Assessing E-commerce Adoption Determinants in Saudi Arabia: Impact of Financial Loss and Identity Theft

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Abstract

The study's is to assess how Saudi Arabian visitor' use of online shopping is affected by financial loss and identity theft. The association between financial loss, identity theft, and adoption of e-commerce in Saudi Arabia was investigated in this study using a quantitative research technique. Data were collected by structured questionnaires, and the findings were analysed utilising structural equation modelling (SEM) in Smart PLS. The analysis shows that visitors from Saudi Arabia tend to be more worried about money loss as well as online identity theft. This study is an innovative attempt to look at the e-commerce habits of Saudi visitors. By shedding light on the issues of identity theft and financial loss during online purchases in the digital age, it contributes to the small amount of knowledge currently scarce in this field.

Keywords: *Identity theft, Financial loss, Tourism, Tourists' behaviour, E-commerce*

INTRODUCTION

Information and communication technology's (ICT) quick development has drastically altered our daily lives, including the way we purchase (Aslam et al., 2021). The growth of B2C, or business-to-consumer In particular, e-commerce has grown to be an essential element of our lives (Lasrado et al., 2023). Online businesses usually ask for personal information such as names and addresses (Liu et al., 2023). As per Janssen et al. (2020) and Benchaya Gans et al. (2022), individuals are entitled to know who is gathering and using their personal data. Because making transactions online requires supplying personal information like names, email addresses, as well as credit card numbers, it is known that some personal information will be exposed.

The growth of the internet has been advantageous to both businesses and travellers in many ways, since it enables the former to market their products and the latter to make purchases from anywhere (Aslam et al., 2021). But, e-commerce also has disadvantages. Travellers may be hesitant to engage in e-commerce despite the potential benefits since it requires disclosing personal information, for instance, social security numbers, credit card details, as well as date of birth. Ensuring the protection of users' personal data is essential to the e-commerce success (Liu et al., 2004). Two knowledge gaps are therefore identified by this investigation. The first apparent knowledge gap is the lack of research on how financial loss affects tourists' adoption of e-commerce. Additionally, the subsequent knowledge gap is that no past studies that has performed intensely considering the effect of identity theft on tourists' adoption of e-commerce.

The Saudi government has implemented a number of e-commerce adaptation initiatives since it views this industry as a national transformation initiative that aligns with the Saudi Vision of 2030. However, no research has looked at how tourists to Saudi Arabia perceive the amount of laws and regulations pertaining to e-commerce that are in place to foster a stable e-commerce sector. Saudi tourists are key stakeholders in the success of e-commerce that supports Saudi Vision 2030, but a lack of understanding of their perceptions of e-commerce safety could make it more difficult for the country to prepare for Saudi Vision 2030 to be achieved. It is necessary to address two research aims. The following are the researcher's stated objectives:

What is the influence of financial loss towards adoption of e-commerce by tourists in Saudi Arabia?

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This is how the rest of the paper is organized. The following section offers a thorough introduction to a conceptual framework and several hypotheses in addition to reviewing some relevant research. After part 3 provides an explanation of the technique, section 4 gives the paper's findings. The debate is presented in Section 5, and section 6 concludes with some limits and recommendations for future research.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Literature Review

During the 1990s, the concept of e-commerce was established with the expectation of long-term marketable events and assistance for many businesses (Emami et al., 2023). Here is a brief overview of cyberspace, albeit, as most research on the subject didn't focus on how much e-commerce had expanded until the dot-com bubble era, when large corporations began to transform their businesses (i.e., 1998 to 2000). Due to the destruction caused by countless incompetent "dot.com" businesses, managers of these organisations started to realise that instead of possessing an apparently reliable concept (Turban et al., 2008).

E-commerce is the most significant type of Internet Company in the modern day. Internet shopping is one of the main e-services that many modern civilizations are able to access because to the explosion of information and rapid network expansion. In contrast to earlier versions, the new type e-commerce poses a serious threat to corporate and radical competition because it has the potential to alter the current financial structures due to the volume of consumer demands and opportunities (Rosário & Raimundo, 2021).

The remarkable progress of social media as well ad internet usage in Saudi Arabia remains unchanged. As per BBC's statement, of all the Middle Eastern nations, Saudi Arabia has the largest social media market. This is a result of using cell phones more frequently. The operators tend to be highly active on platforms of social media such as Twitter, Snapchat, Facebook, as well as YouTube. Social media usage in the nation is primarily influenced by political, religious, and cultural considerations. These variables consider the varying backgrounds of social media usage among Saudi citizens. This makes it easier for users to interact and converse (Baabdullah et al., 2019).

Saudi Arabia is expected to have 35.84 million people living there in total in 2022. At a pace of 1.5%, the population has increased. 34.84 million people in Saudi Arabia use the internet. A study published in the Saudi Gazette in 2022, which draws on data from the Communications and Information Technology Commission (CITC) about internet prevalence and use in Saudi Arabia, states that 98% of the country's population uses the internet. This is a remarkable amount of national internet intrusions. There are over 39.53 million mobile connections in Saudi Arabia. 29.20 million Saudi Arabians are engaged social media users, growing at a 5.4% annual pace. Of all those using social media, 27.66 million, or 82.3%, do so via mobile (Baabdullah et al., 2019).

HYPOTHESES DEVELOPMENT FOR THE PROPOSED MODEL

Financial Loss

The unpleasant emotions that come along with suffering a financial setback are related to the psychological idea of loss (Hille et al., 2015). It is an alternative way of saying that there is a possibility which modern technology can cause harm to humans (Jibril et al., 2020) because it is the fear that one's financial and personal data will be taken and utilised unethica lly, for as by a hacker purchasing goods on the victim's name in order to make money (Hille et al., 2015). Even though online shopping has grown significantly and is predicted to continue growing in the future, there are growing drawbacks associated with this alternate method of making purchases. Travelers are concerned, for instance, about the lack of security that exists online when it comes to utilising credit cards as well as revealing personal information. The concept of financial loss is the idea that a certain amount of money could be lost or demanded to ensure that a product will act as intended. It is also described as a potential financial loss, with visitors' anxiety about using credit cards online acting as a significant deterrent to making purchases online (Sharma & Mishra, 2022). The research on online banking has shown that consumers' utilisation of the service is adversely impacted by their fear of financial loss (Jibril et al., 2020). According to other research, experiencing financial loss has a detrimental impact on using e-commerce (OECD,

2022). According to the studies, travellers who face the possibility of financial loss would also refrain from participating in online shopping. Additionally, the fear of losing money has a beneficial effect on security (Jibril et al., 2020) since they believe that providing credit card information when conducting online business would raise their Loss of doing so. Consequently, the research hypothesises the following.

H₁: Financial loss has a negative association with tourists' adoption of e-commerce

Identity Theft

Identity theft, also regarded as identity fraud, typically occurs when a criminal obtains critical personal data, such as a credit number, for improper use (Jibril et al., 2020). Research has investigated the relationship between concerns about potential harm to one's reputation and factors including the level of Loss involved in considering e-commerce. For example, Kumar and Gupta (2020) demonstrated how identity theft has a detrimental impact on e-commerce usage. The aim of their study was to identify how consumers' intentions to make online purchases were influenced by their worries around Loss and identity theft. It is in line with the conclusions of other scholars who have studied related issues, such as Gupta et al. (2021). The intent to use online banking is negatively impacted by identity theft, according to the internet banking research (Jibril et al., 2020). Therefore, this study makes the assumption that visitors' propensity to engage in e-commerce will be adversely impacted by identity theft as well. As a result, the following is the suggested relevant hypothesis:

H₂: Identity theft has a negative association with tourists' adoption of e-commerce.

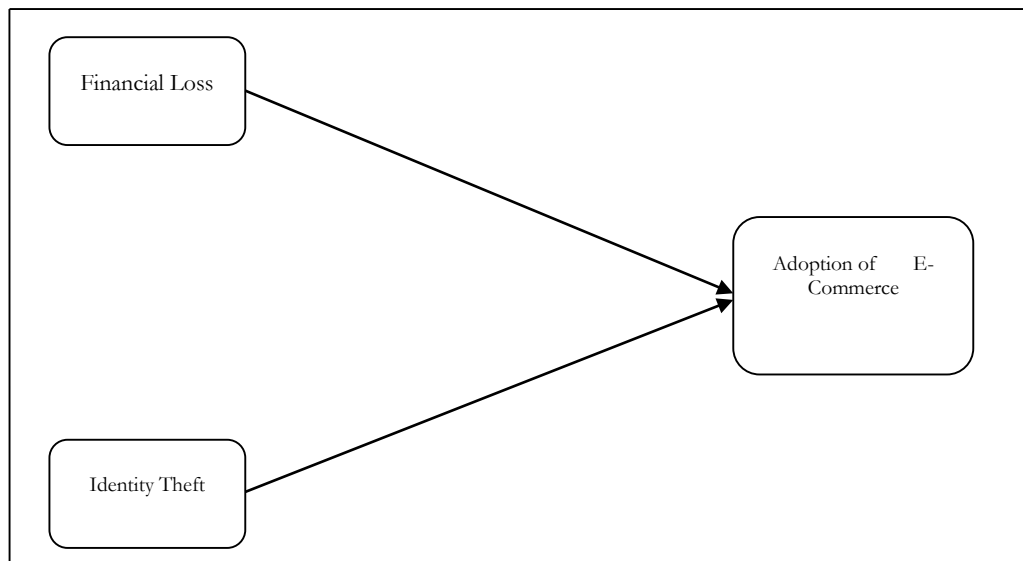The proposed research model in Figure 1 illustrates the ideas that were previously discussed.

Figure 1 Conceptual Framework

METHODOLOGY

This chapter detailed the research methodology that was utilized to test the theories elaborated in the previous chapter. Additionally, methods—including the questionnaire—were covered in this research study chapter. This research study provided explanations for other significant components, such as the population, sample, and survey equipment. Additionally, this chapter included the administration of surveys and pilot testing.

Research Design

The difficult quantitative research approach utilised in this study was deliberately chosen to provide an in-depth examination and explanation of the issue.

Data Collection Method

The most appropriate technique for analysing research and interpreting relationships is quantitative analysis (Fernando et al., 2018). The purpose of this study is to test a hypothesis on the correlation between e-commerce willingness, Identity theft, as well as financial loss. Therefore, quantitative analysis is deemed suitable as it examines numerical data obtained from the surveys.

Population and Sampling

According to Kara (2015), " A population is the larger group about which a generalisation is made, whereas a sample is the small group that is observed." To put it another way, samples are portions of a population. As per Dawadi et al. (2021), " The term "population" describes every member of a given group. Also referred to as the target group, it is the group to which the researcher aims to generalize study findings." The demographic of this study consisted of Saudi Arabian potential visitors who had expertise utilising the internet for all purposes necessary to run an online store. Therefore, for the chosen population, two requirements must be satisfied.

1- Population of tourists: The Saudi Gazette (2023) stated that the Minister of Tourism in Saudi Arabia estimated that the country's overall number of visitors in 2022, both domestic and foreign, was roughly 93.5 million.

2- Internet users: Saudi Arabia is home to 34.84 million internet users.

The number of observable and latent variables in the model, the predicted effect size, the desired probability, and the degrees of statistical power are used to determine the required sample size using the A-priori Sample Size Calculator for Structural Equation Models. The calculator need to display the bare minimum sample size necessary to identify the desired impact (Memon et al., 2021).

Sample size calculations for a structural model study were made using Daniel Soper's calculator (Figure 2). 335 responses were obtained to meet the minimum necessary sample size of 89 with an estimated effect size, latent, and observable variables.

Anticipated effect size: 0.3

Desired statistical power level: 0.8

Number of latent variables: 3

Number of observed variables: 13

Probability level: 0.05

Calculate!

Minimum sample size to detect effect: 119

Minimum sample size for model structure: 89

Recommended minimum sample size: 119

Figure 2: Daniel Soper's calculator

Questionnaire Design

The research tool used in this study to obtain quantitative data was a questionnaire. The goal of this study's questionnaire design is to examine the connection between Saudi Arabian tourists' inclination to engage in e-commerce and financial loss and identity theft. The questionnaire's format was derived from past studies on the effects of financial loss and identity theft on e-commerce willingness, which is relevant to the elements of technology theft avoidance theory.

Study Variables

This study report focuses on several key components. Online financial loss as well as online identity theft are separate factors that are being changed or examined to see how they affect each other. The impact of these variables on the dependent variable—the inclination to engage in e-commerce—is explored. Moreover, the questionnaire for this study includes questions aimed at gathering viewpoint and opinion data. As a result, the questionnaire design includes rating questions. Participants' degree of agreement with a set of statements is indicated utilising a five-point Likert scale evaluation. Also, scales are a collection of inquiries or scale pieces intended to gauge the strength of a build (Corbetta, 2003).

Survey Administration

The study's questionnaire was created using Google Consumer Surveys (GCS). From September to October 2023, 250 participants were recruited using a Facebook marketing campaign to share the link online on Google Consumer Surveys. The first two questions, *"Are you an online user?"* with a binary response of "Yes" or "No," and *"If Yes to the first question, approximately, how long do you spend surfing the internet daily?"* were asked in order to determine the participants' level of e-commerce knowledge.

Measurement Model Validation

To analyse and validate our research model, we applied SEM using the Smart PLS tool. SEM is a powerful statistical technique that lets us assess complex relationships between different variables (Fan et al., 2016). With its user-friendly interface and ability to handle tiny sample quantities, Smart PLS was determined to be the ideal instrument for our investigation. By offering a strong basis for assessing the validity and dependability of our measurement models and examining the structural connections between model elements, this approach increased the quality of our research.

DATA ANALYSIS AND FINDINGS

Table 1 presents the demographic profile of the survey respondents. Saudi Arabian respondents were reached by the survey using a Google form that was placed on Facebook. The gender distribution shows that a conscious effort was made to gather a range of perspectives, as seen by the well balanced 55% female and 45% male group. The age distribution of the respondents reveals a concentration on young individuals and those recently startinf careers, with 52.8% of them being between the ages of 18 and 34. There is a steady drop in participation beyond the age of fifty-five. 80.84% identify as Arabs ethnically, despite the fact that the sample contains individuals of other races, such as Africans (3.4%), Asians (6.3%), Whites (7.35%), while others (2.1%). A bachelor's degree or above was held by 50.13% of respondents, followed by master's degree holders (17.85%) and individuals with high school equivalency diplomas or equivalents (17.85%). Married individuals are up 46.20% of the population, followed by divorced (4.46%), separated (7.08%), widowed (6.82%), single people (30.18%), and unreported (5.25%).

A sizable number of the study's respondents, coming from various job backgrounds, are full-time employees (26.25%) and students (27.56%). The contributions of retirees (9.45%), part-timers (13.91%), jobless (17.32%), and independent contractors give a full picture of work opportunities (5.51%). Regarding income, the majority (35.43%) earn between $2000 and $4000 annually, with a substantial part (29.40%) in lower income groups earning less than $2000. 9.71% of respondents indicated that they make more than $100,000, while 22.05% indicated that they make between $8000 and $10000. This diverse demographic composition strengthens the study's conclusions.

Table 1: Respondents Demographic characteristics

Category	Sub-category	Frequency (Total = 335)	(%)
Gender	Male	150	44.80
	Female	185	55.20
Age	18 – 24	88	26.30
	25 – 34	82	24.50
	35 – 44	78	23.30
	45 – 55	67	20.00
	Above 55	20	6.00
Ethnicity	Arab	270	80.60
	African	12	3.60
	Asian	22	6.60
	White	25	7.50
	Others	6	1.80
Qualification	Less than high school diploma	11	3.30
	High school diploma or equivalent	63	18.80
	Bachelor	158	47.20
	Master	72	21.50
	Doctorate/MD	20	6.00
	No degree	11	3.30
Marital status	Married	157	46.90
	Divorced	17	5.10
	Separated	23	6.90
	Widowed	25	7.50
	Unmarried	98	29.30
	Do not want to say	15	4.50
Employment status	Full-time employment	91	27.20
	Part-time employment	48	14.30
	Unemployed	60	17.90
	Self-employed	18	5.40
	Student	86	25.70
	Retired	31	9.30
Income	less than 2000 $ (7500 SR)	108	32.20
	2000 – 4000 $	120	35.80
	5000 – 7000 $	6	1.80
	8000 – 10000 $	71	21.20
	more than 10000 $ (more than 37500 SR)	30	9.00
Time Spent on Internet	less than one hour	14	4.00
	From 1 to 3 hours	61	18.00
	From 4 to 6 hours	137	41.00
	From 7 to 9 hours	89	26.00
	More than 9 hours	34	10.00

Correlation Analysis

Strong negative as well as positive correlations between the study constructs are shown by Table 3's correlation values. First of all, it is evident that there is a substantial correlation between identity theft and financial loss, which partially explains the direct relationship between the two concepts. Online identity theft frequently results in significant financial loss as well (Guedes et al., 2023). The use of e-commerce services by tourists is adversely correlated with both online identity theft and online financial loss, with the majority of incidents falling between or over the 0.5 threshold, which is deemed high.

Table 3: Correlation analysis

	OLF1	OLF2	OLF3	OLF4	OLF5	OLF6	OLF7	OLF8	OLF9	OIT1	OIT2	OIT3	OIT4	WEC1	WEC2	WEC3
OLF1	—															
OLF2	0.737	—														
OLF3	0.74	0.783	—													
OLF4	0.659	0.733	0.786	—												
OLF5	0.691	0.741	0.801	0.848	—											
OLF6	0.648	0.733	0.77	0.774	0.809	—										
OLF7	0.652	0.699	0.749	0.717	0.713	0.725	—									
OLF8	0.675	0.761	0.766	0.724	0.721	0.731	0.778	—								
OLF9	0.702	0.743	0.795	0.733	0.736	0.693	0.83	0.824	—							
OIT1	0.65	0.703	0.755	0.733	0.719	0.728	0.727	0.771	0.787	—						
OIT2	0.639	0.668	0.671	0.656	0.686	0.69	0.714	0.742	0.779	0.825	—					
OIT3	0.615	0.626	0.689	0.634	0.668	0.641	0.701	0.738	0.761	0.783	0.8	—				
OIT4	0.585	0.631	0.66	0.655	0.637	0.638	0.696	0.735	0.749	0.749	0.794	0.803	—			
WEC1	0.386	0.477	0.427	0.412	0.402	0.393	0.437	0.443	0.469	0.499	0.472	0.499	0.523	—		
WEC2	0.349	0.422	0.465	0.388	0.402	0.363	0.413	0.476	0.443	0.427	0.424	0.489	0.503	0.692	—	
WEC3	0.313	0.423	0.413	0.397	0.394	0.425	0.454	0.448	0.409	0.422	0.445	0.438	0.528	0.675	0.799	—

Measurement Model Analysis

The research adopted the recommended two-step procedure for doing PLS-SEM analysis on the examined model: The validation of the measurement model must come first, after which the structural model must be assessed. As per Hair Jr et al. (2014) the measuring model's soundness really establishes the validity of the outer model. When a collection of measured items accurately captures the theoretical latent concept that the measure is meant to measure, the set is said to have construct validity. Throughout the investigation, much validity might be determined in different ways. An expert evaluation from the relevant field approved the researcher's use of appropriate metrics to establish content validity. When conducting the pilot testing, the face validity of the survey instruments has been established. Two important validities, convergent and discriminant, were established together with the reliability using the PLS algorithm approach in the SMART-PLS 4 programme. There were 300 PLS algorithm iterations and a factor weighting algorithm employed (Hair et al., 2017).

Three factors make up the study's framework. One endogenous variable is the adoption of e-commerce, whereas the other two exogenous variables are online identity theft and financial loss. Since all of the constructs were reflecting in nature, the latent construct is thought to be the cause of any signs of a construct. After running the PLS algorithm, the measurement model results are displayed in Figure 3.
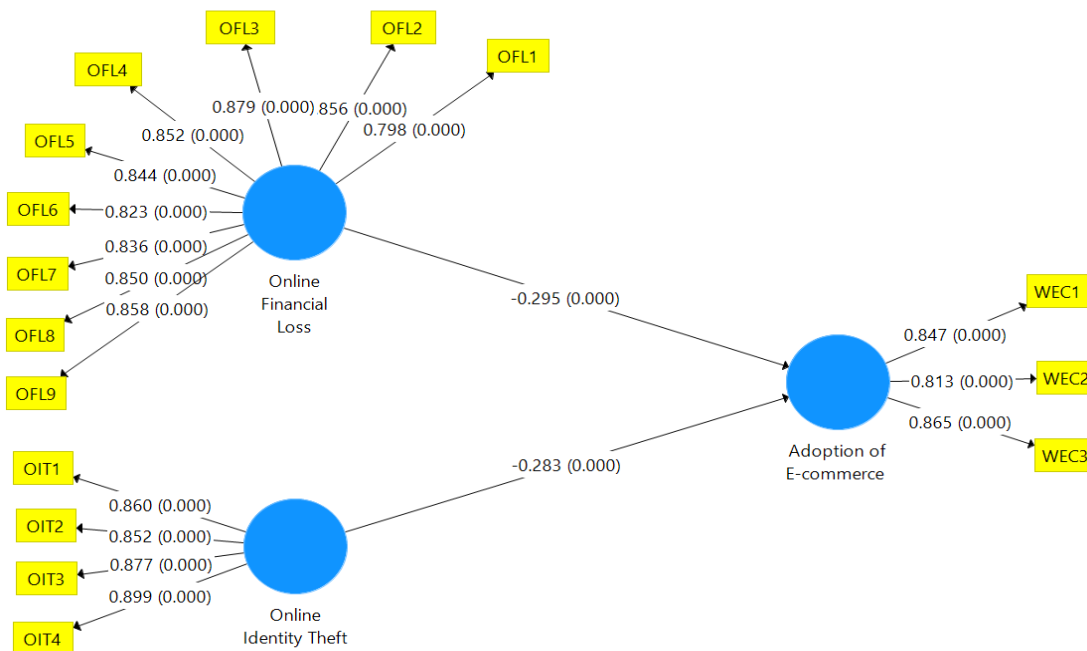
Figure 3: Measurement model analysis

Reliability Analysis

The internal consistency reliability was evaluated using two criteria. A commonly used metric is Cronbach's alpha. The cornerstone for evaluating dependability is the inter-correlation of each latent variable indicator. Recently, the technique of composite reliability (CR) has been proposed as an alternative to internal consistency testing (Dijkstra & Henseler, 2015). It is believed to offer a more accurate measure of dependability since it considers the relative sizes of the indicator variables' outer loadings. Cronbach's Alpha, on the other hand, assigns equal weight to each item.

Both types' reliabilities range from 0 to 1, with higher values denoting stronger reliabilities. Cronbach's alpha as well as composite reliability are recommended to have values better than 0.7. Less than 0.6 values of CR are regarded as inadequate (Hair et al., 2017). Considering the relative sizes of the outer loadings of the indicator variables, it is believed to provide a more accurate assessment of dependability.

Table 4: Reliability analysis

	Cronbach's Alpha	Composite Reliability
Online Financial Loss	0.919	0.937
Online Identity Theft	0.904	0.933
Adoption of E-Commerce	0.848	0.908

Validity Analysis

An essential step in assessing the precision and dependability of the measurement model is validity analysis. In the past, researchers have used the Fornell-Larcker criteria to test discriminant validity (Fornell & Larcker, 1981). This method was employed in the current investigation to ascertain discriminant validity. Using this method, the correlation between each construct and its other constructs is compared to the square root of AVEs for each construct. If the square root of AVE is higher than the correlations between the constructs, discriminant validity is present. Table 5 shows that the square root of AVE is larger than the correlations shown behind the diagonal, as indicated by the bold diagonal. As a result, this approach was also used to establish discriminant validity.

Table 5: Fornell-Larcker criterion

	Online Financial Loss	Online Identity Theft	Adoption of E-Commerce
Online Financial Loss	0.844		
Online Identity Theft	0.78	0.881	
Adoption of E-Commerce	0.474	0.532	0.876

Structural Model Analysis

In structural equation modelling, the hypothesized directional links between latent constructs have been graphically represented in a structural model. Typically, arrows are used to indicate the expected impact of exogenous variables on endogenous variables. After the accuracy of the measurement model was validated, the structural model underwent a thorough examination using the procedures below (Hair et al., 2017). The structural model results diagram in SMART PLS 4 is displayed in Figure 4.
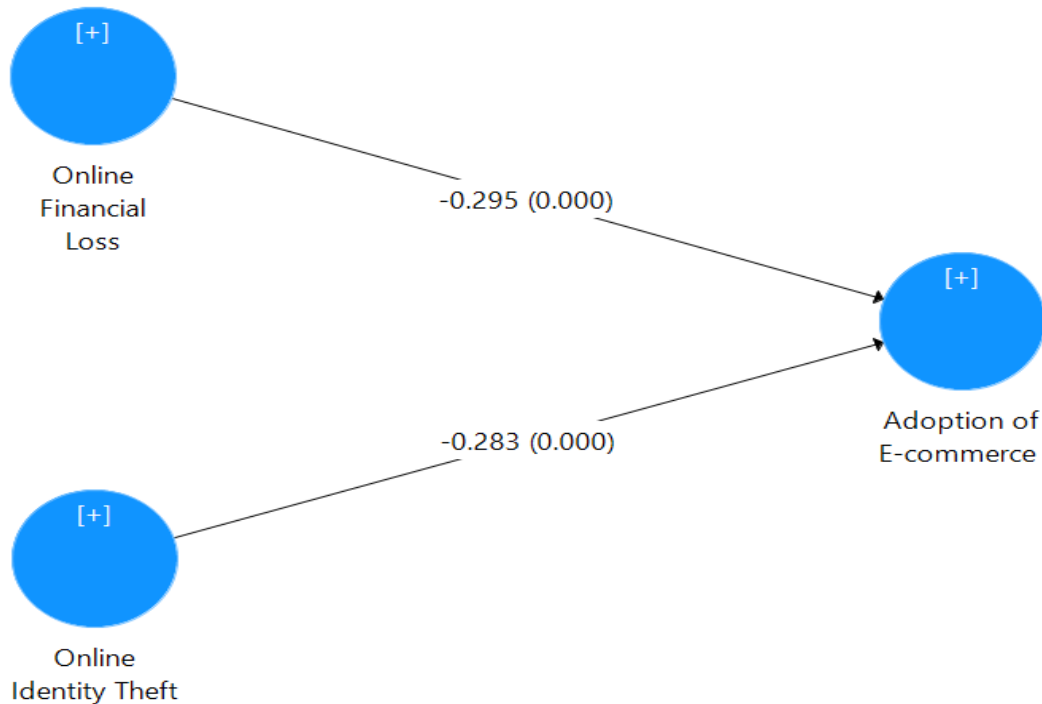

Figure 4: Structural equation modelling

DISCUSSION

ICTs have unquestionably had a revolutionary and pervasive impact on contemporary life (El-Haggar et al., 2023). ICT has significantly altered many aspects of our lives, most notably how we make purchases (Balsalobre-Lorente et al., 2023). The retail business has undergone a transformation as a result of this paradigm change, which has blurred the lines between physical and virtual markets and altered consumer behaviour (Aslam et al., 2021). This study looks at how ICT affects purchase experiences and what it can mean for business in the future (Aslam et al., 2021; Lasrado et al., 2023). It examines how online and in-store buying are related to one another, shedding light on the exchanges that have altered the retail landscape. The report highlights the need for adaptability in the face of this digital transformation and discusses the implications for consumers and the retail industry (Chawla & Kumar, 2022; Mofokeng; Sukendia & Harianto, 2021).

To achieve the study's objectives, the conceptual model created in section 3 was validated in accordance with the literature research conducted in section 2. This study explores how identity theft, financial loss, and e-commerce interact to influence consumer behaviour in the digital age. To help businesses as well as governments meet the demands of an increasingly digitally connected society, research goals is to offer relevant information about the motivations as well as concerns of modern customers.

ANSWERS TO THE RESEARCH QUESTIONS

What is the impact of financial loss on adoption of e-commerce by tourists in Saudi Arabia?

The data pertaining to this inquiry indicates that users are not enthusiastically adopting e-commerce because they are afraid of possible monetary losses resulting from issues such as fraudulent transactions or unsuccessful payments. This result may come as a surprise because one would assume that those who have experienced financial loss will be more watchful and, therefore, more inclined to look for the transparency as well as security which e-commerce platforms may offer. Furthermore, the association between financial loss as well as e-commerce adoption is more complex in the case of visitors from Saudi Arabia, and it is crucial to keep in mind that a wide range of factors affect consumer behavior. The substantial p-value of 0.04 in the results supports the hypothesis that there is a significant impact of financial loss on tourists' willingness in engaging with online shopping in Saudi Arabia.

What is the impact of identity theft on adoption of e-commerce by tourists in Saudi Arabia?

Surprisingly, identity theft promotes online commerce among Saudi tourists. The accessibility of e-commerce and the demand for secure transactions may entice victims to it. This highlights how critical it is to understand and solve the impact on consumer trust in online shopping (Li et al., 2019; Reyns & Randa, 2017). With a significant p-value of 0.00, the results validated the hypothesis regarding the influence of identity theft on tourists' inclination to participate in e-commerce within Saudi Arabia. This implies that identity theft incidents have a big influence on travellers' openness to doing business online.

CONCLUSION

This study has illuminated the elements influencing tourists' adoption of online shopping in Saudi Arabia, with a specific focus on financial loss and online identity theft. Also, the research indicates that visitors frequently don't give these Losses much thought.

According to the report, tourisists in Saudi Arabia are more anxious about identity theft on the online than they are about financial loss on purchases they make online. The results of this research, which was completed in the Saudi Arabian setting, are significant in that they provide light on how tourists' desire to participate in e-commerce is affected by identity theft and financial loss. Unlike what we had anticipated, both of the hypotheses (H_1 and H_2) have been accepted. The study shows that tourists' inclination to engage in e-commerce activities is negatively correlated with worries about identity theft and financial loss. These findings illustrate the unique difficulties and factors that Saudi Arabian travellers must take into account while purchasing online and emphasise the need of resolving concerns with identity theft and financial security. Understanding and addressing these worries is crucial to building better trust and confidence among tourists, which will eventually contribute to the sector's long-term success as Saudi Arabia's e-commerce industry grows.

Due to response bias and the restricted response options brought forth by the data collecting process using Likert scales, the study had limitations. Quantitative statistics lack the subtlety of qualitative approaches and can oversimplify complex human experiences, although being valuable for measuring. Because of the study's exclusive focus on tourists from Saudi Arabia, which restricts its generalizability to a larger variety of international scenarios, it may also be challenging to apply its results to regions with different socio-cultural dynamics and visitor populations.

The study's conclusions offer fresh perspectives on how to look at Saudi Arabian visitors' e-commerce adoption and purchasing habits. The universality of the relationships among financial loss, identity theft, as well as e-commerce can be explored via comparisons of cross-culture. Research employing a longitudinal approach can track changing patterns and actions throughout the period. Focus groups and other qualitative methods can be

used to investigate the factors influencing e-commerce decisions. Cybersecurity education, the effect of law, and the impact of emerging technologies such as blockchain and biometrics on e-commerce are among the other interesting topics. A more comprehensive viewpoint may be obtained by comparing nations with similar geographic regions.

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