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Examining Gender Disparities in Traditional Retailers' Intentions to Embrace Digital Technology in Saudi Arabia

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Abstract

This study aims to examine the factors influencing digital technology adoption among retail businesses in Saudi Arabia, with a focus on understanding gender-specific differences. Employing a cross-sectional design, data were collected from 291 owners and managers using an online survey. A convenience sampling technique was utilized to gather responses. The study investigated four primary constructs: intention to use digital technology, attitude toward digital technology, perceived ease of use, and perceived usefulness. Data analysis was conducted using structural equation modeling with SmartPLS software version 4. The findings reveal significant relationships among the constructs. Perceived ease of use was found to significantly influence perceived usefulness, which in turn positively affected both attitudes toward digital technology and intentions to use it. The study also highlighted that perceived usefulness has a substantial impact on intention to use digital technology, with attitudes toward technology playing a critical mediating role. Notably, gender-specific differences were observed in the impact of perceived ease of use on attitudes toward digital technology, which was significant for males but not for females. Tailored marketing and training strategies that address these differences are essential for enhancing digital technology adoption in the retail sector. These insights contribute to a deeper understanding of technology adoption behaviors and offer practical implications for improving technology integration.

Keywords: Digital Business, attitude, intention, gender, Saudi Arabia

1. Introduction

The rapid advancement of digital technology has fundamentally transformed business operations globally, offering unprecedented opportunities to enhance efficiency, foster innovation, and improve customer engagement (Ancillai et al., 2023). In nearly every industry, digital tools and platforms have become indispensable, allowing businesses to streamline processes, reduce costs, and respond swiftly

to market changes (Dana et al., 2022). These technological advancements have been particularly impactful in the retail sector, where they have revolutionized various aspects of operations, from inventory management to customer service (Singh and Chandra, 2016). Retail businesses now have access to a broad array of digital technologies, including e-commerce platforms, customer relationship management systems, mobile payment solutions, and data analytics tools (Santalova et al., 2019). These technologies enable businesses to create more personalized and efficient customer experiences, thereby providing a competitive edge in the marketplace (Härting et al., 2019). The integration of digital technology into retail operations has evolved from being a strategic advantage to an essential requirement for survival in today's highly competitive market environment (Borisova et al., 2020). Businesses that are slow to adopt these technologies risk being outpaced by more agile competitors who can leverage digital tools to meet customer demands more effectively and optimize their operations (Alateeg & Alhammadi, 2023). As consumer expectations for seamless and integrated digital experiences grow, the pressure on retail businesses to adopt and effectively utilize digital technology intensifies (Alnasser, 2024).

In the rapidly shifting global marketplace, the retail sector has undergone significant transformation, fundamentally altering how businesses operate and interact with consumers (Risberg, 2023). This shift is primarily driven by the rise of e-commerce, which has dramatically reshaped the retail environment, challenging and transforming the conventional brick-and-mortar business model (Gao & Zhao, 2022). Traditional retailers are increasingly compelled to adopt digital strategies to maintain their competitiveness and relevance in an ever-digitizing world (Mustafa et al., 2022; Banerjee et al., 2023). Historically, the retail industry has relied on physical stores where consumers could experience products firsthand before purchasing (Verma et al., 2023). Yet, the advent of the digital age and widespread internet access have significantly altered consumer expectations and shopping behaviors (Harrisson-Boudreau & Bellemare, 2022). Technological advancements and evolving consumer preferences have positioned e-commerce as a disruptive force, fundamentally challenging the traditional retail model (Attar et al., 2022). While e-commerce offers substantial benefits, including access to a wider customer base, streamlined transaction processes, and reduced operational expenses, it also requires retailers to undergo significant adaptation, invest resources strategically, and develop a comprehensive understanding of the digital retail ecosystem (AlGhamdi et al., 2012; AlGhamdi et al., 2015). In Saudi Arabia, where the government's Vision 2030 initiative emphasizes digital transformation and entrepreneurial growth, the urgency for traditional retailers to embrace e-commerce has intensified considerably (Alateeg & Al-Ayed, 2024).

Despite the evident advantages of digital technology, its adoption within the retail sector varies widely (Alateeg & Alhammadi, 2024a). Several factors influence the pace and extent of digital adoption, including the size of the business, available resources, and the technological literacy of the workforce (Alshanqiti et al., 2022). Smaller retail businesses, in particular, may encounter challenges related to the cost and complexity of implementing new technologies, while larger firms might have more resources but face difficulties in integrating digital tools across diverse and sometimes global operations (Alflayyeh et al., 2020). Additionally, cultural and demographic factors, such as the age, gender, and educational background of business owners and managers, significantly shape attitudes toward digital technology and determine how quickly and effectively it is adopted.

Understanding the drivers and barriers to digital technology adoption in the retail sector is crucial for supporting businesses in their digital transformation journey. This study seeks to contribute to this understanding by exploring the factors that drive digital technology adoption among retail businesses in Saudi Arabia, with a particular focus on gender-specific differences in adoption patterns. This study is organized into key sections: identifying the research gap and objectives, presenting the conceptual framework and hypotheses, outlining the research design and data analysis, showcasing results via structural equation modeling, and discussing the findings and their implications.

2. Theoretical Underpinning

The Technology Acceptance Model (TAM) is a theoretical framework developed by Davis (1989) to explain and predict how users come to accept and use a technology. The model identifies two primary factors that influence a person's decision to adopt a technology: perceived ease of use (PEOU) and perceived usefulness (PU). PEOU refers to the degree to which an individual believes that using a particular technology will be free of effort, while PU refers to the extent to which the technology is believed to enhance job performance or provide other benefits. According to TAM, these factors shape the individual's attitude toward using the technology, which then influences their behavioral intention to use it, ultimately leading to actual usage. While TAM has been expanded over time to incorporate additional factors such as social influence and facilitating conditions, its core focus on PEOU and PU remains central to understanding technology adoption behavior.

In the context of digital technology adoption in the retail business, the TAM provides a valuable framework for understanding how and why retailers decide to integrate digital tools and platforms into their operations. The model suggests that a retailer's decision to adopt digital technologies is primarily influenced by two factors: PEOU and PU. For retail businesses, PEOU might involve the retailer's belief that a particular digital technology—such as an e-commerce platform, mobile payment system, or customer relationship management software—is user-friendly and can be easily implemented without requiring extensive training or technical support. If the technology is perceived as straightforward and accessible, retailers are more likely to adopt it. PU in the retail context refers to the retailer's belief that the digital technology will enhance their business operations, improve customer engagement, increase sales, or streamline processes. For instance, a retailer might view an online sales platform as useful if it allows them to reach a broader customer base, provide personalized shopping experiences, or efficiently manage inventory. The greater the perceived benefits of the technology, the more likely the retailer is to embrace its adoption.

2.1 Perceived Ease of Use

PEOU is a fundamental concept within the TAM that refers to the degree to which a user believes that using a particular technology will be free of effort (Rogers, 2003). In simpler terms, it reflects how easy and straightforward the user perceives the technology to be in terms of learning, understanding, and operating (Sevim et al., 2017). In the context of digital technology for retail businesses, PEOU plays a crucial role in determining whether retailers will adopt new digital tools and platforms (Lim and Ting, 2012). If a retailer perceives a digital solution—such as an online payment system, inventory management software, or an e-commerce platform—as easy to use, they are more likely to integrate it into their business operations. This ease of use can translate into reduced training time for staff, minimal technical support needs, and a smoother overall implementation process, all of which can lower the barriers to adoption. For instance, if a small retail business owner finds a new point-of-sale system intuitive, with a user-friendly interface and straightforward features, they are more likely to adopt it compared to a more complex system that requires extensive training and support. Therefore, PEOU is a critical factor that influences the decision-making process in the adoption of digital technologies within the retail sector (Sevim et al., 2017). Hence, the subsequent hypotheses are proposed.

H1: PEOU influence on PU

H2: PEOU influence on attitude toward digital technology

2.2 Perceived Usefulness

PU is a key concept in the TAM that refers to the degree to which a user believes that a particular technology will enhance their performance or provide significant benefits (Davis, 1989). In the context of retail businesses, PU is about how beneficial a retailer believes a digital technology will be

in improving various aspects of their business operations. For retail businesses, PU might involve several factors, such as increasing sales, improving customer service, streamlining operations, or expanding market reach (Fagan et al., 2012; Broom et al., 2019). For example, a retailer might find an e-commerce platform useful because it allows them to reach customers beyond their physical location, leading to higher sales (Sumak et al., 2011). Similarly, a digital inventory management system might be perceived as useful if it helps the retailer manage stock levels more efficiently, reducing costs and preventing stockouts (Dutot et al., 2019). The more a retailer perceives that a digital technology can positively impact their business outcomes—whether through increased efficiency, cost savings, or enhanced customer satisfaction—the more likely they are to adopt that technology. PU is thus a crucial determinant in the adoption and continued use of digital technologies in the retail industry, as it directly influences the retailer's motivation to integrate new digital tools into their business strategy. Thereby, the subsequent hypotheses are postulated.

H3: PU influence on attitude toward digital technology
H4: PU influence on intention to use digital technology

2.3   *Attitude Towards use of Digital Technology*

Attitude Toward the Use of Digital Technology refers to an individual's overall evaluation of using a particular technology, which encompasses their feelings and perceptions about its advantages and disadvantages (Ajzen, 1991). In the TAM, this construct is pivotal as it reflects how positively or negatively an individual views the adoption and utilization of digital technologies (Yadav and Pathak, 2017). In the context of retail businesses, attitude toward the use of digital technology is shaped by both PEOU and PU. For instance, if a retailer finds a new e-commerce platform both user-friendly and beneficial for enhancing sales and customer engagement, they are likely to develop a positive attitude toward its use. Conversely, if the technology is perceived as difficult to use or not very useful in achieving business objectives, the attitude toward it may be more negative (Karjaluoto and Leppaniemi, 2013). This attitude is crucial because it influences the retailer's behavioral intention to use the technology, which in turn affects the actual adoption and utilization of the technology (Nasar et al., 2019). A positive attitude towards digital technology often leads to greater enthusiasm for exploring and integrating new digital solutions, while a negative attitude can result in resistance or reluctance to adopt such technologies. Therefore, understanding and fostering a positive attitude towards digital technology is essential for successful technology adoption and effective implementation in the retail sector. Thereby, the subsequent hypothesis is postulated.

H5: Attitude toward digital technology influence on intention to use digital technology

2.4   *Mediation Effects*

The exploration of mediation effects within the context of technology adoption provides insights into how different factors interplay to influence user intentions and attitudes. Attitude toward digital technology often serves as a critical mediator in the relationships between PEOU, PU, and intention to use digital technology (Gajanayake et al., 2014; Krishanan et al., 2016). Research indicates that attitude toward digital technology can mediate the relationship between PEOU and intention to use digital technology (Venkatesh et al., 2003). This means that the ease with which users can navigate a technology influences their attitude toward it, which subsequently affects their intention to adopt it. When users find a technology easy to use, their positive attitude toward it can enhance their willingness to adopt it. Similarly, attitude toward digital technology also mediates the relationship between PU and intention to use digital technology. PU, or the extent to which a technology is believed to enhance performance, impacts users' attitudes toward the technology (Makmor et al., 2019). This, in turn, influences their intention to use it (Davis, 1989). A technology perceived as useful is likely to foster a positive attitude, which can drive the intention to adopt it. Additionally, PU and attitude toward digital technology together mediate the relationship between PEOU and intention to

use digital technology. This dual mediation suggests that the ease of use of a technology affects its PU, which then shapes the user's attitude and intention to use the technology (Venkatesh et al., 2012). Therefore, both PU and attitude play crucial roles in this relationship (Hussein et al., 2019). Furthermore, PU is identified as a mediator between PEOU and attitude toward digital technology. This mediation suggests that the ease with which a technology can be used affects its PU, which subsequently influences users' attitudes toward the technology (Venkatesh & Davis, 2000). Finally, PU also mediates the relationship between PEOU and intention to use digital technology. This indicates that the PEOU influences users' perception of a technology's usefulness, which in turn affects their intention to adopt the technology (Davis, 1989). Hence, the following hypotheses are proposed.

H6: Attitude toward digital technology mediates the relationship between PEOU and intention to use digital technology

H7: Attitude toward digital technology mediates the relationship between PU and intention to use digital technology

H8: PU and attitude toward digital technology mediate the relationship between PEOU and intention to use digital technology

H9: PU mediates the relationship between PEOU and attitude toward digital technology

H10: PU mediates the relationship between PEOU and intention to use digital technology

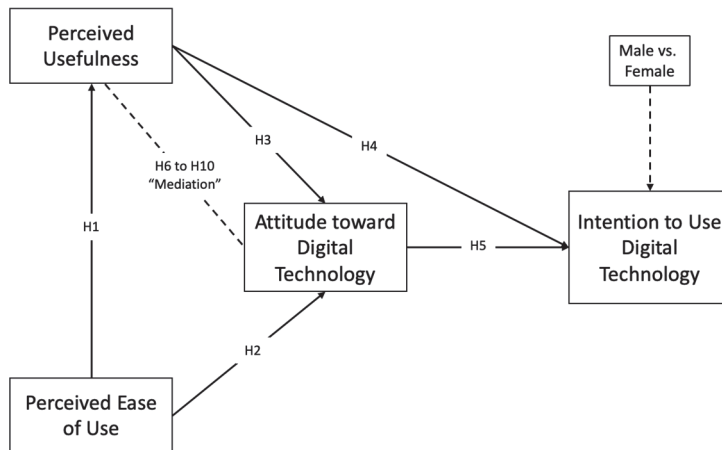Figure 1 depicts the research model.

Figure 1. Research Model

3. Methodology

This study employed a cross-sectional design to investigate the adoption of digital technology among retail businesses in Saudi Arabia. Data collection occurred between July 2024 and August 2024 using an online survey form. The sample consisted of 291 owners and managers from various retail businesses, selected through a convenience sampling technique. The survey utilized a 5-point Likert scale ranging from "strongly agree" to "strongly disagree" to measure participants' responses. The constructs of interest included intention to use digital technology, attitude toward digital technology, PEOU, and PU. To measure intention to use digital technology, three items were adapted from Alam et al. (2021). Attitude toward digital technology was assessed using three items adapted from Alam et al. (2018). PEOU was evaluated with four items adapted from Huang and Liao (2015) and Alam et al. (2018). For PU, four items were adapted from Janssen (2018). Data analysis was conducted using

structural equation modeling (SEM) via SmartPLS software version 4. This approach was chosen to assess the relationships between the constructs and evaluate the model's overall fit and predictive power.

4. Results

The demographic profile of the 291 participants in Table 1 reveals a predominantly male sample, with 58% being men and 42% women. The age distribution shows that nearly half of the participants (49%) are between 25-34 years old, followed by 26% aged 35-44 years, 13% aged 45-54 years, and 12% aged 18-24 years. In terms of education, the majority of participants (63%) hold a Bachelor's degree, while 20% have a high school diploma, 11% possess a trade school certification, and 7% have earned a Master's degree. Regarding work experience, 48% of participants have 3-4 years of experience, 30% have 1-2 years, 14% have more than 6 years, and 8% have 5-6 years of experience.

The measurement model assessment for the constructs—PEOU, PU, attitude toward digital technology, and intention to use digital technology—shows strong reliability and validity (Table 2). The PEOU construct has a Cronbach's alpha of 0.788, composite reliability of 0.861, and an average variance extracted (AVE) of 0.609, indicating good internal consistency and acceptable convergent validity. Similarly, PU has a Cronbach's alpha of 0.783, composite reliability of 0.860, and an AVE of 0.606, reflecting reliability and adequate convergent validity. The attitude toward digital technology construct exhibits a Cronbach's alpha of 0.749, composite reliability of 0.857, and an AVE of 0.668, suggesting acceptable reliability and strong convergent validity. Lastly, intention to use digital technology is measured with a Cronbach's alpha of 0.760, composite reliability of 0.862, and an AVE of 0.676, further confirming the construct's reliability and high convergent validity.

The discriminant validity assessment using the Fornell-Larcker criterion confirms that the constructs—attitude toward digital technology, intention to use digital technology, PEOU, and PU—are distinct from each other (Table 3). This ensures that the constructs are unique and measure different aspects of the model.

The path coefficients table reveals significant relationships among the constructs in the model (Table 4). The connection between PEOU and PU is strong and significant across all samples, with β = 0.564 for the full sample, 0.534 for males, and 0.649 for females, supporting hypothesis H1. In the path analysis, hypothesis H2, which examines the effect of PEOU on attitude toward digital technology, is supported for the full sample and male sample but not for the female sample. Specifically, for the full sample, the path coefficient is β = 0.166, and for the male sample, it is β = 0.191, both of which are significant. However, for the female sample, the path coefficient is β = 0.029, which is not significant, indicating that the relationship does not hold for females. Similarly, PU significantly influences attitude toward digital technology, with β = 0.589 for the full sample, 0.573 for males, and 0.694 for females, confirming hypothesis H3. The impact of PU on intention to use digital technology is also significant across all samples, with β = 0.339 for the full sample, 0.337 for males, and 0.353 for females, supporting hypothesis H4. Additionally, the direct effect of attitude toward digital technology on intention to use digital technology is consistent across groups, with β = 0.464 for the full sample, 0.464 for males, and 0.457 for females, validating hypothesis H5. The indirect effect of PEOU through attitude toward digital technology on intention to use digital technology is significant for the full sample (β = 0.077) and the male sample (β = 0.089) but not for females (β = 0.013), indicating that hypothesis H6 is not supported for females. The mediation of PU between attitude toward digital technology and intention to use digital technology is significant for all groups, with β = 0.274 for the full sample, 0.266 for males, and 0.317 for females, supporting hypothesis H7. Additionally, the more complex indirect paths involving PEOU, PU, and attitude toward digital technology leading to intention to use digital technology are significant across all samples, with β = 0.154 for the full sample, 0.142 for males, and 0.206 for females, confirming hypothesis H8. The indirect effect of PEOU through PU and attitude toward digital technology is significant across all groups, with β = 0.332 for the full sample, 0.306 for males, and 0.450 for females, supporting

hypothesis H9. Finally, the indirect effect of PEOU through PU on intention to use digital technology is significant for the full sample (β = 0.191), males (β = 0.180), and females (β = 0.229), confirming hypothesis H10.

The multigroup analysis assesses gender differences in the path coefficients between males and females for various relationships (Table 5). The analysis shows no significant gender differences across the examined paths. For the relationship between PEOU and PU, the difference in path coefficients is -0.115, with p-values of 0.936 (1-tailed) and 0.127 (2-tailed), indicating no significant difference. Similarly, the path from PEOU to attitude toward digital technology shows a difference of 0.162 with a 1-tailed p-value of 0.037 and a 2-tailed p-value of 0.075, which does not show a significant gender difference upon closer inspection. The path from PU to attitude toward digital technology has a difference of -0.121, with p-values of 0.917 (1-tailed) and 0.167 (2-tailed), suggesting no significant gender difference. The relationship between PU and intention to use digital technology has a minimal difference of -0.016 and p-values of 0.56 (1-tailed) and 0.88 (2-tailed), also indicating no significant difference. Finally, the path from attitude toward digital technology to intention to use digital technology shows a difference of 0.007, with p-values of 0.477 (1-tailed) and 0.955 (2-tailed), confirming no significant gender difference.

The R-squared values reflect the proportion of variance explained by the model for each construct across different samples in Figure 2, Figure 3 and Figure 4. For attitude toward digital technology, the model explains 48.5% of the variance in the full sample, 48.2% for males, and 50.9% for females, indicating similar explanatory power across genders, with a slightly higher proportion explained for females. In terms of intention to use digital technology, the model accounts for 54.6% of the variance in the full sample, 54.0% for males, and 56.3% for females, showing a consistent and somewhat higher explanatory power for females. For PU, the model explains 31.8% of the variance in the full sample, 28.5% for males, and 42.1% for females, highlighting a notable difference with higher explanatory power for females compared to males.

Table 1. Demographic of Participants (n=291)

	Frequency	Percent
Gender		
Male	169	58%
Female	122	42%
Age		
18-24 years	34	12%
25-34 years	143	49%
35-44 years	77	26%
45-54 years	37	13%
Education		
"High school diploma"	57	20%
"Trade school certification"	31	11%
"Bachelor's degree"	182	63%
"Master's degree"	21	7%
Work Experience		
"1-2 years"	87	30%
"3-4 years"	139	48%
"5-6 years"	24	8%
"More than 6 years"	41	14%

Table 2. Measurement Model

"Constructs and Items"	"Loadings"	"Cronbach's alpha"	"Composite reliability"	"Average variance extracted (AVE)"
"Perceived Ease of Use"		0.788	0.861	0.609
"PEU1: I think using e-commerce applications is easy"	0.796			
"PEU2: I think it is very simple to learn how to use e-commerce applications"	0.834			
"PEU3: I think it does not require much effort to use e-commerce application"	0.701			
"PEU4: I think the e-commerce application is clear and understandable"	0.784			
"Perceived Usefulness"		0.783	0.86	0.606
"PUF1: I can improve the selling process with e-commerce application"	0.806			
"PUF2: My selling process will be more efficient with e-commerce application"	0.719			
"PUF3: E-commerce will be helpful while selling"	0.825			
"PUF4: E-commerce will improve my ability while selling"	0.759			
Attitude toward Digital Technology		0.749	0.857	0.668
"ATT1: I like the idea of selling with e-commerce"	0.84			
"ATT2: I think that it is a good idea to sell with e-commerce"	0.867			
"ATT3: I have a favorable attitude towards selling with e-commerce"	0.738			
Intention to Use Digital Technology		0.76	0.862	0.676
"INT1: I will consider e-commerce while selling online"	0.823			
"INT2: I think it will be worth it for me to use e-commerce in selling"	0.855			
"INT3: Regularly, I will use e-commerce in selling"	0.787			

Table 3. Discriminant Validity (Fornell-larcker criterion)

	(1)	(2)	(3)	(4)
(1) Attitude toward Digital Technology	0.817			
(2) Intention to Use Digital Technology	0.696	0.822		
(3) PEOU	0.498	0.49	0.78	
(4) PU	0.683	0.657	0.564	0.779

Table 4. Path coefficients (Direct Effects)

"Paths"	"β Full Sample"	"β Male Sample"	"β Female Sample"	Results
PEOU -> PU	0.564***	0.534***	0.649***	H1 supported
PEOU -> Attitude toward Digital Technology	0.166***	0.191***	0.029	H2 not supported for female
PU -> Attitude toward Digital Technology	0.589***	0.573***	0.694***	H3 supported
PU -> Intention to Use Digital Technology	0.339***	0.337***	0.353***	H4 supported
Attitude toward Digital Technology -> Intention to Use Digital Technology	0.464***	0.464***	0.457***	H5 supported
PEOU -> Attitude toward Digital Technology -> Intention to Use Digital Technology	0.077***	0.089***	0.013	H6 not supported for female

"Paths"	"β Full Sample "	"β Male Sample"	"β Female Sample"	Results
PU -> Attitude toward Digital Technology -> Intention to Use Digital Technology	0.274***	0.266***	0.317***	H7 supported
PEOU -> PU -> Attitude toward Digital Technology -> Intention to Use Digital Technology	0.154***	0.142***	0.206***	H8 supported
PEOU -> PU -> Attitude toward Digital Technology	0.332***	0.306***	0.45***	H9 supported
PEOU -> PU -> Intention to Use Digital Technology	0.191***	0.18***	0.229***	H10 supported

"Note: * p < 0.05; ** p < 0.01; *** p < 0.001."

Table 5. Multigroup Analysis

| Paths	"Difference (Male - Female)"	"1-tailed (Male vs Female) p value"	"2-tailed (Male vs Female) p value"	Results
PEOU -> PU	-0.115	0.936	0.127	H1 no difference
PEOU -> Attitude toward Digital Technology	0.162	0.037	0.075	H2 no difference
PU -> Attitude toward Digital Technology	-0.121	0.917	0.167	H3 no difference
PU -> Intention to Use Digital Technology	-0.016	0.56	0.88	H4 no difference
Attitude toward Digital Technology -> Intention to Use Digital Technology	0.007	0.477	0.955	H5 no difference
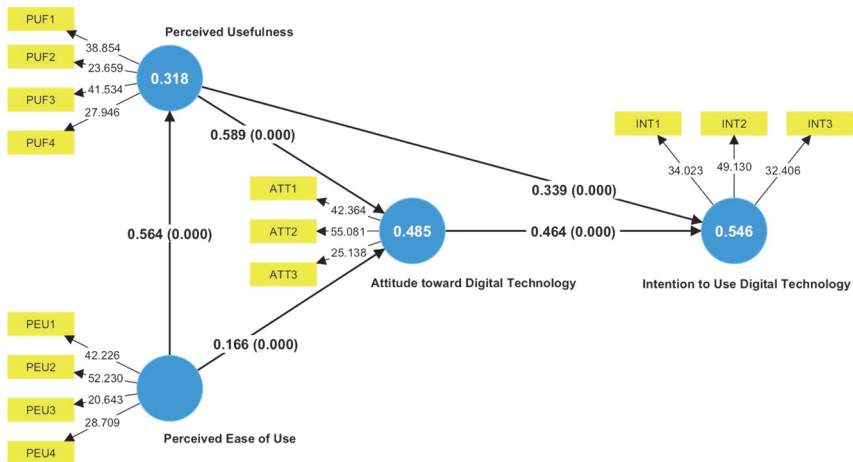
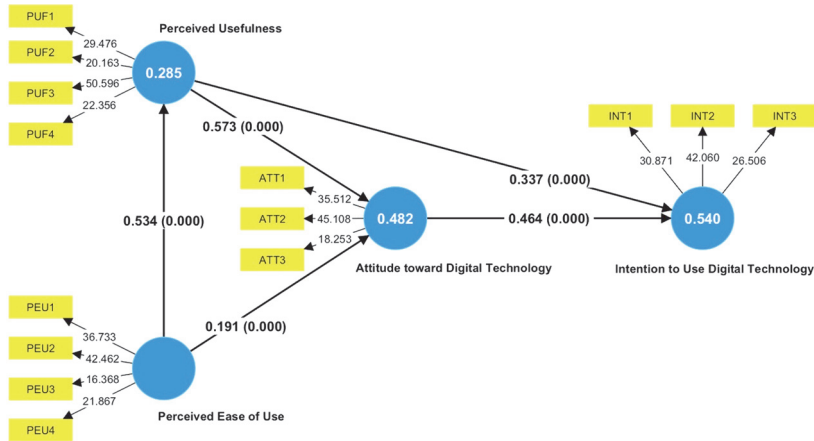**Figure 2.** Structural Model Retailers' Intention (Full Sample)

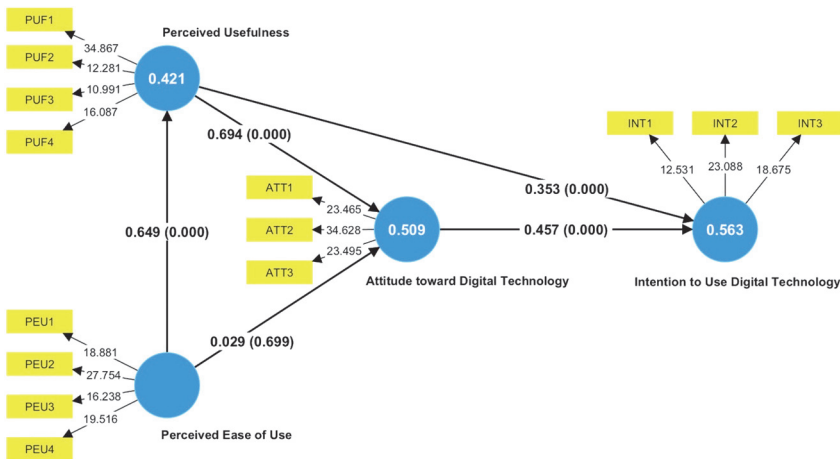**Figure 3.** Structural Model Retailers' Intention (Male Sample)

Figure 4. Structural Model Retailers' Intention (Female Sample)

5. Discussion

The purpose of this study was to examine how PEOU, PU, and attitudes toward digital technology influence users' intentions to adopt digital technologies, with a particular focus on gender differences. The findings provide significant insights into the effectiveness of the model in explaining technology adoption behaviors and highlight important implications for both theoretical understanding and practical applications. The analysis confirms the significant relationships between the core constructs of the model. PEOU has a strong direct effect on PU, with coefficients of β = 0.564 for the full sample, 0.534 for males, and 0.649 for females. This suggests that users who find technology easy to use are more likely to perceive it as useful, a relationship that is robust across different genders (Sevim et al., 2017). Similarly, the effect of PU on attitude toward digital technology is significant, with coefficients of β = 0.589 for the full sample, 0.573 for males, and 0.694 for females. This underscores the role of PU in shaping attitudes towards technology, highlighting its critical

importance in both male and female contexts. The direct impact of PU on intention to use digital technology is also significant, with coefficients of $\beta = 0.339$ for the full sample, 0.337 for males, and 0.353 for females. This shows that PU positively influences users' intentions to adopt technology, with a slight increase in influence observed among females. Furthermore, the relationship between attitude toward digital technology and intention to use it is consistently significant across all groups, with coefficients of $\beta = 0.464$ for the full sample, 0.464 for males, and 0.457 for females. This indicates that a positive attitude towards digital technology is a strong predictor of intention to use it, regardless of gender. However, notable differences arise in the influence of PEOU on attitude toward digital technology. While this path is significant for the full sample ($\beta = 0.166$) and the male sample ($\beta = 0.191$), it is not significant for the female sample ($\beta = 0.029$). This indicates that for females, PEOU does not significantly impact attitudes toward technology, suggesting potential differences in how ease of use is perceived or valued between genders. This finding is supported by the multigroup analysis, which shows that the path from PEOU to attitude toward digital technology does not differ significantly between genders.

The implications of this study offer profound insights for both theoretical frameworks and practical approaches to technology adoption. The study's findings provide robust validation of key components of technology adoption models, particularly the TAM. This validation is crucial as it reinforces the significance of constructs such as PEOU, PU, attitude toward digital technology, and intention to use digital technology in explaining user behavior. The strong relationships among these constructs across different samples highlight the model's effectiveness in capturing the core factors influencing technology adoption (Alateeg et al., 2024). However, the study also uncovers important gender-specific differences that suggest a need for theoretical refinement. The differential impact of PEOU on attitudes toward digital technology, where it is significant for males but not for females, indicates that existing models may not fully account for how different genders perceive and react to technology. This finding suggests that future research should explore gender-specific factors in more depth, such as differing user experiences, expectations, and barriers, to enhance the applicability of technology adoption models across diverse user groups. From a practical standpoint, the study's results have several actionable implications. Organizations should consider gender-specific preferences when designing marketing and training programs. Since PU has a more substantial impact on females, strategies that emphasize the practical benefits and value of technology may be particularly effective in engaging female users. Tailoring messages to highlight how technology can meet specific needs and provide tangible benefits can enhance its appeal to this group (Alateeg & Alhammadi, 2024b). In terms of user experience design, the findings suggest that creating interfaces that are intuitive and user-friendly can help address issues related to PEOU. By simplifying technology and making it more accessible, organizations can reduce barriers to adoption and improve user satisfaction. This approach is especially relevant for female users, who may face different challenges or expectations in their interactions with technology.

Furthermore, the study highlights the importance of ongoing research into gender-specific factors affecting technology adoption. Understanding why PEOU does not significantly impact female attitudes, and exploring other contextual factors that may influence technology adoption, can lead to more nuanced and effective strategies. This includes investigating different types of technologies, user environments, and cultural contexts to develop comprehensive models that address a wide range of user needs.

6. Conclusion

This study provides valuable insights into the factors influencing digital technology adoption and highlights significant gender-specific differences in these influences. The analysis confirms the robustness of the TAM in explaining how PEOU, PU, and attitudes toward digital technology impact users' intentions to adopt new technologies. The study reveals that while PEOU strongly influences PU and, indirectly, attitudes and intentions, this impact varies across genders, particularly in its effect

on attitudes toward technology. The findings underscore the importance of PU in shaping users' intentions, with notable differences between males and females. Specifically, PU has a greater impact on female users, suggesting that marketing and training strategies should emphasize the practical benefits and value of technology for this group. Additionally, user experience design should focus on creating intuitive and user-friendly interfaces to enhance PEOU and address any gender-specific barriers to adoption. The study highlights the need for tailored approaches in technology adoption strategies, taking into account gender differences and specific user needs. By refining theoretical models to better reflect these differences and developing targeted, user-centric strategies, organizations can improve technology adoption rates and user satisfaction. Future research could benefit from a broader exploration of the underlying reasons behind gender disparities in technology adoption, potentially including qualitative methods to capture the perspectives of male and female retailers more deeply. This would further enrich the discourse on gender and technology adoption, providing more comprehensive strategies for fostering digital transformation in the retail sector.

7. Funding

References

Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes, 50, 179–211.

Alateeg, S. S., & Alhammadi, A. D. (2023). Traditional Retailer's Intention to opt E-commerce for Digital Retail Business in Saudi Arabia. Migration Letters, 20(7), 1307–1326.

Alateeg, S., & Alhammadi, A. (2024a). The Role of Employee Engagement towards Innovative Work Behavior mediated by Leadership in Small Businesses. International Journal of Advanced and Applied Sciences, 11(2), 145-156.

Alateeg, S., & Alhammadi, A. (2024b). The Impact of Organizational Culture on Organizational Innovation with the Mediation Role of Strategic Leadership in Saudi Arabia. Journal of Statistics Applications & Probability, 13(2), 843-858.

Alateeg, S., Alhammadi, A., Al-Ayed, S. I., & Helmi, M. A. (2024). Factors Influencing on Behavioral Intention to Adopt Artificial Intelligence for Startup Sustainability. Kurdish Studies, 12(1), 2924–2941. https://doi.org/10.58262/ks.v12i1.209

Alateeg, S., & Al-Ayed, S. (2024). Exploring the role of artificial intelligence technology in empowering women-led startups. Knowledge and Performance Management, 8(2), 28-38. https://doi.org/10.21511/kpm.08(2).2024.03

Alflayyeh, S., Haseebullah, S., & Belhaj, F. A. (2020). The impact of coronavirus (COVID-19) pandemic on retail business in Saudi Arabia: A theoretical review. European Journal of Molecular & Clinical Medicine, 7(1), 3547-3554.

AlGhamdi, R., Alfarraj, O. A., & Bahaddad, A. A. (2015). How retailers at different stages of E-commerce maturity evaluate their entry to E-commerce activities?. arXiv preprint arXiv:1503.05172.

AlGhamdi, R., Nguyen, J., Nguyen, A., & Drew, S. (2012). Factors influencing e-commerce adoption by retailers in Saudi Arabia: A quantitative analysis. International Journal of electronic commerce studies, 3(1), 83-100.

Alshanqiti, E., Alsharif, A. M., Al-Shamani, M., & Karrar, A. E. (2022). Toward E-business During Covid-19: The Business Case of Saudi Arabia. In Advances on Smart and Soft Computing: Proceedings of ICACIn 2021 (pp. 485-496). Springer Singapore.

Alnasser, A. N. (2024). Determinants of retailers' adoption intentions and attitudes toward augmented reality marketing: An empirical analysis. Journal of Statistics Applications & Probability, 13(5), 1465-1476. https://doi.org/10.18576/jsap/130504

Ancillai, C., Sabatini, A., Gatti, M., & Perna, A. (2023). Digital technology and business model innovation: A systematic literature review and future research agenda. Technological Forecasting and Social Change, 188, 122307.

Attar, R. W., Almusharraf, A., Alfawaz, A., & Hajli, N. (2022). New Trends in E-Commerce Research: Linking Social Commerce and Sharing Commerce: A Systematic Literature Review. Sustainability, 14(23), 16024.

Banerjee, D., Erera, A. L., Stroh, A. M., & Toriello, A. (2023). Who has access to e-commerce and when? Time-varying service regions in same-day delivery. Transportation Research Part B: Methodological, 170, 148-168.

Borisova, A., Borisova, E., Kirichenko, E., & Dmitrieva, L. (2020). Digital technologies in retail: is there an impact on businesses?. In SHS Web of Conferences (Vol. 80, p. 01021). EDP Sciences.

Broom, D. R., Lee, K. Y., Lam, M. H. S., & Flint, S. W. (2019). Gotta Catch 'em All or Not Enough Time: Users Motivations for Playing Pokémon Go—and Non-users' Reasons for Not Installing. Health Psychol. Res., 7, 1–9.

Dana, L. P., Salamzadeh, A., Mortazavi, S., & Hadizadeh, M. (2022). Investigating the impact of international markets and new digital technologies on business innovation in emerging markets. Sustainability, 14(2), 983.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. Management Science, 35, 982–1003.

Dutot, V., Bhatiasevi, V., & Bellallahom, N. (2019). Applying the Technology Acceptance Model in a Three-country Study of Smart Watch Adoption. Journal of High Technology Management Research, 30, 1–14.

Fagan, M., Kilmon, C., & Pandey, V. (2012). Exploring the Adoption of a Virtual Reality Simulation: The Role of Perceived Ease of Use, Perceived Usefulness and Personal Innovativeness. Campus-Wide Inf. Syst., 29, 117–127.

Gajanayake, R., Sahama, T., & Iannella, R. (2014). The Role of Perceived Usefulness and Attitude on Electronic Health Record Acceptance: An Empirical Investigation Using Response Surface Analysis. International Journal of E-Health and Medical Communications, 5, 108–119.

Gao, P., & Zhao, L. (2022). Study on Deep Learning Technology to Construct E-Commerce Industry Marketing Promotion Model. Security and Communication Networks, 2022(1), 9958398.

Harrisson-Boudreau, J. P., & Bellemare, J. (2022). Going above and beyond ecommerce in the future highly virtualized world and increasingly digital ecosystem. In Towards Sustainable Customization: Bridging Smart Products and Manufacturing Systems: Proceedings of the 8th Changeable, Agile, Reconfigurable and Virtual Production Conference (CARV2021) and the 10th World Mass Customization & Personalization Conference (MCPC2021), Aalborg, Denmark, October/November 2021 8 (pp. 789-797). Springer International Publishing.

Härting, R., Reichstein, C., Laemmle, P., & Sprengel, A. (2019). Potentials of digital business models in the retail industry–empirical results from european experts. Procedia Computer Science, 159, 1053-1062.

Hussein, L. A., Baharudin, A. S., Jayaraman, K., & Kiumarsi, S. H. A. I. A. N. (2019). B2B e-commerce technology factors with mediating effect perceived usefulness in Jordanian manufacturing SMES. Journal of Engineering Science and Technology, 14(1), 411-429.

Karjaluoto, H., & Leppaniemi, M. (2013). Social Identity for Teenagers: Understanding Behavioral Intention to Participate in Virtual World Environment. Journal of Theoretical and Applied Electronic Commerce Research, 8, 1–16.

Krishanan, D., Teng, K.L.L., & Khalidah, S. (2016). Mediating Effects of Attitude towards Consumers' Perceived Interactivity in Using Mobile Banking. Journal of Global Business and Social Entrepreneurship, 3, 95–106.

Lim, W.M., & Ting, D.H. (2012). E-Shopping: An Analysis of the Technology Acceptance Model. Modern Applied Science, 6, 49–62.

Makmor, N., Aziz, N. A., & Alam, S. S. (2019). Social commerce an extended technology acceptance model: the mediating effect of perceived ease of use and perceived usefulness. Malays. J. Consum. Fam. Econ., 22, 119-136.

Mustafa, S., Hao, T., Qiao, Y., Kifayat Shah, S., & Sun, R. (2022). How a successful implementation and sustainable growth of e-commerce can be achieved in developing countries; a pathway towards green economy. Frontiers in Environmental Science, 10.

Nasar, A., Kamarudin, S., Rizal, A. M., Ngoc, V. T. B., & Shoaib, S. M. (2019). Short-term and long-term entrepreneurial intention comparison between Pakistan and Vietnam. Sustainability, 11(23), 6529.

Risberg, A. (2023). A systematic literature review on e-commerce logistics: Towards an e-commerce and omni-channel decision framework. The International Review of Retail, Distribution and Consumer Research, 33(1), 67-91.

Rogers, E. M. (2003). Diffusion of Innovations (5th ed.). Simon & Schuster.

Santalova, M. S., Lesnikova, E. P., Kustov, A. I., Balahanova, D. K., & Nechaeva, S. N. (2019). Digital technology in retail: reasons and trends of development. Ubiquitous Computing and the Internet of Things: Prerequisites for the Development of ICT, 1071-1080.

Sevim, N., Yuncu, D., & Hall, E.E. (2017). Analysis of the Extended Technology Acceptance Model in Online Travel Products. Journal of International Applied Management, 8, 45–61.

Singh, V. P., & Chandra, R. (2016). Digital Technology and Retail Format Innovations. Shrinkhla Ek Shodhparak Vaicharik Patrika, 4(1), 1-5.

Sumak, B., Heicko, M., Pusnik, M., & Polancic, G. (2011). Factors Affecting Acceptance and Use of Moodle: An Empirical Study Based on TAM. Informatica, 35, 91–100.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management science, 46(2), 186-204.

Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, 27, 425–478.

Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. MIS Quarterly, 36, 157–178.

Verma, A., Kuo, Y. H., Kumar, M. M., Pratap, S., & Chen, V. (2023). A data analytic-based logistics modelling framework for E-commerce enterprise. Enterprise Information Systems, 17(6), 2028195.

Yadav, R., & Pathak, G.S. (2017). Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior. Ecological Economics, 134, 114–122.