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Traditional Retailer's Intention to opt E-commerce for Digital Retail Business in Saudi Arabia

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Abstract

This study investigates the factor affecting traditional retailer's intention to opt e-commerce in the context of digital retail business in Saudi Arabia. Employing a cross-sectional survey methodology, structured questionnaires were administered to traditional retailers, providing a snapshot of their perceptions and intentions regarding e-commerce adoption. The data analysis was conducted utilizing the PLS-based structural equation modeling method. The study reveals that perceived usefulness is a pivotal driver, positively impacting the intention to opt e-commerce. Moreover, attitude towards e-commerce is significantly influenced by perceived usefulness and ease of use, highlighting the importance of user-friendly platforms. Conversely, high perceived costs can deter a positive attitude. Overcoming technological barriers is also instrumental, as they can foster a more favorable attitude. Intriguingly, organizational and environmental barriers had limited direct impact on attitude, indicating that internal and individual factors play a more substantial role in shaping the attitudes of traditional retailers in Saudi Arabia. The insights garnered from this research hold substantial significance for the traditional retail industry, government authorities, and all relevant stakeholders invested in facilitating the successful incorporation of e-commerce into Saudi Arabia's established retail sector. This integration is pivotal in ensuring a competitive edge within the dynamic landscape of digital retail. Understanding these factors is vital as the retail landscape continues to evolve, bridging the gap between traditional and digital retail models.

Keywords: *Retail Business; e-commerce; Digital Business; Saudi Arabia.*

1. Introduction

In today's fast-evolving global marketplace, the retail industry has witnessed a profound transformation in the way businesses operate and engage with consumers (Risberg, 2023). This transformation is predominantly attributed to the proliferation of e-commerce, which has revolutionized the retail landscape, reshaping the traditional brick-and-mortar retail business model (Gao and Zhao, 2022; Banerjee et al., 2023). Traditional retailers have been compelled to explore and adopt digital retail strategies to remain competitive and relevant in an increasingly digital world. E-commerce has proven to be a game-changer for the retail sector, offering numerous benefits such as expanded market reach, convenience, cost-efficiency, and enhanced customer experiences (Mustafa et al., 2022; Verma et al., 2023). However, the successful transition from traditional retail to digital retail entails a myriad of challenges, necessitating a closer examination of the underlying factors influencing a retailer's decision to venture into the e-commerce domain. The retail

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industry has historically operated on the foundations of physical stores, where consumers could browse, touch, and feel products before making a purchase. However, the advent of the digital age and the ubiquity of the internet have redefined consumer expectations and shopping habits (Bhatti et al., 2020; Harrisson-Boudreau and Bellemare, 2022). E-commerce, driven by advancements in technology and changing consumer preferences, has emerged as a disruptive force, challenging the traditional retail paradigm (Attar et al., 2022; Bawack et al., 2022).

The traditional retail sectors faced substantial challenges during the lockdown period brought about by the COVID-19 pandemic (Bhatti et al., 2020). In contrast, E-commerce and M-commerce enterprises seized the pandemic as an opportunity for growth (Aslam et al., 2020). Significant expansion has been observed in the operations of M-commerce and E-commerce organizations throughout the pandemic. Several E-commerce and M-commerce platforms linked to their respective online markets reported that since the onset of the COVID-19 crisis, they experienced a remarkable increase in various aspects of their business especially in Saudi Arabia (Alshanqiti et al., 2022). They noted that average sales surged by 200 percent, the average order value increased by 50 percent, and app installations saw a remarkable 400 percent spike (Oxford Business Group, 2020). Saudi Arabia is no exception to this trend, with its rapidly growing e-commerce market and digitally savvy consumer base. E-commerce in Saudi Arabia has emerged as a robust and rapidly expanding sector within the Middle East and North Africa (MENA) region (Al-Khalidi Al-Maliki, 2021; Sindakis and Aggarwal, 2022). Fueled by factors like increasing internet penetration, a tech-savvy population, and strong government support for digital transformation through initiatives like Vision 2030 and the National E-commerce Strategy, the market's growth is undeniable. Traditional payment methods like cash on delivery are gradually giving way to digital payments and mobile wallets. Marketplaces like Amazon.sa, Noon, and local retailers are flourishing, providing a diverse array of products and services (Alflayyeh et al., 2020). Improved logistics and delivery infrastructure, as well as a burgeoning mobile commerce culture, further contribute to the sector's dynamism. Despite its promising growth, e-commerce in Saudi Arabia faces challenges, including competition and the need for regulatory compliance (Sarabdeen, 2023). The proliferation of e-commerce platforms and online marketplaces has presented traditional retailers with both opportunities and threats (AlGhamdi et al., 2012; AlGhamdi et al., 2015). While e-commerce promises significant advantages, such as the ability to reach a broader customer base, facilitate convenient transactions, and reduce operational costs, it also demands adaptation, resource allocation, and an in-depth understanding of the digital retail landscape. In the context of Saudi Arabia, where the government has actively promoted digital transformation and entrepreneurship through Vision 2030, the need for traditional retailers to explore e-commerce has become more imperative than ever.

This research paper focuses on unraveling the intricacies of the decision-making process among traditional retailers in Saudi Arabia as they contemplate the adoption of e-commerce for their digital retail ventures. The central aim is to investigate the factors that influence a retailer's intention to embrace e-commerce, with a particular emphasis on the interplay of psychological, technological, organizational, and environmental variables. This study is organized into distinct segments. The initial section reveals the research gap and justifies the study's purpose. The subsequent section introduces the conceptual framework and hypotheses. The third part details the study design and data analysis methods, while the fourth section employs structural equation modeling for presenting findings. The concluding section delves into the discussion and implications.

2. Theoretical Background

In the realm of digital retail business, the adoption of information and communication technology is a topic of significant interest and has been extensively explored in the field of technology adoption research. Numerous theoretical frameworks have been applied to analyze and understand this phenomenon. Some of the prominent theories commonly utilized in the context of technology adoption include the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Diffusion of Innovation theory (Rogers, 2003), the Theory of Planned Behavior (Ajzen, 1991), the Technology Acceptance Model (TAM) (Davis, 1986; Davis et al., 1989), the DeLone and McLean Model of Information Success (DeLone and McLean, 2003), the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2012), and Bailey and Pearson's analysis of computer user satisfaction Bailey and Pearson, 1983).

Notably, the Technology Acceptance Model (TAM) holds a prominent position in information system research (Chuah et al., 2016; Kim and Chiu, 2019). TAM, which originated from the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975), drawing from the field of social psychology, has gained widespread recognition. While TRA has been widely employed across various domains, TAM was introduced by Davis in the context of information systems (Davis, 1986). TAM comprises three key constructs: attitude, perceived ease of use (PEU), and perceived usefulness (PU), which collectively elucidate a user's motivation to embrace new technology. Furthermore, Davis and his colleagues introduced behavioral intention (BI) as a new construct within TAM, which is directly influenced by attitude and perceived usefulness. Legris et al. (2003) have indicated that TAM accounts for a significant portion of system usage, typically between 30% to 40%. Moreover, various studies have identified perceived usefulness as the most influential construct within the model (Legris et al., 2003; McFarland and Hamilton, 2006). Consequently, this research adopts the TAM model as its theoretical framework.

Despite the widespread utilization of TAM in information system research, certain limitations have been identified. For instance, TAM may have constraints in addressing emerging solutions or services (Wu, 2011). Garaca (2011) have raised concerns about its limited predictive and explanatory capabilities, as well as its practical applicability. Others have pointed out that empirical studies employing TAM may yield inconclusive or inconsistent results, emphasizing the need to identify additional constructs that should be integrated into the model (Legris et al., 2003). Tarhini et al. (2017) have advocated for the inclusion of context-specific constructs in TAM, as such augmentations may enhance its explanatory power. This underscores the significance of extending the TAM model with domain-specific variables.

3. Model and Construct Development

This study's underlying conceptual model draws upon the TAM while introducing additional constructs, notably perceived cost, technological barriers, organizational barriers, and environmental barriers, all of which are visually represented in Figure 1. As a result, these extra constructs stem from external factors that exert an influence on retailers' attitudes.

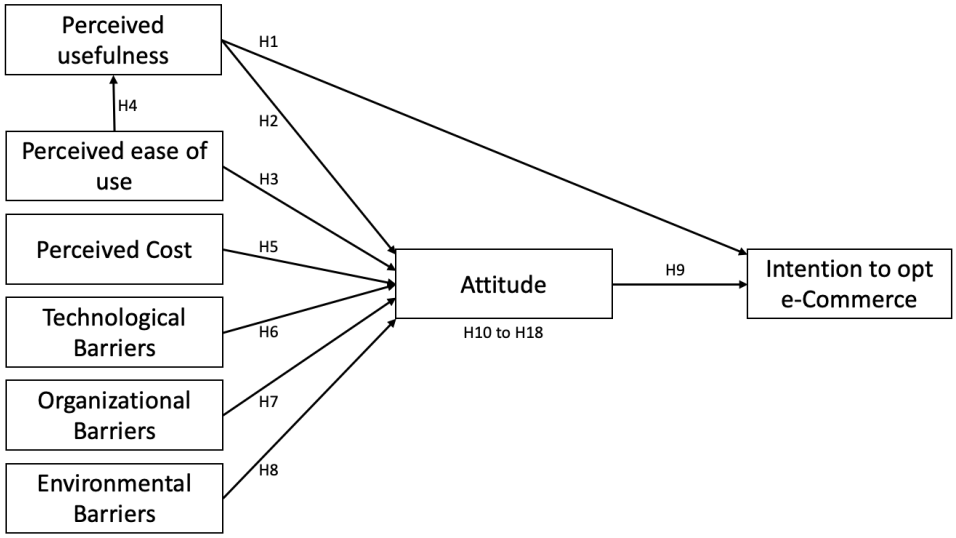

Figure 1. Research Model

3.1. Perceived Usefulness

Perceived usefulness, as postulated in the TAM by Davis (1989), refers to the extent to which a retailer believes that the use of e-commerce technology will enhance their job performance and effectiveness. In various research settings, it has been observed that perceived usefulness plays a pivotal role in shaping behavioral intentions concerning the adoption of new technologies, including virtual reality (Fagan et al., 2012), mobile exergames (Broom et al., 2019), and mobile applications (Hsu and Lin, 2015). Sumak et al. (2011) affirmed that perceived usefulness has a noteworthy positive impact on attitude. Notably, researchers have consistently recognized perceived usefulness as one of the foremost predictors when it comes to explaining and forecasting users' intention to accept and embrace information technology (Chuah et al., 2016; Dutot et al., 2019). When users perceive that information technology offers benefits for their endeavors, this positive perception serves as a driving force for them to adopt the technology. In the Saudi Arabian retail landscape, understanding how traditional retailers perceive the usefulness of e-commerce is pivotal. Retailers must evaluate whether they see e-commerce as a tool that can improve their sales, customer engagement, and overall profitability. Retailers who perceive e-commerce as beneficial and advantageous are more likely to demonstrate a positive attitude towards its adoption and express a stronger intention to integrate it into their business operations. The subsequent hypotheses are postulated.

H1: Perceived usefulness influences on intention to opt e-commerce

H2: Perceived usefulness influences on attitude

3.2. Perceived Ease of Use

Perceived ease of use revolves around how consumers perceive new services or products in relation to their alternatives (Rogers, 2003). The adoption of new technology, particularly in terms of its perceived usefulness, is contingent on the ease with which it is perceived to be used (Ha and Stoel, 2009; Sevim et al., 2017). Research findings consistently demonstrate that perceived ease of use has a significant and positive impact on user attitudes (Yulihasri et al., 2010; Lim and Ting, 2012). Moreover, a study highlights that users' attitudes towards technology usage are directly intertwined with their perception of its ease of use (Sevim et al., 2017). When individuals perceive technology as straightforward to operate, they are more likely to use it regularly. The ease of use plays a crucial role in the acceptance of technology; conversely, complexity tends to lower users' intention to use it (Selamat et al., 2009). Perceived ease of use pertains to the extent to which a retailer believes that using e-commerce technology is

straightforward and user-friendly. In the Saudi context, traditional retailers may harbor concerns about the complexities and challenges associated with e-commerce implementation. This hypothesis posits that retailers' perception of the ease of using e-commerce tools and platforms will significantly influence their attitudes towards e-commerce and their perception of its usefulness. If traditional retailers find e-commerce technology to be user-friendly and accessible, it is expected to positively impact their attitude and reinforce their belief in the benefits and utility of e-commerce. Hence, the subsequent hypotheses are postulated.

H3: Perceived ease of use influences on attitude

H4: Perceived ease of use influences on perceived usefulness

3.3. Perceived Cost

Cost emerges as a pivotal determinant impacting the adoption of technology (Mochoge, 2014; Alam et al., 2011). This encompasses expenses related to various facets such as program development for digital retail operations, website maintenance and upgrades, and ensuring the accessibility of services to consumers within the realm of web-based activities (Luarn and Lin, 2005). The substantial financial commitment required for technology implementation can pose a significant barrier, particularly for small businesses, causing them to approach IT-driven programs with caution (Hayes, 2012). Nonetheless, in the current digital era, enterprises failing to adopt the latest technology often find themselves falling far behind their competitors, despite the substantial costs involved. Financial considerations play a pivotal role in any business decision, particularly for traditional retailers in Saudi Arabia who may need to allocate resources and invest in technology and infrastructure to embark on their digital retail journey. Perceived cost encompasses the perceived financial implications, both upfront and ongoing, associated with e-commerce adoption. Retailers may be concerned about the initial setup costs, maintenance expenses, and other financial commitments. It is expected that retailers who perceive e-commerce adoption as financially burdensome may harbor more negative attitudes towards the digital transition. Therefore, the subsequent hypothesis is postulated.

H5: Perceived cost negatively influences on attitude

3.4. Barriers (Technology, Organization and Environment)

Researchers have identified the deficiency in fundamental expertise as a barrier that hinders the adoption and widespread utilization of information technology (Crook and Kumar, 1998; Van den Berg and Van der Lingen, 2019). External factors, often beyond the retailer's control, can present significant hurdles in the adoption of e-commerce. Technological barriers can encompass issues such as a lack of technical expertise among staff, the need for technological infrastructure upgrades, or concerns about data security (Wymer and Regan, 2005; Seethamraju, 2015). In the rapidly evolving digital landscape of Saudi Arabia, technological proficiency is a fundamental aspect of successful e-commerce operations. Retailers who perceive significant hurdles and difficulties in overcoming these technological challenges may develop more negative attitudes toward e-commerce adoption (Caldeira and Ward, 2002). Organizational barriers pertain to impediments within the retailer's own organizational structure that may inhibit the seamless integration of e-commerce. This can include resistance to change among employees, a rigid organizational culture, or a lack of alignment between the organization's goals and e-commerce adoption (Kshetri, 2007; Amornkitvikai et al., 2022). The environmental barriers can encompass regulatory constraints, market conditions, competition, or even societal factors that may affect consumer preferences (Hamad et al., 2018). In the Saudi Arabian context, where regulatory changes and market dynamics are evolving rapidly, understanding the impact of these environmental barriers is essential. Retailers facing formidable external barriers that hinder their e-commerce

endeavors are expected to hold more negative attitudes towards e-commerce. Thereby, the subsequent hypotheses are postulated.

H6: Technological barriers influence on attitude

H7: Organizational barriers influence on attitude

H8: Environmental barriers influence on attitude

3.5. Attitude

Ajzen (1991) contended that attitude plays a crucial role in shaping behavioral intention. Yadav and Pathak (2017), in their study conducted in India, corroborated this notion by demonstrating a positive impact of attitude on behavioral intention. This alignment is consistent with the findings of several other studies, indicating a strong and positive relationship between attitude and intention (Karjaluoto and Leppaniemi, 2013; Nasar et al., 2019). Attitudes are not static; they can evolve over time as retailers gain experience and knowledge about e-commerce. If retailers harbor a positive attitude toward e-commerce, they are more likely to express a strong intention to use it in their business operations. Conversely, if retailers have a negative attitude, it is expected to dampen their intention to adopt e-commerce, potentially leading to hesitation or even rejection of digital retail strategies. Thereby, the subsequent hypothesis is postulated.

H9: Attitude influences on intention to opt e-commerce

3.6. Attitude with mediating effect

Venkatesh et al. (2003) have postulated that attitude acts as a mediator in the association between perceived usefulness and behavioral intention. In the realm of technology acceptance research, Schaper and Pervan (2007) similarly validated this linkage within the healthcare domain. Gajanayake et al. (2014) discovered that attitude partially serves as a mediator in the relationship between perceived usefulness and behavioral intention. Krishanan et al. (2016) have put forth the idea that attitude acts as a mediator in the relationship between perceived ease of use, perceived usefulness, and behavioral intention. As a result, the following hypotheses are proposed.

H10: Attitude mediates between perceived usefulness and intention to opt e-commerce

H11: Attitude mediates between perceived ease of use and intention to opt e-commerce

H12: Attitude and perceived usefulness mediate between perceived ease of use and intention to opt e-commerce

H13: Attitude mediates between perceived cost and intention to opt e-commerce

H14: Attitude mediates between technological barriers and intention to opt e-commerce

H15: Attitude mediates between organizational barriers and intention to opt e-commerce

H16: Attitude mediates between environmental barriers and intention to opt e-commerce

3.7. Perceived usefulness with mediating effect

The relationship between perceived ease of use and attitude has been a central focus in the technology acceptance literature (Gefen and Straub, 2000; Hussein et al., 2019). This relationship is often mediated by perceived usefulness, which plays a pivotal role in shaping individuals' attitudes toward technology adoption (Makmor et al., 2019). When individuals find a technology easy to use, they are more likely to perceive it as valuable and beneficial for their needs. This positive perception of usefulness, in turn, contributes to the development of a favorable attitude towards the technology. Thus, the subsequent hypotheses are postulated.

H17: Perceived usefulness mediates between perceived ease of use and attitude

H18: Perceived usefulness mediates between perceived ease of use and intention to opt e-commerce

4. Methodology

4.1. Data Collection

Survey data were gathered from owners and managers of retail businesses in Saudi Arabia using a questionnaire that comprised 35 items distributed across eight constructs. Respondents were asked to rate their responses on a five-point Likert scale, ranging from 5 (strongly agree) to 1 (strongly disagree). This data collection occurred during the months of April and May in 2023. To facilitate a better understanding among participants, the questionnaire items were translated into Arabic, which is the native language of the respondents. This translation process followed established guidelines, including forward and backward translations, to ensure linguistic consistency (Sousa and Rojjanasrirat, 2011). Before commencing the primary study, a preliminary test involving 30 owners and managers was conducted to validate the questionnaire's reliability. This phase led to some simplifications and the removal of certain items to enhance the questionnaire's effectiveness. The validation the questionnaire confirmed by referring to a previously published version. The online questionnaire was made accessible to the targeted sample through a convenience sampling technique. In total, 497 responses were successfully collected from the participants. Table 1 presents an overview of the demographic characteristics of the survey participants. Gender distribution shows a notable imbalance, with 74% of the respondents being male, while females make up the remaining 26%. The age distribution of the participants reveals that the majority are relatively young, with 47% falling into the 18-24 years age group and 28% in the 25-34 years age range. Additionally, educational backgrounds vary, with 37% holding bachelor's degrees and an equal percentage having trade school certifications. Notably, 7% of respondents preferred not to disclose their educational level. In terms of experience in the retail industry, participants demonstrate a wide range of experience levels. While none reported having less than one year of experience, 9% have more than 6 years of experience, and 28% were unsure about their level of experience.

Table 1. Demographic of Participants (n=497)

	Frequency	Percent
Gender		
Male	367	74%
Female	130	26%
Age		
18-24 years	236	47%
25-34 years	141	28%
35-44 years	75	15%
45-54 years	32	06%
55-64 years	12	02%
65-74 years	01	0.2%
Education		
High school diploma	114	23%
Associate degree	107	22%

Bachelor’s degree	185	37%
Trade school certification	185	37%
Master’s degree	26	05%
Other	25	05%
I prefer not to answer	34	07%
Experience as retailer		
Less than one year	00	00%
1-2 years	97	20%
3-4 years	81	16%
5-6 years	27	05%
More than 6 years	44	09%
Don’t know/Not sure	137	28%

4.2. Measurement

The initial segment of the survey was dedicated to elucidating the study's objectives and furnishing participants with instructions for completing the questionnaire. Subsequently, participants were requested to provide personal information in the following section. The third section was designed to evaluate the constructs under investigation. To measure the intention to opt e-commerce, three items were adapted from Alam et al. (2021) and were slightly modified to suit the specific research context. These items displayed robust internal consistency reliability, as indicated by a Cronbach's alpha (α) of 0.891. Assessment of attitude utilized three items adapted from Alam et al. (2018), and these items exhibited even stronger Cronbach's alpha reliability (α = 0.886). Perceived ease of use was gauged using four items adapted from sources including Huang and Liao (2015) and Alam et al. (2018), and it achieved a commendable reliability score with α = 0.866. For the measurement of perceived usefulness, four items adapted from Janssen (2018) were employed, yielding a good reliability score of α = 0.882. The assessment of perceived cost comprised three items adapted from Alam et al. (2011), which demonstrated good reliability with α = 0.797. Items related to barriers, encompassing four items for technology, six items for organization, and seven items for the environment, were adapted from Amornkitvikai et al. (2022). In this case, all the constructs displayed good reliability scores for barriers, with technology (α = 0.702), organization (α = 0.797), and environment (α = 0.775). To ensure the quality of the constructs, any items with loadings below 0.7 were removed from all the constructs. A comprehensive overview of each construct and its associated items presented in Table 2.

4.3. Data Analysis Procedures

Data analysis conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique, and utilized SmartPLS 4 for this purpose. PLS-SEM is a widely recognized and applied method in the fields of management and information technology (IT) due to its established reputation for producing reliable results (Avkiran and Ringle, 2018). PLS-SEM is a non-parametric approach specifically designed to capture the explained variance in latent dimensions that cannot be directly observed. PLS-SEM offers the advantage of analyzing both direct and indirect effects of latent variables on a larger scale, making it suitable for evaluating strong and weak path coefficients within complex models (Hoyle, 1999; Heuer and Liñán, 2013). PLS-SEM was chosen as the analytical tool in this study because it provides a framework that integrates relevant theories and empirical data. Consequently, the use of PLS-SEM allows for the validation of theoretical

concepts and simplifies the exploration of relationships among variables (Henseler et al., 2009). Following a methodological approach proposed by Leguina (2015), we adopted a two-step strategy. The first step involved examining the outer model to establish discriminant and convergent validity in line with the proposed theoretical model. Subsequently, the inner model was evaluated to test the hypotheses. This methodological approach and the use of PLS-SEM in the analysis serve to ensure the robustness and validity of the research findings, allowing for a comprehensive exploration of the relationships and hypotheses outlined in the study.

5. Results

5.1. Measurement Model

Table 2 presents a comprehensive view of the measurement model, offering insights into the reliability and validity of the constructs and their associated items. The loadings for each item, which signify the strength of their relationship with the respective construct, are notably robust, ranging from 0.691 to 0.941. This indicates a strong association between the items and their underlying constructs. The internal consistency reliability, as indicated by Cronbach's alpha, is impressive across all constructs, with values ranging from 0.737 to 0.932. These high alpha values demonstrate the internal reliability of the items in measuring their intended constructs. Furthermore, the composite reliability scores, which assess the consistency and reliability of the constructs, are consistently high, ranging from 0.527 to 0.821. The Average Variance Extracted (AVE) values for each construct are also noteworthy, with scores ranging from 0.527 to 0.821. These AVE values indicate the proportion of variance in the construct that is captured by the items. In all cases, the AVE values exceed the recommended threshold of 0.5, signifying that the items collectively explain a substantial portion of the variance in the constructs. Table 3 assesses the discriminant validity of the measurement model. It confirms that each construct is distinct from the others, a critical aspect of model reliability. It shows that the square root of the AVE for each construct consistently exceeds the correlations with other constructs. This signifies strong discriminant validity, reinforcing the distinctiveness of each construct and affirming the model's reliability.

Table 2. Measurement Model

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Attitude		0.886	0.929	0.814
ATT1: "I like the idea of selling with e-commerce"	0.927			
ATT2: "I think that it is a good idea to sell with e-commerce"	0.875			
ATT3: "I have a favorable attitude towards selling with e-commerce"	0.905			
Environmental Barriers		0.775	0.737	0.553
EB1: "My country's telecommunications and other logistics infrastructure are inadequate"	0.792			
EB2: "Governmental incentives are inadequate"	0.712			
EB3: "Insufficiently qualified vendors for	0.817			

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
website development and maintenance"				
EB4: "Absence of government standards or regulations for e-commerce activities"	0.744			
EB5: "A significant proportion of customers are still unfamiliar with e-commerce"	0.871			
EB6: "E-payment (commissions, bank fees, etc.) and logistics incur high additional expenses"	0.730			
EB7: "Competitors' pressure is not enough"	0.842			
Intention to opt e-commerce		0.891	0.932	0.821
INT1: "I will consider e-commerce while selling online"	0.887			
INT2: "I think it will be worth it for me to use e-commerce in selling"	0.935			
INT3: "Regularly, I will use e-commerce in selling"	0.896			
Organizational Barriers		0.797	0.844	0.545
OB1: "The company's product or service is not suitable for online transactions"	0.759			
OB2: "Lack of technical understanding or awareness of available e-commerce training"	0.756			
OB3: "The company's size is insufficient to support e-commerce activities"	0.757			
OB4: "Financial/human resource constraints prevent investment in e-commerce activities"	0.697			
OB5: "Uncertainty over the proportion of e-commerce benefits to expenses"	0.748			
OB6: "Still acquiring knowledge of e-commerce transactions and markets"	0.786			
OB7: "Concerning the management of disruptive e-commerce technologies"	0.818			
Perceived Cost		0.797	0.838	0.637
PC1: "The initial set-up cost is high"	0.777			
PC2: "Incur extra cost for hiring IT staff"	0.691			
PC3: "Assessing costs and benefits are difficult"	0.918			
Perceived Ease of Use		0.866	0.909	0.714

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
PEU1: "I think using e-commerce applications is easy"	0.88			
PEU2: "I think it is very simple to learn how to use e-commerce applications"	0.83			
PEU3: "I think it does not require much effort to use e-commerce application"	0.941			
PEU4: "I think the e-commerce application is clear and understandable"	0.782			
Perceived Usefulness		0.882	0.919	0.74
PUF1: "I can improve the selling process with e-commerce application"	0.854			
PUF2: "My selling process will be more efficient with e-commerce application"	0.9			
PUF3: "E-commerce will be helpful while selling"	0.813			
PUF4: "E-commerce will improve my ability while selling"	0.809			
Technological Barriers		0.702	0.804	0.527
TB1: "The company's technological infrastructure (including its website) does not support e-commerce"	0.874			
TB2: "E-commerce activities (e.g., marketing, payment, logistics) remain segmented"	0.882			
TB3: "Inadequate security for online transactions and payments"	0.781			
TB4: "Inadequate security measures to prevent hacking and malware"	0.749			

Table 3. Discriminant Validity (Fornell-larcker criterion)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Attitude	0.902							
(2) Environmental Barriers	0.714	0.791						
(3) Intention to opt e-commerce	0.854	0.623	0.906					
(4) Organizational Barriers	0.711	0.713	0.783	0.667				
(5) Perceived Cost	0.624	0.796	0.807	0.647	0.798			

(6) Perceived Ease of Use	0.807	0.707	0.712	0.621	0.668	0.845		
(7) Perceived Usefulness	0.842	0.712	0.801	0.585	0.742	0.816	0.861	
(8) Technological Barriers	0.713	0.663	0.855	0.645	0.649	0.801	0.791	0.726

5.2. Structural Model

Table 4 provides a comprehensive overview of the direct path coefficients, their standard deviations, T statistics, and corresponding p-values, offering valuable insights into the relationships between the various constructs in the research model. Notably, the relationship between "Perceived Usefulness" and "Intention to opt e-commerce" is supported with a positive beta coefficient of 0.28, a low standard deviation of 0.124, a T statistic of 2.247, and a p-value of 0.025, H1 is supported. Similarly, the link between "Perceived Usefulness" and "Attitude" is strongly supported with a high beta coefficient of 0.527, a low standard deviation of 0.105, a T statistic of 5.01, and a p-value of 0.000, H2 is supported. Additionally, "Perceived Ease of Use" is positively related to "Attitude" with a beta coefficient of 0.366, supported by a low standard deviation, a T statistic of 3.669, and a p-value of 0.000, H3 is supported. Furthermore, "Perceived Ease of Use" strongly influences "Perceived Usefulness" with a high beta coefficient of 0.816, a very low standard deviation, a highly significant T statistic of 22.898, and a p-value of 0.000, H4 is supported. On the other hand, "Perceived Cost" has a significant, albeit negative, effect on "Attitude" with a beta coefficient of -0.231, a moderate standard deviation, a T statistic of 4.156, and a p-value of 0.035, H5 is supported. "Technological Barriers" positively impact "Attitude" with a beta coefficient of 0.169, supported by a moderate standard deviation, a T statistic of 3.719, and a p-value of 0.021, H6 is supported. In contrast, "Organizational Barriers" and "Environmental Barriers" do not significantly affect "Attitude," as indicated by low T statistics and p-values exceeding 0.05, H7 and H8 are not supported. Lastly, "Attitude" strongly influences "Intention to opt e-commerce" with a beta coefficient of 0.619, a moderate standard deviation, a T statistic of 5.512, and a p-value of 0.000, H9 is supported.

In Table 5, a comprehensive analysis of indirect effects in a research study is presented, shedding light on the intricate relationships between various variables. Hypothesis 10, examined the indirect effect of "Perceived Usefulness" on "Intention to opt e-commerce" through "Attitude," is supported with a significant beta coefficient of 0.326 and a p-value of 0.001. Similarly, Hypothesis 11, investigating the indirect effect of "Perceived Ease of Use" on "Intention to opt e-commerce" through "Attitude," is supported with a substantial beta coefficient of 0.226 and a low p-value of 0.000. Hypothesis 12, which examines the indirect effect of "Perceived Ease of Use" on "Intention to opt e-commerce" through a sequence of variables, including "Perceived Usefulness" and "Attitude," is also supported, as indicated by a significant beta coefficient of 0.266 and a p-value of 0.002. Hypothesis 13, focusing on the indirect effect of "Perceived Cost" on "Intention to opt e-commerce" through "Attitude," is supported with a substantial beta coefficient of 0.191 and a p-value of 0.031. Hypothesis 14, investigating the indirect effect of "Technological Barriers" on "Intention to opt e-commerce" through "Attitude," is supported with a significant beta coefficient of 0.133 and a p-value of 0.021. Hypothesis 15, exploring the indirect effect of "Organizational Barriers" on "Intention to opt e-commerce" through "Attitude," is not supported, as the beta coefficient is negligible (-0.011), and the p-value is high (0.800). Similarly, Hypothesis 16, examining the indirect effect of "Environmental Barriers" on "Intention to opt e-commerce" through "Attitude," is not supported, as indicated by a negligible beta coefficient (-0.042) and a p-value of 0.529. Hypothesis 17, focusing on the relationship between "Perceived Ease of Use," "Perceived Usefulness," and "Attitude," is supported with a significant beta coefficient of 0.43 and a p-value of 0.000. Lastly,

Hypothesis 18, investigating the relationship between "Perceived Ease of Use," "Perceived Usefulness," and "Intention to opt e-commerce," is supported with a significant beta coefficient of 0.228 and a p-value of 0.024.

The Figure 2 provides valuable insights into the goodness of fit of regression models for three key variables. For "Attitude," the model explains 76% of the variance, indicating a strong fit, with the adjusted R-squared of 0.743 accounting for model complexity. Similarly, the "Intention to opt e-commerce" model demonstrates a good fit, explaining 75.2% of the variance with an adjusted R-squared of 0.747. The "Perceived Usefulness" model explains 66.5% of the variance, and the adjusted R-squared of 0.662 accommodates the model's complexity. These values collectively offer a clear understanding of the explanatory power of the regression models, with higher R-squared values suggesting better model fit and adjusted R-squared values accounting for the number of predictors in the models.

Table 4. Path coefficients (Direct Effects)

Hypothesis	Paths	β	Standard deviation	T statistics	P values	Results
H1	Perceived Usefulness -> Intention to opt e-commerce	0.28	0.124	2.247	0.025	Supported
H2	Perceived Usefulness -> Attitude	0.527	0.105	5.01	0.000	Supported
H3	Perceived Ease of Use -> Attitude	0.366	0.1	3.669	0.000	Supported
H4	Perceived Ease of Use -> Perceived Usefulness	0.816	0.036	22.898	0.000	Supported
H5	Perceived Cost -> Attitude	-0.231	0.077	4.156	0.035	Supported
H6	Technological Barriers -> Attitude	0.169	0.074	3.719	0.021	Supported
H7	Organizational Barriers -> Attitude	-0.018	0.072	0.255	0.799	Not supported
H8	Environmental Barriers -> Attitude	-0.067	0.107	0.627	0.531	Not supported
H9	Attitude -> Intention to opt e-commerce	0.619	0.112	5.512	0.000	Supported

Table 5. Path coefficients (Indirect Effects)

Hypothesis	Paths	β	Standard deviation	T statistics	P values	Results
H10	Perceived Usefulness -> Attitude -> Intention to opt e-commerce	0.326	0.102	3.188	0.001	Supported
H11	Perceived Ease of Use -> Attitude -> Intention to opt e-commerce	0.226	0.065	3.491	0.000	Supported
H12	Perceived Ease of Use -> Perceived Usefulness -> Attitude -> Intention to opt e-commerce	0.266	0.087	3.045	0.002	Supported
H13	Perceived Cost -> Attitude -> Intention to opt e-commerce	0.191	0.048	3.055	0.031	Supported
H14	Technological Barriers -> Attitude -> Intention to opt e-commerce	0.133	0.047	2.705	0.021	Supported

Hypothesis	Paths	β	Standard deviation	T statistics	P values	Results
H15	Organizational Barriers -> Attitude -> Intention to opt e-commerce	-0.011	0.045	0.253	0.800	Not supported
H16	Environmental Barriers -> Attitude -> Intention to opt e-commerce	-0.042	0.066	0.629	0.529	Not supported
H17	Perceived Ease of Use -> Perceived Usefulness -> Attitude	0.43	0.09	4.788	0.000	Supported
H18	Perceived Ease of Use -> Perceived Usefulness -> Intention to opt e-commerce	0.228	0.101	2.256	0.024	Supported

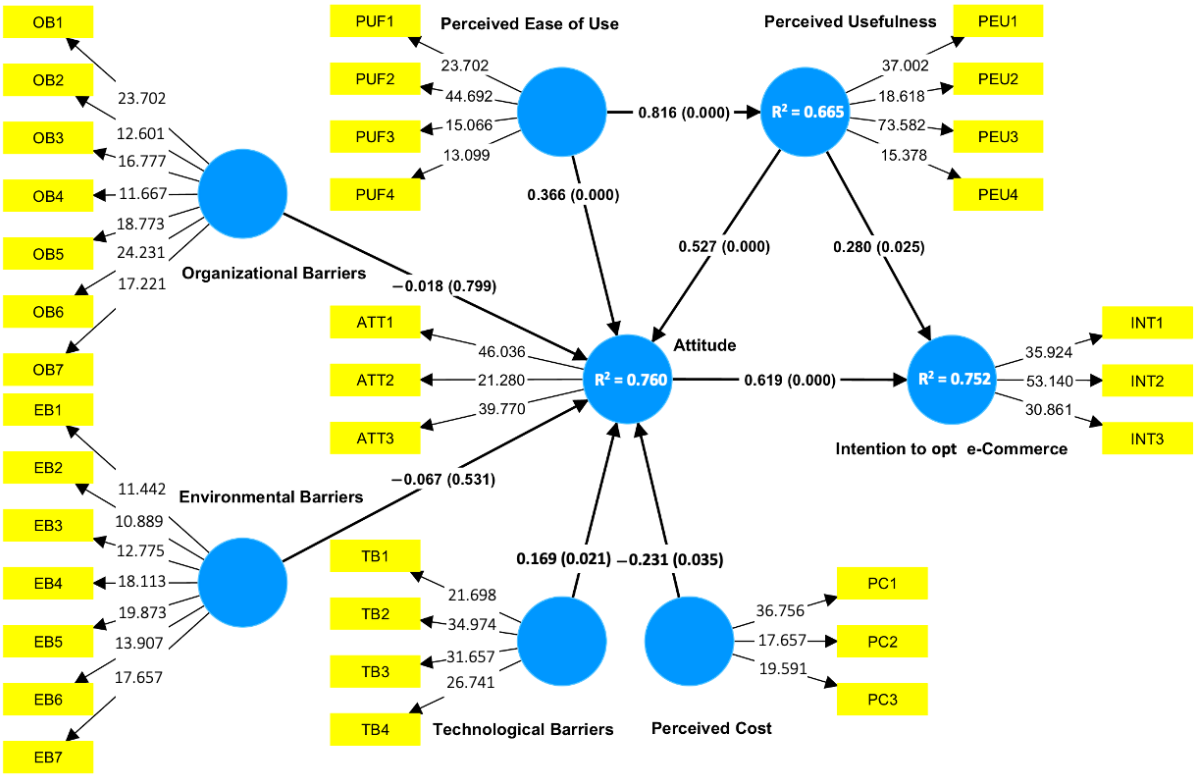

Figure 2. Model for Retailer's Intention to opt e-commerce

6. Discussion

The adoption of e-commerce in traditional retail businesses is a topic of significant interest and importance, particularly in the rapidly evolving digital landscape of Saudi Arabia. This study investigated various factors influencing the intention to opt e-commerce for digital retail business among traditional retailers in Saudi Arabia. The results of the study offer valuable insights into the intricate dynamics that underpin the decision-making process of traditional retailers in embracing e-commerce.

The main study findings are the strong influence of perceived usefulness on the intention to opt e-commerce. Traditional retailers who perceive e-commerce as a valuable tool are more inclined to consider its adoption. This aligns with the concept of the TAM, which posits that users are more likely to accept and use technology when they perceive it as

useful (Davis, 1986; Davis et al., 1989). In the context of traditional retailers in Saudi Arabia, the perceived usefulness of e-commerce systems is a critical factor in shaping their intentions to embrace this digital platform. As the Saudi retail landscape becomes increasingly digital, recognizing the practical benefits and advantages of e-commerce becomes paramount for retailers looking to stay competitive and relevant in the market (Sarabdeen, 2023). The study also underscores the importance of attitude in the decision-making process. Attitude towards e-commerce is significantly influenced by perceived usefulness and ease of use. Hence, similar findings reported in other studies in different context by Yulihasri et al. (2010), Lim and Ting (2012) and Sevim et al. (2017). Traditional retailers who view e-commerce as a useful tool tend to develop a more positive attitude towards it. Additionally, the ease of using e-commerce systems is closely linked to a favorable attitude. Retailers who find e-commerce systems easy to use tend to have a more positive perception of digital retail. This highlights the role of user-friendliness and simplicity in reducing resistance and fostering a positive attitude towards e-commerce, which is instrumental in driving its adoption. However, not all factors had a direct positive impact. Perceived cost, for instance, had a negative influence on attitude, as specified in other study such as (Alam et al., 2011; 2021). Retailers who perceive e-commerce as costly tend to have a less favorable attitude towards it. This finding emphasizes the importance of cost management and efficiency in promoting a positive attitude and, consequently, the adoption of e-commerce. In a competitive market, where cost-effectiveness is often a critical consideration, retailers must address these cost perceptions to encourage e-commerce adoption. Technological barriers also emerged as a significant factor influencing attitude. Traditional retailers facing fewer technological obstacles tend to exhibit a more positive attitude towards e-commerce. Overcoming these barriers, such as technological skill gaps and infrastructure limitations, is essential in promoting a positive attitude and encouraging the adoption of e-commerce (Seethamraju, 2015; Van den Berg and Van der Lingen, 2019). Specifically, it was observed that organizational and environmental barriers did not exert a direct influence on the attitudes of traditional retailers in this particular context. The results suggest that, in the Saudi Arabian market, internal and individual factors may exert a stronger influence on the attitude of traditional retailers. This highlights the unique challenges faced by traditional retailers in adapting to the digital retail landscape and underscores the need to focus on factors like perceived usefulness, ease of use, and cost considerations. The findings of this study provide valuable insights for businesses and policymakers seeking to promote the successful integration of e-commerce in the traditional retail sector of Saudi Arabia. By focusing on enhancing the perceived usefulness, ease of use, and cost-efficiency of e-commerce systems, stakeholders can foster a more positive attitude and intention to adopt e-commerce among traditional retailers.

The implications drawn from this study carry significant practical value for traditional retailers, policymakers, and researchers operating in the context of Saudi Arabia's digital retail landscape. First and foremost, traditional retailers should recognize the importance of highlighting the practical benefits of e-commerce systems. Emphasizing how e-commerce can expand market reach, improve operational efficiency, and enhance customer engagement can serve as a powerful motivator for its adoption. Furthermore, user-friendliness and simplicity in e-commerce platforms should be prioritized, as the study underscores their role in fostering a positive attitude. Training and resources to enhance employees' digital skills and navigate user-friendly interfaces are essential in this regard. Managing costs effectively is another imperative for retailers, as high perceived costs can deter adoption. Strategies to optimize e-commerce operations and mitigate cost concerns are central to promoting a positive attitude.

For policymakers, the findings suggest the need for tailored initiatives that address the specific dynamics at play in the Saudi Arabian market. While external environmental and organizational barriers were found to have limited influence, the emphasis should shift towards factors like perceived usefulness, ease of use, and cost considerations.

Policymakers should craft policies and provide support that aligns with these internal dynamics to facilitate a smoother transition into the digital retail landscape for traditional retailers.

Collaborative efforts between stakeholders are crucial, especially in terms of training and resource provision. Government agencies, industry associations, and educational institutions can collaborate to offer training programs and resources to equip traditional retailers with the necessary digital skills and knowledge, thus ensuring a successful integration of e-commerce into their business models. These insights are instrumental in facilitating the transition to digital retail in the Saudi Arabian market, where the convergence of traditional and digital retail models is a defining feature of the contemporary retail landscape.

7. Conclusion

The study aimed to unravel the factors influencing the intention to opt e-commerce for digital retail business among traditional retailers in Saudi Arabia. The study constructed and empirically tested a model using TAM specifically tailored to the Saudi context. The study yielded compelling results, underlining the paramount importance of perceived usefulness in shaping the intentions of traditional retailers. Attitude emerged as a pivotal component in this decision-making process, intricately linked with perceived usefulness and ease of use. A positive attitude was closely associated with the perception of e-commerce as both useful and user-friendly. This finding underscores the necessity for user-centric design and accessible platforms that resonate with the capabilities and expectations of traditional retailers. Conversely, the perception of high costs associated with e-commerce emerged as a notable barrier. When e-commerce was viewed as costly, retailers exhibited a less favorable attitude. The study also identified the significance of addressing technological barriers. Overcoming these obstacles is integral in cultivating a positive attitude among traditional retailers. Interestingly, the findings indicated that organizational and environmental barriers did not exert a direct influence on attitude in this specific context. This suggests that unique internal and individual factors play a more substantial role in shaping the attitudes of traditional retailers in Saudi Arabia. Thus, the study implications provide a tailored roadmap for traditional retailers, policymakers, and industry stakeholders operating within the evolving Saudi Arabian retail landscape. The focus on perceived usefulness, ease of use, and cost considerations can facilitate a seamless transition into the digital era, supporting the growth and competitiveness of the retail sector in Saudi Arabia.

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