio of 5:1, with ratios of 15:1 or 20:1 preferred. This recommendation is in line with the guidelines of Kline (1998) and Field (2009), who suggest a sample size of at least 10 times the number of parameters in the model, with a preferred sample size of 20 times the number of parameters.

When conducting multi-group analysis, it is important to ensure that each group is large enough to yield reliable and meaningful results. Bentler and Chou (1987) suggest a ratio of 5 cases per variable for each group, while Kline (1998) recommends a sample size of at least 10 times the number of parameters in each group. The choice of sample size for multi-group analysis should be based on the number of variables and parameters in each group, as well as the desired level of statistical power. The current survey had six variables, considering the above mentioned suggestions, the minimum required sample size for each group was 200 for this study. After several reminders and efforts, a total of 251 from Iraq and 235 usable responses from Pakistan could be collected.

Data collection procedures

From both countries (Pakistan and Iraq), data were collected through self-administered questionnaires and distributed among different public library users. Friendship chains were also used, public library users were requested to share the questionnaire link through their social media channels to the other users known to them.

Data analysis

Data were entered into SPSS (20.0) for descriptive analysis i.e., frequency and percentage of demographic information. Data from both countries were combined in a single file and codes were assigned to keep the data separately identifiable. For Iraq code "1" was used and for Pakistan, code "2" was used. Later, MS Excel was used for making compatible files to run analysis in SmartPLS. Multi-Group Analysis (MGA) was applied to find the similarities and differences between the two studied groups through the 'parametric analysis.

Results

The results are presented into two sections: first demographics and then the results of the structural equation model.

Demographics

The data presented in Table I confirm that from Pakistan more males (68%) whereas from Iraq more females (58%) represented the sample. A majority of the respondents were well qualified having 14 years or above qualification. However, from Iraq respondents with a higher degree (Ph.D.) were higher as compared to Pakistan. Comparatively, Iraqi people were spending more time on e-reading daily. Mobiles followed by laptops are common e-reading devices. Laptops are equally used among Pakistani and Iraqi people i.e., 31 %, however, use of the mobile phone was higher among Pakistani digital immigrants for e-reading. The use of e-readers/tablets and desktops for e-reading was a bit higher among Iraqi generation Xers.

Table I

Demographics.

Variable	**Iraq**	**Pakistan**
	n (%)	n (%)
Gender		
Male	105(42)	160(68)
Female	146(58)	75(32)
Educational level		
Intermediate (12 yrs of education)	31(12)	9(3)
Bachelor /BSc (14 yrs of education)	63(25)	88(37)
MA/MSc/BS (16 yrs of education)	89(36)	105(47)

MS/M.Phil. (18 yrs of education)	0	30(13)
Ph.D.	68(27)	3(1)
Internet experience		
Less than one year	43(17)	23(10)
1-5 yrs	70(28)	56(24)
More than 5 yrs	138(55)	156(66)
Time spent on e-reading		
1-6 Hrs	145(58)	194(83)
7-12 Hrs	63(25)	38(16)
13-18 Hrs	36(14)	31(1)
19-24 Hrs	7(8)	0
Devices used for e-reading		
Mobile	124(50)	153(65)
Laptop	78(31)	73(31)
Tablet/ e-reader	26(10)	3(1)
Desktop	23(9)	6(3)
Total	**251**	**235**

Note: n = number of observations, % = proportionate of total observations, total observations (Iraq) = 251, total observations (Pakistan) = 235

Measurement model

Before the application of structural equation model the validity of the instrument was measured through convergent and discriminant validity. Indicators having factor loadings of more than 0.4 were selected for final analysis and model measurements. All the constructs were reflective, and the convergent validity was measured through composite reliability (CR) and average variance extracted AVE). At the same time, convergent validity is examined based on HTMT 0.85 criterion. The results presented in Table II confirm that composite reliability values for all constructs were above the threshold value, i.e., 0.7, and similarly, AVE was above the benchmark (>.05) for most of the constructs in both groups, however, the AVE values above 0.4, were also accepted based on "composite reliability (CR) alone, and the CR for the same constructs was satisfactory at >.70. As suggested by Fornell and Larcker (1981) the researchers may conclude that the convergent validity of the construct is adequate, even though more than 50% of the variance is due to error (p. 46).

Table II

Collinearity

Scale	**Loadings**		**CR ≥ 0.70**		**AVE ≥ 0.50**	
	IQ	**PK**	**IQ**	**PK**	**IQ**	**PK**
Attitude			0.766	0.813	0.461	0.523
A1	0.711	0.635				
A2	0.426	0.776				
A3	0.811	0.667				
A4	0.705	0.801				
Perceived Behavioral Control			0.757	0.710	0.614	0.550
P1	0.887	0.715				
P2	0.665	0.767				
Intentions			0.857	0.757	0.604	0.439
I1	0.844	0.719				
I2	0.874	0.660				
I3	0.754	0.605				
I4	0.611	0.663				
Subjective Norms			0.830	0.868	0.710	0.766
S1	0.793	0.874				
S2	0.890	0.877				
Reading Purpose			0.805	0.728	0.513	0.403
R1	0.777	0.631				
R2	0.748	0.664				
R3	0.800	0.724				

Reading Behavior			0.819	0.713	0.601	0.454
RB1	0.817	0.578				
RB2	0.794	0.640				
RB3	0.587	0.723				
RB4	0.641	0.589				

Note: CR = Composite Reliability, AVE = Average Variance Explained

The "Variance Inflation Factor" (VIF) was applied to check the multicollinearity. Table III provides a summary of results that reflect collinearity, which is less than 5, and it is aligned with the "rule of thumb", as mentioned by Hair *et al.* (2017). Thus, the VIF values in both contexts confirm that there was no issue of multicollinearity among latent variables.

Table III

Multicollinearity

Scale	**VIF (Iraq)**	**VIF(Pakistan)**
Attitude		
A1	1.140	1.168
A2	1.495	1.379
A3	1.262	1.769
A4	1.580	1.497
Perceived Behavioral Control		
P1	1.010	1.063
P2	1.010	1.063
Intentions		
I1	1.210	1.913
I2	1.112	2.020
I3	1.171	1.533
I4	1.134	1.289
Subjective Norms		
S1	1.395	1.223
S2	1.395	1.223
Reading Purpose		
R1	1.041	1.325
R2	1.076	1.234
R3	1.112	1.386
Reading Behavior		
RB1	1.116	1.783
RB2	1.104	1.772
RB3	1.133	1.201

RB4	1.104	1.241

After examining the convergent validity, data were examined to check the HTMT values of all constructs; all values were less than 0.85 except 1 that was 0.86 that too was within the threshold value that is <.90 (Henseler, 2017). Thus, the results confirm discriminant and convergent validity (Table IV).

Table IV

Heterotrait-Monotrait Ratio (HTMT 0.85).

Construct	**1**	**2**	**3**	**4**	**5**	**6**
Attitude (1)	-					
Perceived Behavioral Control (2)	0.666	-				
Intention (3)	0.283	0.797	-			
Subjective Norms (4)	0.453	0.860	0.517	-		
Reading Behavior (5)	0.565	0.597	0.266	0.469	-	
Reading Purpose (6)	0.249	0.458	0.497	0.431	0.533	-

Structural model

After satisfying the pre-analysis conditions, algorithm and bootstrapping for 5000 samples were run for structural equation modeling. Results presented in Table IV expose the fact that there are behavioral differences among digital immigrants from both countries. Pakistani Digital immigrants reported that their behavioral control does not affect their attitude, and similarly, their attitude has no effect on their e-reading intention. Another major difference is found regarding normative beliefs; Pakistani digital immigrants are more likely to be affected by their peers, families, and important people for their intention to adopt e-reading. At the same time, this relationship does not exist among Iraqi digital immigrants. Furthermore, reading purpose was a predictor of attitude to adopt e-reading among Iraqi digital immigrants and a predictor of intention among Pakistani digital immigrants.

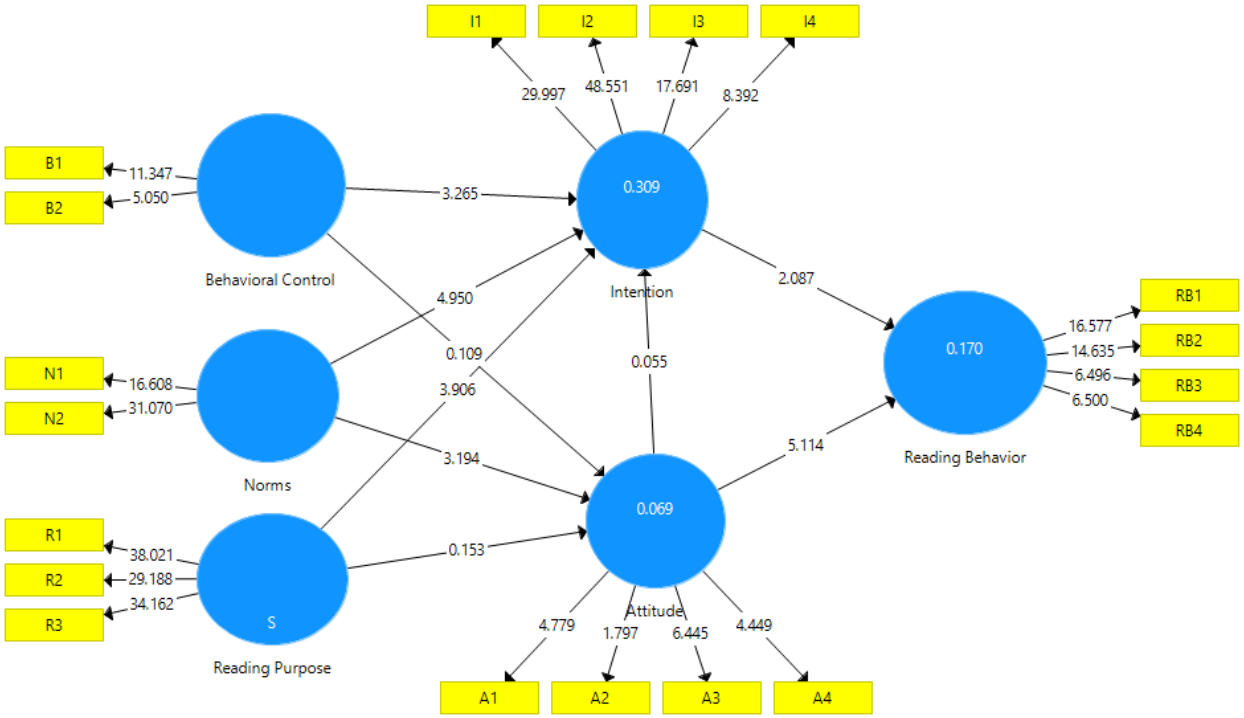

Fig. 2. Structural model (Pakistan)

Among Iraqi digital immigrants, data analysis indicates that intention significantly and positively affects reading practices, whereas this relationship does not exist among Pakistani digital immigrants. Results presented in Table V confirmed H2, H3, H8 at p<.05, predicting that subjective norms influence attitude, and attitude affect reading behavior positively. Similarly, perceived behavioral control is proved to be affecting the intention to adopt e-reading. These relationships prevail in both cultures. However, H1, H4, H5, H6, H7, and H9 are rejected at p>.05.

Table V

Structural model.

Hypotheses	Path	β (IQ)	β (PK)	t-Values (IQ)	t-Values (PK)	p-Values (IQ)	p-Values (PK)	Decision (IQ)	Decision (PK)
H1	PBC→AT	.33	.01	5.12	0.11	0.00	0.92	Supported	Rejected
H2	**SN→AT**	**.22**	**.25**	**3.67**	**3.19**	**0.00**	**0.01**	**Supported**	**Supported**
H3	**PBC→I**	**.24**	**.22**	**3.31**	**3.26**	**0.01**	**0.01**	**Supported**	**Supported**

H4	RP→AT	.16	.02	3.01	0.15	0.01	0.87	Supported	Rejected
H5	AT→I	.21	-.01	3.04	0.05	0.01	0.95	Supported	Rejected
H6	SN→I	.09	.31	1.26	4.95	0.21	0.00	Rejected	Supported
H7	RP→I	.05	.24	0.83	3.91	0.41	0.00	Rejected	Supported
H8	**AT→RB**	**.37**	**.36**	**5.45**	**5.12**	**0.00**	**0.00**	**Supported**	**Supported**
H9	I→RB	.07	.15	0.96	2.08	0.34	0.04	Rejected	Supported

Note: β = Path Coefficient, IQ = Iraq, PK = Pakistan

On the contrary, Iraqi digital immigrants reported opposite results. Their behavioral control is a significant predictor of positive attitude towards e-reading, and attitude significantly predicts positive intention to adopt e-reading (Fig. 3).

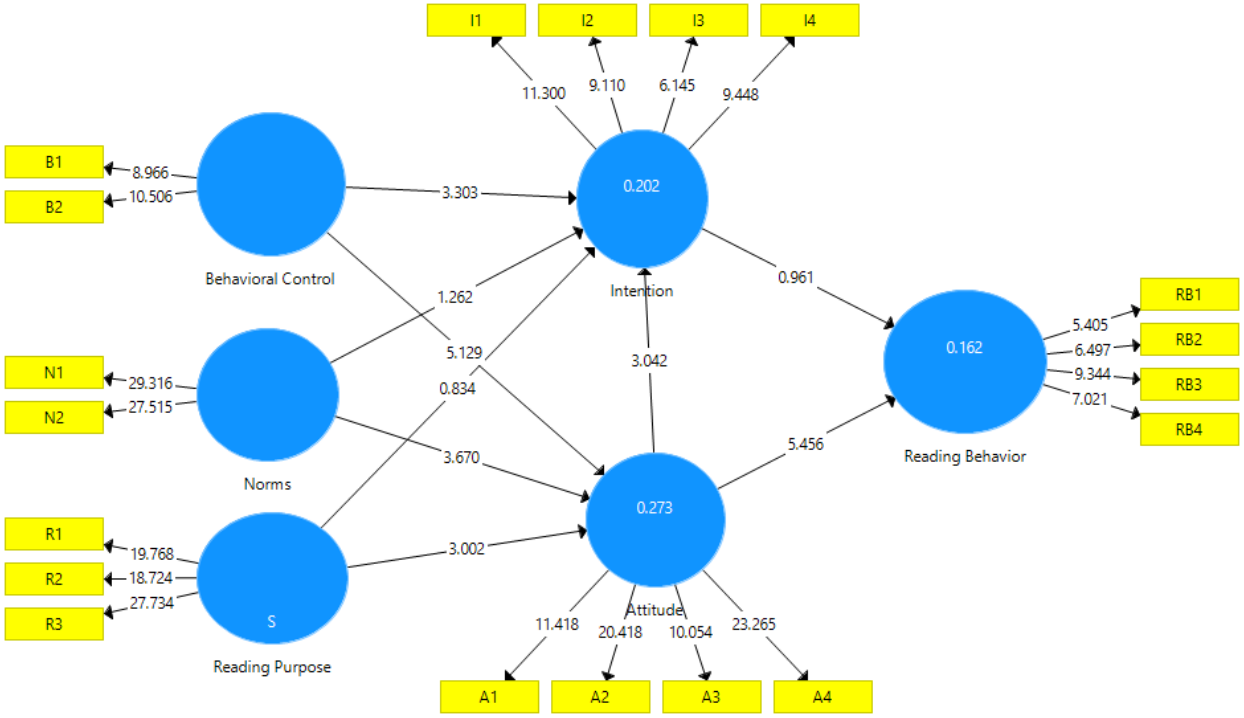

Fig. 3. Structural model (Iraq)

Parametric tests of multi-group analysis (MGA) confirmed significant differences between Iraqi and Pakistani digital immigrants regarding e-reading adoption. Differences were found

regarding attitude, intention, behavioral control, subjective norms, and reading purposes. Impact of attitude on intention, behavioral control on attitude, subjective norms, and reading purpose on intention differ significantly between Iraqi and Pakistani digital immigrants at $p < 0.05$ (Table VI).

Table VI
Parametric Test (MGA).

	Hypotheses	β-diff (IQ-PK)	t-Value (IQ-PK)	p-Value (IQ-PK)
H1	**Perceived Behavioral Control → Attitude**	**0.324**	**3.275**	**0.001****
H2	Subjective Norms → Attitude	-0.04	0.413	0.68
H3	Perceived Behavioral Control → Intention	0.022	0.221	0.825
H4	Reading Purpose → Attitude	0.15	1.314	0.189
H5	**Attitude → Intention**	**0.206**	**2.2**	**0.028***
H6	**Subjective Norms → Intention**	**-0.211**	**2.152**	**0.032***
H7	**Reading Purpose → Intention**	**-0.193**	**2.184**	**0.029***
H8	Attitude → Reading Behavior	0.003	0.035	0.972
H9	Intention → Reading Behavior	-0.076	0.73	0.466

*Note: β = Path Coefficient, IQ = Iraq, PK = Pakistan, * = Signiant at .05 and ** = Signiant at .01*

Discussions

The current study intended to empirically investigate the e-reading behavior of digital immigrants from two developing contexts (Iraq and Pakistan) and to identify significant cross-cultural differences in e-reading adoption. Overall, the results of the current study suggest, there are significant differences among e-reading adoption of digital immigrants in both contexts of Iraq and Pakistan. Looking into similarities (Table V) among these contexts three hypotheses H2 (Subjective norms → Attitude), H3 (Perceived Behavioral Control → Intention), H8 (Attitude →Reading Behavior).

The results from the multi-group analysis (Table VI), two hypotheses H1 (Perceived Behavioral Control → Attitude), H5 (Attitude → Intention) where the Iraqi sample's path

coefficients are greater than the Pakistani sample's path coefficients. The environment plays an integral role towards the actual behaviors. In the new normal during global pandemic, every commercial and non-commercial activity experienced a considerable shift to establish social distancing, and journey from touch to tech. Higher education contexts, moved the services to online learning where e-reading got more demand. Therefore, the results which are similar in both contexts of Iraq and Pakistan, have proved the global impact of COVID-19 pandemic. There was a shift to go for e-reading despite numerous challenges (Jung *et al.*, 2021).

In contrast, as per multigroup analysis (Table VI), there is a variance of path coefficients for two hypotheses H6 (Subjective Norms → Intention), H7 (Reading Purpose → Intention) where the Pakistani sample's path coefficients are greater than the Iraqi sample's path coefficients. It means results are significant for H6 and H7, however, Pakistani sample proved stronger relationship of subjective norms and reading purpose on intentions as compared with Iraqi sample. Finally, these distinctions are examined, along with a few potential research topics.

From a cultural perspective Iraq is different from Pakistan on (Hofstede, 1983) dimensions ‘power distance’, and ‘collectivism’, has significant differences and Iraq has more power distance and collectivism. Conversely, Pakistan has more long-term orientation than Iraq in terms of technology adoption. These cultural differences are important to understand the findings of the current study. High inclination towards collectivism in Pakistani culture shapes up subjective norms which means intentions are formed by peer influences towards e-reading. Interestingly, reading purpose stands out in Pakistan due to the collective thought of e-reading benefits such as time and cost saving as concluded by (Soroya *et al.*, 2022).

On the other hand, a higher magnitude of power distance in Iraqi culture changes the adoption of e-reading through attitude and perceived behavioral control to predict intention. The more power distance in the Iraqi culture triggers advanced technologies adoption that might hinder the actual difficulty to have e-reading intentions. It implies, even though it is quite challenging for digital immigrants to adopt e-reading in general, the Iraqi sample shows a positive attitude towards e-reading intentions.

In addition to cultural aspects, the access and exposure to tech devices for digital immigrants quite appeared late in both contexts (Iraq and Pakistan). From the societal perspective, digital media adoption has been a challenge for digital immigrants (Joa and Magsamen-Conrad, 2021), digital media users across countries vary based on numerous demographics such as gender

and age (Taipale *et al.*, 2021). To enhance digital engagement in higher education, the personal attributes (habits, sense of trust, and fears) of digital immigrants are crucial (Safarov, 2021). However, technology in higher education is trending in both contexts and public policy at higher education might use the results of this study to develop policies around e-reading among digital immigrants.

The study empirically investigated the e-reading adoption of digital immigrants across two cultures (Pakistan and Iraq), employing the theory of planned behavior. We employed SEM and MGA using SmartPLS and confirmed that although digital immigrants from two different cultures behave similarly, there are still significant differences between digital immigrants from the two cultures. Digital immigrants accept the influence of their peers, friends, family members while deciding to opt for electronic reading in both cultures. Also, if they perceive that they have control over their decisions, they are more likely to adopt e-reading intentionally.

Furthermore, without any variance, the attitude of digital immigrants from both cultures leads to e-reading behavior/practices. In terms of differences, first, in the Iraqi context, perceived behavioral control of the respondents is a significant predictor of digital immigrants from Iraq. In contrast, this variable is insignificant among Pakistani digital immigrants. Similarly, Iraqi digital immigrants' attitude significantly helped them develop their intention to adopt e-reading, whereas, among Pakistanis, attitude plays no role in this regard. On the contrary, Pakistani digital immigrants' intention to adopt e-reading was significantly influenced by subjective norms and reading purpose. However, these variables remained insignificant among Iraqis. The demographics confirm that generation Xers spend a reasonable time on e-reading, thus it is not the age that restricts this generation to read electronic content but maybe some other factors that may cause their low e-reading including social norms, behavioral control, and attitude.

Theoretical implications

The study is unique in many ways. First, the study provides cross-cultural insights taking two developing countries underpinning the theory of planned behavior in the e-reading context giving generation X perspective. Literature provides rare evidence of this kind of study on the topic. Thus, it will grab the attention of the researchers to further advance this topic. The findings confirm that developing countries have different contexts, norms, and mindsets that may be considered while applying any research findings and making policies. Thus, the study strengthened the literature on e-reading from developing countries and the literature on digital immigrants. According to the

modern phygital concept, the virtual environment can be strengthened with the help of humans, and the physical environment if supported with digital information can add value. Particularly in the new normal, these kinds of studies and findings are helpful in policymaking. Theoretically, the study advances the TPB by confirming the mediating role of attitude (originally independent variable) as suggested by Soroya *et al*., (2022) which is again confirmed in both cultures in the current study.

Practical implications

Overall, examining the differences among generational cohorts in adopting e-reading tools and behavior can provide valuable insights into how society is changing and evolving in response to new technologies. By understanding these differences, we can work towards creating more inclusive and accessible digital environments that benefit all members of society.

Based on the results, a few solutions are suggested here. Since attitude is significantly found affecting e-reading behavior in both cultures which are aligned with the findings of Soroya *et al*. (2022), therefore it is suggested that digital immigrants may not only be informed about the positive consequences of e-reading but also there is a need to provide them user-friendly apps to make their reading experiences more joyful. Similarly, Subjective norms were found to influence positively on the attitude in both contexts, therefore, it is suggested that individuals belonging to generation X may be encouraged to share their e-reading experiences with their family members, friends, and peers.

In Iraqi culture perceived behavioral control determines intention, whereas, in Pakistani culture subjective norms predict intention. It means that in Pakistani culture peers and family members not only develop a positive attitude but also to develop their intention which is a predictor of e-reading behavior, therefore, their peers, friends and family members can play an influential role in making up their intention. This can be done by highlighting the need of e-reading in an emergency like COVID-19 among generation Xers circles which is also validated by Soroya *et al*. (2022). Similarly, the more Iraqi would have decision power the more they will be likely to have positive intention towards e-reading.

In the Iraqi context reading purpose was found insignificant in developing intention, but Pakistanis intend to read online to avail the associated benefits (purposes). Iraqi generation Xers must be guided about the benefits of e-readings through libraries, media campaigns, seminars, and

workshops. They should be told that a phygital environment is the only solution for information clients. Thus, practical steps are required to maximize the adaptability of online content among digital immigrants, particularly through a liaison of libraries, learned people, media sources and government policies to support generation Xers in changing reading habits (Ulker *et al*., 2021)

Limitations and future research directions

Likewise, the current study comes up with a few limitations and future research efforts can be built on these. First, the sample for the current study was generation X e-readers from developing country contexts – Iraq and Pakistan. Further research can compare from a developed country context. Second, current research has used a cross-sectional design from an e-reading perspective, it would be interesting to understand the preferences of readings in the phygital environment (physical and digital) using Necessary Condition Analysis (NCA). Third, the current study has employed a survey design, however, understanding and comparing generation X (digital immigrants) on the longitudinal experimental design to enrich e-reading theory for digital immigrants. Finally, we had two different yet developing country contexts to empirically e-reading behaviors from the perspectives of digital immigrants, it would be valuable to test the proposed model on digital natives which will probably provide few grounds to enrich the discussion of e-reading behaviors among generations from developing country contexts.

Conclusions

The current study conceptualized theory of planned behavior to examine e-reading intention and behavior. Contextually, generational cohort theory was employed to emphasize on 'generation X' and rationalize as digital immigrants. Regarding the cultural dimensions, we examined multi group analysis to compare the results and developed theoretical and practical implications. There are significant differences among the populations of two countries. For example, Iraqi digital immigrants' attitude towards e-reading was dependent on their behavioral control, whereas it remained insignificant for the Pakistani population. Similarly, Iraqi digital immigrants' attitude significantly helped them develop their intention to adopt e-reading, whereas, among Pakistanis, attitude played no role in this regard. On the contrary, Pakistani digital immigrants' intention to adopt e-reading was significantly influenced by their social circle (subjective norms) and reading purpose. However, these variables remained insignificant among Iraqis. In conclusion, when it comes to technology adoption among digital immigrants (people who were not born into the digital

era), cultural differences can play a significant role in their decision-making process. To effectively promote reading technology adoption among digital immigrants, it is important to understand and respect these cultural differences.

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Appendix A. Questionnaire Statements (Soroya *et al.*, 2022)

Constructs	Code	Statements
1. Attitude	A1	On-screen reading is effective
	A2	On-screen reading is helpful
	A3	On-screen reading is exciting
	A4	On-screen reading is enjoyable
2. Normative Belief	N1	Most people (Family, peers, friends) who are important to me think that I should practice e-reading
	N2	The people in my life whose opinion I value would approve my e-reading practice/habit
3. Perceived Behavioral Control	P1	I believe I am able to use e-devices for reading
	P2	I can improve the frequency of e-reading in the forthcoming months
4. Intention	I1	I intend to develop e-reading skills in the forthcoming months
	I2	I plan to continue e-reading in future

	I3	I am thinking to enhance my technological skills for e-reading in the forthcoming months
	I4	I intend to purchase e-reading devices (Kindle reader/tablet/laptop etc.) in near future
5. Reading Purpose	RP1	I read on screen to save time and money
	RP2	I read on screen to learn new ideas
	RP3	I read on screen to improve technical skills
6. Reading Behavior	RB1	I read on-screen
	RB2	I read on-screen on daily basis
	RB3	I spend more time on e-reading than print
	RB4	I read on screen at home.