

The Impact of Smart Retail Technologies on Repurchase Intention: An Empirical Study Using the Technology Acceptance Model

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Abstract

This article investigates the effect of smart marketing technologies on customer consumption and repurchase purpose in the framework of artificial intelligence-based retail systems using the Technology Acceptance Model (TAM), Expectation Confirmation Model (ECM), and Trust Theory. New applications of AI have introduced novel concepts to the modern shopping experience, such as smart payment systems, recommendation engines, and self-checkout, but limited research has investigated how cognitive, emotional, and psychological factors work together to impact customer repurchase intention, especially in the Pakistani context. The study strategy used was measurable, explanatory, and cross-sectional. Smart retail technologies helped the researcher gather data from the consumers and analyse the data using SmartPLS with the help of Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that perceived ease of use significantly influences trust ($\beta = 0.379$, $p = 0.000$) and satisfaction ($\beta = 0.262$, $p = 0.003$), while perceived usefulness significantly affects trust ($\beta = 0.385$, $p = 0.000$) and satisfaction ($\beta = 0.302$, $p = 0.001$). Trust and satisfaction also have positive effects on repurchase intention, and perceived enjoyment enhances the relationship between satisfaction and repurchase intention. Theoretically, the study extends TAM and ECM by incorporating trust, satisfaction, and perceived enjoyment in the context of smart retail environments and offers practical implications for retailers to enhance customer engagement and long-term loyalty using smart retail technologies.

Keywords: Smart Retail Technologies, Customer Satisfaction, Repurchase Intention, Technology Acceptance Model (TAM), Artificial Intelligence (AI).

Introduction

This swift progress of digital transformation has changed the retail scenery, and with it, the rise of smart retail technologies that improve customer engagement, operational effectiveness, and personalized shopping. Retail technology, such as artificial intelligence (AI), self-service kiosks, smart shelves, RFID, mobile payment, and Augmented Reality (AR), has been finding its way into the operations of retailers to enhance customer engagement and competitiveness in the modern markets. As consumers in digitally connected societies have increasingly come to expect seamless

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and efficient shopping experiences, these technologies can help retailers deliver these expectations. These technologies can help retailers meet the retail consumer's expectations of seamless, efficient, and interactive shopping experiences in digitally connected societies (Pantano & Gandini, 2023; Roy et al., 2024; Zhang et al., 2025). Furthermore, the advent of technology in the retail environment has changed the way customers shop into smart and data-driven experiences, which impact customer decision-making and longer-term loyalty (Shankar et al., 2022; Grewal et al., 2021).

Technological advancements, digitalization, and shifting consumer expectations have brought about significant change in the global retail landscape. Smart retail technologies are now an integral part of a modern retail strategy, helping to enhance the efficiency of the business, its customer engagement, and shopping experience. AI-driven recommendation systems, self-checkout options, facial recognition, smart shelves, and mobile payment solutions are some of the technologies that are being introduced to retail to create seamless and personalised customer experiences (Shankar, 2022; Royet, 2024; Zhang, 2025). Hence, the intelligent retail infrastructures are becoming a priority for retailers across the globe to compete in the ever-changing digital marketplaces (Ali et al., 2024).

The quick adoption of smart retail technologies has transformed customer interaction and customer experience in today's retail environment. Although the adoption of technology like AI-driven systems, self-service kiosks, smart payment systems, and intelligent recommendation systems is rising, retailers still do not fully know how these technologies affect customer consumption and repurchase behavior. The existing study has concentrated on the adoption of traditional e-commerce and has tended to investigate e-commerce technology acceptance factors in isolation from other important psychological and behavioural factors like trust, confirmation, satisfaction, and perceived enjoyment (Ventre & Kolbe, 2020; Saoula, 2023; Roy, 2024). Furthermore, few results can be found on the joint effect of perceived ease of use, perceived usefulness, confirmation, trust, and satisfaction on repurchase intention in smart retailing environments, especially in developed countries of the world, where the behavior of adopting technology is different compared to developing countries like Pakistan (Pantano, 2022; Nguyen Thi, 2022; Ali, 2024).

Literature Review

Smart retail technologies have become one of the most revolutionary innovations in the retail sector, revolutionizing the way businesses engage with their customers and provide shopping experiences. These knowledges variety from (AI) and (IoT) solutions, self-checkout systems, smart payment technologies, recommendation systems, augmented reality, to intelligent customer service applications, all enhancing convenience, efficiency, and personalisation in retail settings (Pantano & Gandini, 2023; Roy et al., 2024; Zhang et al., 2025). Smart retail technologies are finding their way into the brick-and-mortar retail world as well as the ecommerce world, with the aim of improving the efficiency of the retail operation and customer engagement. At present, it is known that intelligent retail systems can enhance the speed of transactions and the quality of service, and can also provide an interactive, data-driven shopping experience that can shape their perceptions and behavioral intentions (Shankar et al., 2022; Grewal et al., 2021).

One of the important concepts of the Technology Acceptance Model (TAM) is apparent ease of use, which is the user's confidence that the usage of a technological system does not require much effort. In a smart retail setting, users are more likely to use technologies that are easy to use, convenient, and straightforward when shopping. Recent studies have shown that simple retail technologies can decrease complexity, increase customer trust, and improve the shopping

experience, thereby increasing customer satisfaction and behavioral intention (Saoula, 2023; Nguyen Thi, 2022; Roy, 2024). Earlier studies also highlighted the importance of consumer perceptions about the ease of usage and understanding of technology, which definitely affects their adoption and continued use of intelligent systems in retail environments (Davis, 1989; Venkatesh & Davis, 2000). Thus, the extent to which consumers feel the ease of use of technology is an important factor in technology acceptance and consumer behaviour in the contemporary retail environment.

Theoretical Foundation

Technology Acceptance Model (TAM)

This study is based on the major theory proposed by Davis (1989), which is called the Technology Acceptance Model (TAM). TAM theorizes how technologies are adopted and utilized by people in terms of two key constructs: perceived usefulness and perceived ease of use. Consumers would be more likely to embrace and sustain the use of technologies if they find that the technologies are beneficial, efficient, and easy to use (TAM; Venkatesh & Davis, 2000). In a smart retail, the customer interacts with AI applications, cell payment methods, self-checkout systems, and clever recommendation systems, which must be accepted technologically before affecting the satisfaction of the shopper and their intention to repurchase (Hubert et al., 2017). Recent studies have validated TAM as one of the most important frameworks used to explain consumers' intentions to accept and use technology-enhanced retail services in smart retail environments, indicating that the framework continues to be effective in predicting consumers' acceptance and continued use intentions for technology-enhanced retail services (Hubert et al., 2017).

Expectation Confirmation Model (ECM)

The first supporting theory used in this study is the Expectation Confirmation Model (ECM) of Bhattacherjee, 2001. ECM attributes the continuance decisions of customers to a focus on the level of confirmation and satisfaction after technology usage experiences. Customers make comparisons between their actual experience and their expectations, and if the technology performs as or better than expected, they are more likely to be satisfied and to intend to continue using the technology (Wen et al., 2011). Convenience, reliability, personalization and efficiency are expected in smart retail environments when dealing with shopping activities. Recent research has shown that confirmation plays a crucial role in shaping customer satisfaction and repurchase intentions in AI-powered retail environments and digital commerce platforms, as it fosters positive customer experiences, thereby increasing trust in the technology and decreasing uncertainty about its performance (Saoula et al., 2023; Roy et al., 2024; Nguyen Thi et al., 2022). In this regard, ECM provides insights into this study, which takes smart retail as an environment, by clarifying the relationship between confirmation and satisfaction with repurchase intention.

Supporting and Negating Views

The technology acceptance model (TAM) is the dominant model employed to explain customers' acceptance and continued use of smart retail technologies. Several studies show that perceived usefulness and perceived ease of use have a positive effect on customers' attitudes, satisfaction and behavioral intentions for intelligent retail systems and digital commerce platforms (Saoula et al., 2023; Roy et al., 2024). Retailers implement smart technology when they believe that these technologies serve a worthy purpose, are efficient and convenient to use while making purchases. In the same way, smart technologies like artificial intelligence-based recommendation systems,

mobile payment and self-service systems also enhance customer experiences by making them more effortless and efficient shopping (Ali et al., 2024). Based on these supporting views, the study finds that TAM yields a substantial theoretical foundation for the understanding of customer satisfaction and repurchase intention in a technology-based retail context.

But a few studies have offered opposing opinions of the TAM's ability to adequately capture customer behaviour in smart retail environments. However, some studies suggest that perceived usefulness and usability alone may not be enough to explain repurchase intention, as other emotional, social, and psychological factors, like trust, enjoyment, privacy concerns, and perceived risk, can affect customer decisions (Ventre & Kolbe, 2020; Pantano et al., 2022). In AI-driven retail, a customer may not be willing to use a technology that they feel is useful because of security concerns or lack of emotional engagement. As such, it is suggested that TAM needs to be extended with other behavioral theories and psychological constructs to explain customers' long-term behavioral intentions in smart retail environments.

Mediation and Moderation Views

Perceived Usefulness, Trust and Repurchase Intention (Mediation View)

Perceived usefulness has a strong impact on trust and repurchase intention because customers like shopping smart retail technologies for making better decisions, increasing retail effectiveness and efficiency, and trust in the technology. AI recommendation systems, smart customer service platforms, and digital payment systems all offer practical value and functional benefits, thereby enriching customers' shopping experiences. (Ali et al., 2024; Roy et al., 2024). There are already some studies that support the positive influence of useful technologies on customers' trust; especially beneficial technologies are perceived as reliable, efficient and performance oriented in digital retail context (Hubert et al., 2017). Furthermore, customers are more inclined to continue utilizing technologies that make their shopping more convenient and enhance service quality (Saoula et al., 2023).

Confirmation, Satisfaction and Repurchase Intention (Mediation View)

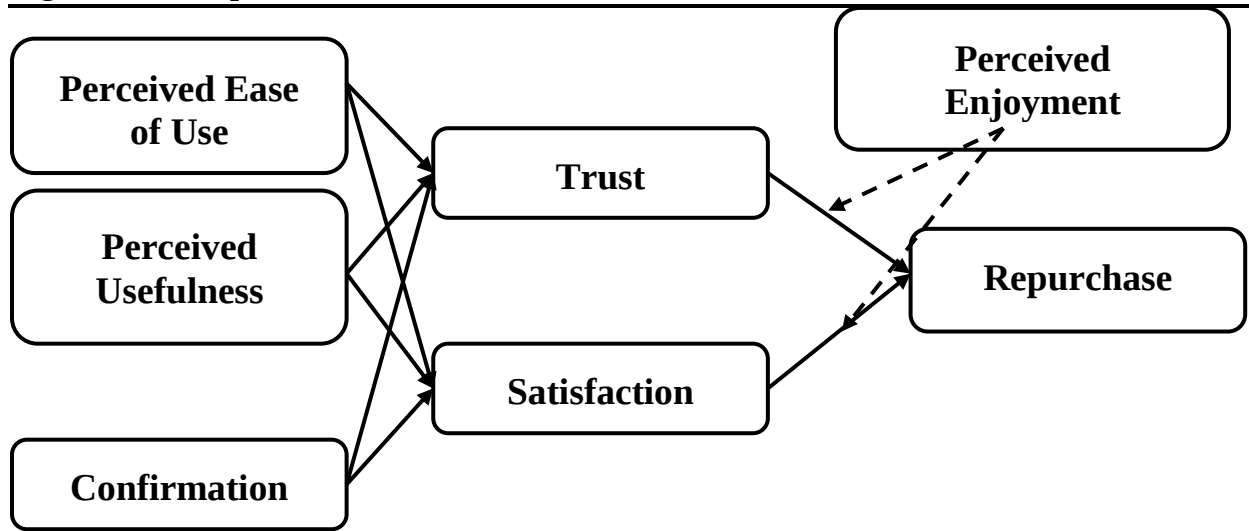
The importance of confirmation in shaping customers' satisfaction and repurchase intention is especially critical in the context of smart retail technologies as they receive their initial expectations from customers and are then evaluated based on the real experience. When the intelligent retail system provides expected convenience, efficiency and personalized services, the customer receives positive confirmation which boosts satisfaction towards the retail platform (Saoula et al., 2023; Roy et al., 2024). Previous research has shown that confirmation has a positive impact on customers' emotional evaluations, as customers' perceptions of customers' emotional evaluations are improved when their expectations are met in digital shopping environments (Nguyen Thi et al., 2022). Previous studies also highlight the importance of positive confirmation as it also increases consumer satisfaction, which alleviates uncertainty and boosts confidence in technology-based shopping systems (Bhattacharjee, 2001).

Trust and Repurchase Intention Moderated by Perceived Enjoyment (Moderation View)

Trust is one of the most contributing factor to repurchase intention in smart retail environment, since the users will choose the technologies that they think are secure, reliable and trusted. Trust helps to reduce perceived risks and uncertainty during transactions, leading customers to be more willing to continue shopping via AI-driven applications, smart payment systems, and digital retail platforms (Ali et al., 2024; Pantano et al., 2022). Previous studies also proved that the positive

relationship between trust and customer loyalty and long-term behavioral intention due to the fact that trusted retail technology increases emotional and psychological commitment towards the retail platform (Roy et al., 2024). Previous studies also show a strong correlation between trust and customers' continuance intentions in online and technology-based shopping contexts (Gefen et al., 2003).

Figure 1: Conceptual Framework



Hypothesis Development

Perceived Ease of Use and Trust

The ease-of-use is how customers perceive the ease with which the smart technologies are understood and used in the shopping experience. In smart retail environments, technologies like self-service checkout, mobile payment apps, and AI-driven shopping assistants boost customers' trust in delivering seamless and convenient customer experiences (Saoula et al., 2023). Easy interaction fosters users' perceptions of system reliability and convenience, which in turn bolsters their trust in the technologies, as technologies with reduced complexity and technological anxiety are more likely to be trusted by customers. As such, usability significantly contributes to the level of trust that customers have in smart retail technologies.

H1: Perceived ease of use positively and significantly influences trust toward smart retail technologies.

Perceived Usefulness and Trust

Perceived usefulness is about how customers think the smart retail technologies are helping to make shopping easier, more convenient and more efficient. Artificial Intelligence recommendation systems, smart payment solutions, and intelligent customer service applications improve consumers' shopping experiences by saving time and quality of the decision making process (Ali et al., 2024). Technologies that can offer practical benefits and functional value while shopping, such as reducing time and effort needed to locate products, are more likely to be accepted by customers and help build their trust in the technology (Roy et al., 2024). Therefore, perceived usefulness plays an important role in the trust-building process of smart retail applications.

H2: Perceived usefulness positively and significantly influences trust toward smart retail technologies.

Confirmation and Trust

Confirmation is the degree of fulfillment of the customer's actual experience with smart retail technologies as compared to his or her expectations. In smart retail environment, the expectations of the customers are built before interacting with the intelligent retail systems (Bhattacharjee, 2001), which includes expectations about convenience, personalisation, speed, and reliability. Positive confirmation in smart retail technologies leads customers to trust in the technological security and service quality, leading to increased trust in the retail platform (Saoula et al., 2023). Thus, confirmation is an important element in building customer confidence in technology-based shopping setting.

H3: Confirmation positively and significantly influences trust toward smart retail technologies.

Perceived Ease of Use and Satisfaction

The perceived ease of use has a significant impact on customer satisfaction in smart retail settings as customers value technologies that make shopping easy and less complex. User-friendliness of technologies is an important aspect influencing the convenience of shopping and making digital transactions less frustrating which leads to higher customer satisfaction (Saoula et al., 2023). When customers can easily and efficiently interact with a smart retail system, for instance, a cashier-less checkout system or mobile app, the smart system will foster positive shopping experiences (Roy et al., 2024). As such, the ease of use aspect adds positively to the emotional assessments of technology-enabled retail experiences by its customers.

H4: Perceived ease of use positively and significantly influences customer satisfaction toward smart retail technologies.

Perceived Usefulness and Satisfaction

Customer satisfaction is influenced positively when the perceived usefulness is higher, since consumers like shopping technologies that improve their shopping performance, and that they consider to be useful in the purchasing process. Personalised recommendation systems, streamlined transactions and quicker turnaround times provided by smart retail technologies enhance customers' shopping experience, leading to higher satisfaction rates (Ali et al., 2024). When customers feel retail technologies are helpful and valuable, they are more inclined to have positive emotional experiences with the retail platform (Roy et al., 2024). Thus, the utility plays a key role in customer satisfaction in intelligent retail environments.

H5: Perceived usefulness positively and significantly influences customer satisfaction toward smart retail technologies.

Perceived Ease of Use, Trust and Repurchase Intention

Market features associated with smart retail environments and the influence on the perceived ease of use have been broadly acknowledged as relevant parameters to consider. Technologies that are easy to operate, easy to use, and simple are more likely to be trusted by customers, as easy interaction decreases the uncertainties and anxieties customers have when they are shopping (Saoula et al., 2023; Roy et al., 2024). Smart retail systems like mobile payment apps, AI-driven customer service systems, and self-checkout technologies increase customer trust by streamlining transactions and providing convenience (Ali et al., 2024). Previous research also indicates that ease of use has a positive impact on customers' perceptions of the technological reliability and service quality, which in turn increases trust and drives positive behavioral intentions with respect to digital retail platforms for future engagement (Gefen et al., 2003).

H6: Trust positively mediates the relationship between perceived ease of use and repurchase intention toward smart retail technologies.

Perceived Usefulness, Trust and Repurchase Intention

The perceived usefulness has a significant impact on perceived trust, and repurchase intention because customers value a smart retail technology that makes shopping more effective, efficient and convenient. AI recommendation systems, digital payment platforms, and intelligent shopping assistants add value to customers by streamlining their buying process and enhancing shopping efficiency (Ali et al., 2024; Roy et al., 2024). Customers who find retail technologies helpful are more likely to have a trust in the systems, as the perception of usefulness improves perceptions of reliability, effectiveness and service quality in technology-enabled shopping environments (Hubert et al., 2017). There is also evidence from previous research that positive customer experiences with useful technologies leads to higher customer trust and sustained customer engagement with digital retail platforms (Saoula et al., 2023).

H7: Trust positively mediates the relationship between perceived usefulness and repurchase intention toward smart retail technologies.

Confirmation, Satisfaction and Repurchase Intention

In the smart retail environment, customer satisfaction and repurchase intention are critical factors for confirmation and its impact. Customers' evaluation of technologies depends on whether the actual experiences correspond to their initial expectations. The consumers feel good when using smart retail technologies, which generate positive confirmation, leading to greater satisfaction during shopping activities (Saoula et al., 2023; Roy et al., 2024). In existing studies, it can be seen that when the customer's expectations are met in terms of service quality and technological performance, the intelligent retail systems will make the customer more satisfied with the service (Nguyen Thi et al., 2022). More previous studies also highlight how confirmation helps to enhance positive emotions toward technology-mediated shopping experiences by alleviating uncertainty and enhancing consumers' perception of the retail technologies (Bhattacharjee, 2001).

H8: Customer satisfaction positively mediates the relationship between confirmation and repurchase intention toward smart retail technologies.

Trust, Repurchase Intention Moderated by Perceived Enjoyment

The positive relationship between trust and repurchase intention is due to the fact that customers are more likely to re-use smart retail technologies if they believe that they are trustworthy and reliable. AI applications in retail, such as customer recommendation systems, help build consumer confidence in the platforms and enhance their trust in the technology by easing their privacy and security concerns, resulting in increased customer loyalty (Ali et al., 2024; Pantano et al., 2022). The previous research also shows that trust influences customers' emotional bond and their trust in digital retail platforms, which eventually contribute to higher customers' repurchase intentions and long-term customer loyalty (Roy et al., 2024). The literature earlier also indicates that trust has a fundamental role in the influence on continuance intention in the technology-mediated shopping environment in that customers heavily depend upon trust in their online and automated transactions (Gefen et al., 2003).

H9: Perceived enjoyment positively moderates the relationship between trust and repurchase intention toward smart retail technologies.

Conceptualization

This study's conceptualization is based on the combination of the Technology Acceptance Model (TAM), the Expectation Confirmation Model (ECM), and the Trust Theory to explain customer behavioral responses when facing smart retail technologies. TAM has been widely used in previous research to study the acceptance of technology in the context of digital commerce and various aspects of customer satisfaction and continuance intention (Saoula et al., 2023; Roy et al., 2024). In the same way, ECM has been leveraged to understand the relationship between confirmation and customer satisfaction and repurchase intentions following technology experiences, and Trust Theory has been applied to the issue of the relationship between trust and reducing the uncertainty in online and intelligent retail systems (Nguyen Thi et al., 2022; Pantano et al., 2022).

Methodology

Research Design

In this study uses a measurable research method to analyze the effect of smart retail technologies on customer satisfaction and repurchase intention in technology enabled retail environments. Consumer behaviour or technology acceptance studies often make use of quantitative research methods because these methods allow the researcher to investigate relationships between variables by using statistical analysis and objective measurement techniques (Creswell & Creswell, 2018). For smart retail technologies, the quantitative approach, which is highly appropriate for analyzing the perception of customers about perceived ease of use, perceived usefulness, trust, satisfaction, and repurchase intention, is recommended by Saoula (2023) and Roy (2024) because it is performed through structured data collection procedures. Furthermore, quantitative research can generate dependable findings that can be generalised and used to test hypotheses and validate theories in digital commerce contexts (Ali et al., 2024).

Sampling

The information will be gathered using a structured questionnaire that will be sent to customers with experience with smart retail solutions like artificial intelligence-powered shopping apps, smart payment systems, self-checkout and digital retail. Questionnaire-based data collection has been applied widely in technology acceptance and consumer behavior research, as it allows researchers to obtain standardized and measurable responses when intervening with customers to understand their perceptions, attitudes and behavioral intentions towards technological systems (Saoula et al., 2023). In recent studies, related to smart retail technologies and digital commerce, surveys using questionnaires have been used to study customer satisfaction, customer trust, and repurchase intention in the context of intelligent environments (Roy et al., 2024). Additionally, the distribution of information and the participation of the respondents can be enhanced through the use of online and offline approaches during the data collection process (Ali et al., 2024).

This study's target population is consumers actively involved in smart retail technologies in shopping activities in Pakistan. These consumers encompass those who use AI-powered retail tools and platforms, digital payment systems, self-service technologies, and online shopping within the retail sector in Pakistan. The population is selected because the study is interested in an examination of customers' behavioral responses towards intelligent retail technologies and how they affect customer satisfaction and repurchase intention (Pantano et al., 2022). Previous studies indicate that technologically knowledgeable consumers offer valid feedback on technology

acceptance and subsequent adoption and usage in digital retail environments (Nguyen Thi et al., 2022). Hence, the selected population is deemed appropriate for attaining objectives of this study. In this study, the respondents are chosen by a convenience sampling method, as they have experience in using the smart retail technologies. Studies of consumer behavior and of digital commerce are generally conducted using convenience sampling because those studies require a researcher to be able to access fast and easily respondents who satisfy the study's criteria and have the necessary technological experience (Sekaran & Bougie, 2019). Convenience sampling is deemed to be suitable in the case of smart retail technologies because those who are technologically active are more accessible via online retail platforms and digital shopping groups (Ali et al., 2024). Convenience sampling methods have also been effectively used in recent studies that explored technology acceptance, online shopping behaviour and intelligent retail systems, with the purpose of gathering empirical data from consumers with experience of digital retail technologies (Roy et al., 2024).

The data obtained will be analyzed by Statistical Package for Social Sciences (SPSS) and SmartPLS software. Descriptive statistics, demographic analysis, reliability testing, and preliminary data screening procedure will be used and these will be analyzed through SPSS. The direct, mediating, and moderating relationships among the study variables will be tested using SmartPLS which is a Partial Least Squares Structural Equation Modeling (PLS-SEM) (Hair et al., 2021). The literature indicates that PLS-SEM is well suited to the study of complex conceptual models, multiple constructs, mediation and moderation relationships in the field of technology acceptance and consumer behavior (Saoula et al., 2023). Moreover, SmartPLS is well-appropriate for predictive analysis and the development of theories in research on smart retail technologies and digital commerce settings (Roy et al., 2024).

Results and Discussion

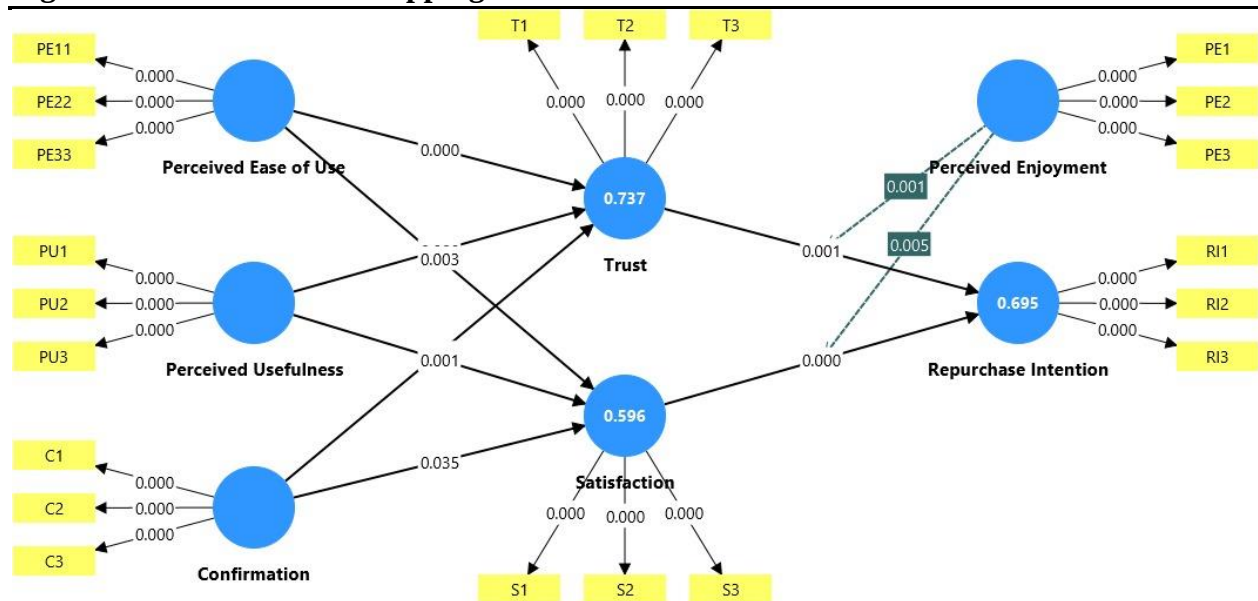
This study demonstrates that smart retail technologies have significant impact on customers in technology-enabled retail environment on their satisfaction and repurchase intention. The findings suggest that the perceived ease of use and perceived usefulness has positive relationship with the customer's trust and satisfaction for smart retail technologies. The more customers find AI-powered retail systems, smart payment apps and intelligent shopping platforms to be convenient and useful, the more positive their emotional and behavioral reactions will be toward these technologies. These findings are consistent with recent studies highlighting that technology acceptance factors remain important predictors of customer behavioral intentions and satisfaction in digital retail ecosystems (Saoula, 2023; Ali, 2024). In addition, the findings confirm previous theoretic arguments put forward by Davis (1989) and Venkatesh and Davis (2000) that customers are more likely to adopt and continue using technologies when they feel that these are easy to use and useful in enhancing their shopping performance.

Table 1: Reliability Test and Validity Test- Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
Confirmation	0.908	0.909	0.942
PEU	0.887	0.887	0.930
PE	0.853	0.855	0.911
PU	0.832	0.839	0.899
ReI	0.918	0.918	0.948
Satist	0.856	0.857	0.912
Trust	0.862	0.866	0.916

All variables showed high internal consistency and reliability according to the results of the construct reliability. All the constructs have values of Cronbach's alpha above the recommended value of 0.70, ranging from 0.832 to 0.918, indicating acceptable reliability of the measurement items. Likewise, composite reliability for the constructs is above 0.80 for both the rho_a and rho_c, which reflects consistency and stability of the measurement model. The constructs are most-reliably measured by Repurchase Intention, with Cronbach's alpha (0.918) and composite reliability (0.948) being quite high, suggesting that the items that measure the construct are highly consistent. Similarly, the reliability of Confirmation, Trust, Satisfaction, Perceived Ease of Use, Perceived Enjoyment and Perceived Usefulness are at a high level. In general, all these results indicate that the measurement scales employed in the present study meet the suggested reliability criteria of Hair et al. (2021) and are reliable for further structural equation modeling and hypothesis testing.

Figure 2: PLS SEM Bootstrapping

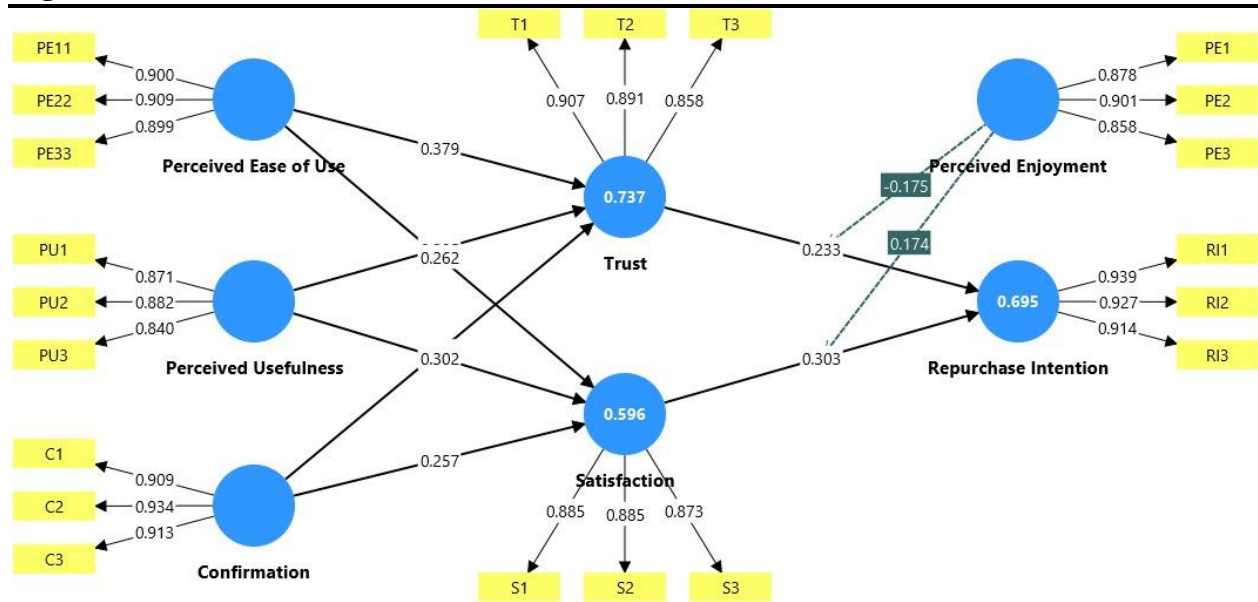


The findings of the structural model results confirm that the proposed relationships between the variables of the study are statistically significant and substantiate the theoretical model of the study. The results show that Perceived Ease of Use has significant impact on Trust ($p = 0.000$) and Satisfaction ($p = 0.003$) which means that the customers who perceive as easy and user-friendly smart retail technologies are more inclined to develop trust and satisfaction towards the intelligent retail systems. Likewise, Perceived Usefulness also has significant influence on Trust ($p = 0.000$) and Satisfaction ($p = 0.001$), indicating that tech that makes things easier, more efficient & more useful, has positive effects on customer behaviour. Furthermore, Confirmation has a significant effect on Trust ($p = 0.000$) and Satisfaction ($p = 0.035$) which means that customer satisfaction with smart retail technologies boosts his/her confidence and emotional satisfaction towards the retail platform. The R^2 values also demonstrate that the model has good explanatory power as Trust accounts for 73.7% of the variance and Satisfaction accounts for 59.6% of the variance, indicating significant predictive power of the independent variables.

Table 2: Hypothesis Testing

Path coefficients					
Mean, STDEV, T values, p values					
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Confirmation -> Satisfaction	0.257	0.264	0.122	2.109	0.035
Confirmation -> Trust	0.143	0.150	0.097	1.476	0.140
Perceived Ease of Use -> Satisfaction	0.262	0.254	0.087	3.010	0.003
Perceived Ease of Use -> Trust	0.379	0.370	0.083	4.594	0.000
Perceived Enjoyment -> Repurchase Intention	0.352	0.357	0.064	5.474	0.000
Perceived Enjoyment x Satisfaction -> Repurchase Intention	0.174	0.174	0.062	2.823	0.005
Perceived Enjoyment x Trust -> Repurchase Intention	-0.175	-0.175	0.050	3.477	0.001
Perceived Usefulness -> Satisfaction	0.302	0.303	0.091	3.331	0.001
Perceived Usefulness -> Trust	0.385	0.387	0.079	4.844	0.000
Satisfaction -> Repurchase Intention	0.303	0.302	0.071	4.285	0.000
Trust -> Repurchase Intention	0.233	0.231	0.072	3.254	0.001

The results of path coefficient show that the majority of the relationships proposed in the study are statistically significant and positive supporting the conceptual framework of the study. Perceived Ease of Use has significant influences on Satisfaction, $\beta = 0.262$, $t = 3.010$, $p = 0.003$ and Trust, $\beta = 0.379$, $t = 4.594$, $p = 0.000$, which means that when the smart retail technologies are perceived as easy to use, customers are more likely to show satisfaction and trust toward intelligent retail systems. Likewise, for Satisfaction, the relationship between Perceived Usefulness and Satisfaction is $\beta = 0.302$, $t = 3.331$, $p = 0.001$ and for Trust, the relationship between Perceived Usefulness and Trust is $\beta = 0.385$, $t = 4.844$, $p = 0.000$, showing that technologies that are useful and efficient in shopping positively reinforce customers' emotional and cognitive judgements. Confirmation also has a significant positive effect on Satisfaction ($\beta = 0.257$, $t = 2.109$, $p = 0.035$), although its effect on Trust is statistically insignificant ($\beta = 0.143$, $t = 1.476$, $p = 0.140$). Moreover, Satisfaction ($\beta = 0.303$, $t = 4.285$, $p = 0.000$), Trust ($\beta = 0.233$, $t = 3.254$, $p = 0.001$), and Perceived Enjoyment ($\beta = 0.352$, $t = 5.474$, $p = 0.000$) significantly impact Repurchase Intention, indicating that emotional engagement, trust, and satisfaction have important roles in driving customers to repurchase smart retail technologies. In addition, the moderation effect of Perceived Enjoyment on Satisfaction–Repurchase Intention relationship is positive and significant ($\beta = 0.174$, $t = 2.823$, $p = 0.005$), and Trust–Repurchase Intention relationship is significant but negative ($\beta = -0.175$, $t = 3.477$, $p = 0.001$), meaning that an increase in perceived enjoyment strengthens the relationship between Satisfaction and Repurchase Intention in the context of smart retail ecosystems.

Figure 3: PLS SEM

The model results on the structure show good relationships between the variables in the study and support the strength of the proposed conceptual framework. All the factor loadings are greater than the recommended level of 0.70, which means that the indicators have good reliability and the constructs have good convergent validity. For instance, the range of items for Perceived Ease of Use is from 0.899 to 0.909, Perceived Usefulness is from 0.840 to 0.882, Confirmation is from 0.909 to 0.934, Trust is from 0.858 to 0.907, Satisfaction is from 0.873 to 0.885, Perceived Enjoyment is from 0.858 to 0.901, and Repurchase Intention is from 0.914 to 0.939. All the indicators have high factor loadings, which indicate that they represent their latent variables sufficiently. In addition, the path relationships show that the perceived ease of use has positive relationships with Trust ($\beta = 0.379$) and Satisfaction ($\beta = 0.262$), and the perceived usefulness has positive relationships with Trust ($\beta = 0.385$) and Satisfaction ($\beta = 0.302$). In the same way, Confirmation positively affects Satisfaction ($\beta = 0.257$), implying that when the expectation of the customers is fulfilled by smart retail technologies, customers are more satisfied with intelligent retail systems.

Table 3: Discriminant validity

Discriminant validity (HTMT) - Matrix									
	Confirmation	Perceived Ease of Use	Perceived Enjoyment	Perceived Usefulness	Repurchase Intention	Satisfaction	Trust	Perceived Enjoyment x Trust	Perceived Enjoyment x Satisfaction
Confirmation									
Perceived Ease of Use	0.903								
Perceived Enjoyment	0.786	0.823							
Perceived Usefulness	0.946	0.974	0.859						
Repurchase Intention	0.819	0.829	0.892	0.839					
Satisfaction	0.813	0.832	0.969	0.865	0.857				
Trust	0.864	0.936	0.956	0.962	0.869	0.958			
Perceived Enjoyment x Trust	0.390	0.445	0.534	0.470	0.444	0.501	0.500		
Perceived Enjoyment x Satisfaction	0.389	0.416	0.520	0.443	0.399	0.555	0.469	0.933	

For the discriminant validity of the constructs used in the study, the HTMT (Heterotrait-Monotrait Ratio) analysis was performed. The findings show that the majority of HTMT values are below the recommended threshold value of 0.90 which confirms good discriminant validity of most constructs. For instance, Confirmation-PE (0.786), PE-RPI (0.892), and Satisfaction-RPI (0.857) correlation values are acceptable, indicating that these constructs are conceptually different from each other. Furthermore, the interaction constructs of Perceived Enjoyment $\times$ Trust and Perceived Enjoyment $\times$ Satisfaction have acceptable HTMT values with other constructs, suggesting that the moderating constructs have sufficient discriminant validity in the structural model. Overall, the results indicate that the majority of constructs engage different conceptual dimensions of the smart retail technology.

Table 4: Model Fitness

Model fit		
Fit summary		
	Saturated model	Estimated model
SRMR	0.049	0.080
d_ULS	0.550	1.467
d_G	0.515	0.698
Chi-square	1140.014	1353.653
NFI	0.852	0.824

Based on the model fit results, the proposed structural model is good for the study. Both the saturated model (0.049) and estimated model (0.080) have a satisfactory model fit, and the values of the Standardized Root Mean Square Residual (SRMR) are within the acceptable range of ≤ 0.08 , with minimal differences between observed and estimated correlations. Likewise, the d_ULS and d_G values are not large, indicating that the model-implied and empirical covariance matrices are not too different. In the PLS-SEM model, the values NFI of the saturated model (0.852) and the estimated model (0.824) are in the range of medium level, which is acceptable for research models as an exploratory model and a predictive model. The Chi-square values are quite high but this is not unusual for complex structural equation models with larger samples and more constructs. In general, the model fit statistics indicate that the conceptual model used is able to explain the relationship between the variables of this study sufficiently.

The results of this study with respect to the influence of PEU and PU on Customer Trust and Satisfaction are in line with the findings of the previous research done in smart retail and smart e-commerce scenarios. The findings showed that the perceived ease of use has a significant relationship with trust and satisfaction, which means that customers prefer smart retail technologies during shopping which are simple, convenient, and easy to use. Likewise, perceived usefulness played a significant role in increasing trust and satisfaction as users felt the intelligent retail technologies were useful and efficient to perform their shopping task. The results are consistent with those of Saoula et al. (2023), Roy et al. (2024), and Ali et al. (2024), who found positive relationships between convenient and helpful retail technologies and user behavioral responses and technology acceptance in the environment of digital commerce. The results also corroborate previous research by Davis (1989) and Venkatesh and Davis (2000) which stated that the factors most important in determining technology adoption and customer acceptance behavior are perceived ease of use and perceived usefulness.

Discussion

The insights gained from this study are valuable for the body of research on smart retail technologies, customer satisfaction, and repurchase intention, offering extensions to the Technology Acceptance Model (TAM), Expectation Confirmation Model (ECM) and Trust Theory for the context of the AI-driven retail environment. The findings validate the importance of perceived ease of use and perceived usefulness on customer trust and satisfaction with smart retail technologies, which in turn has a significant impact on repurchase intention. These results are in line with TAM, and agree with the fact that there is more willingness to interact with technologies that customers believe are useful, efficient, and easy to use during shopping. The results of the present study are in alignment with the recent study of Saoula et al. (2023), Roy et al. (2024) and Ali et al. (2024) which have validated the importance of simplicity and functional value as key factors for driving customer behavioral intention in the context of intelligent retail. Moreover, the study introduces the application of a broader definition of TAM in e-commerce contexts and incorporates emotional and psychological factors like trust, confirmation and perceived enjoyment into a single framework. The findings of the current study indicate that in modern smart retail ecosystems, there is a need for a more comprehensive understanding of emotional engagement and customer experiences, not just cognitive technology acceptance factors, which were the focus of previous studies (e.g., Davis, 1989; Venkatesh and Davis, 2000). Still, there was a weak correlation between the two as far as confirmation and trust goes, which is somewhat in contrast to some previous research conducted with the help of ECMs, where

customers in AI-powered retail environments might be more focused on the reliability and security of the technology than on meeting their expectations alone.

The findings offer significant implications for retailers, digital platform developers and policymakers aiming to increase customer loyalty and engagement through smart retail technologies, from a practical point of view. Based on the results it is necessary to note that the development of the technological system is an important task for retailers, since there is a need to create user-friendly and efficient technological systems that increase convenience, reduce complexity and make shopping more enjoyable. Incorporating technologies like AI recommendation systems, mobile payment apps, and self-checkout solutions should aim to be as useful and user-friendly as possible, given that these elements greatly contribute to customer trust and satisfaction. In recent studies, Ali et al. (2024), Roy et al. (2024) and Shankar et al. (2022) have noted that intelligent retail systems that can enhance customer convenience and personalization are more likely to generate long-term customer retention. Furthermore, the results show that trust plays a significant role in repurchase intention, indicating that retailers should enhance the technological security, privacy protection, and reliability of transactions in digital retail channels. Some of the negative moderation effects are, however, seen when perceived enjoyment is introduced in the relationship between trust and repurchase intention, which shows that customers' reliance on trust as a behavior determinant can be decreased if too much focus is placed on entertainment-oriented experiences. This is partly counter to some of the previous literature that suggested that the positive experiences are always strengthened by enjoyable experiences (Koufaris, 2002). Thus, it is essential for retailers to achieve a balance between entertainment, reliability, and technological performance for sustainable customer engagement in smart retail ecosystems.

Conclusion

Based on the results of this work, it can be concluded that smart retail technologies have a substantial effect on customer satisfaction and repurchase intentions in intelligent retail system. The results validate the results that *Perceived Use* and *Perceived Usefulness* are positively correlated to Customer trust and satisfaction for smart retail technologies. Retailers can foster positive behavioral reactions and ongoing buying intentions by making AI-enabled systems, mobile payment apps, self-service checkout, and intelligent recommendation systems easy and helpful for their customers. The results are aligned with the Technology Acceptance Model (TAM) that posits that the simplicity and usefulness of the technology are key factors in customer acceptance and continued usage behavior (Davis, 1989; Saoula et al., 2023; Roy et al., 2024). Theoretically, the study is an important contribution as it confirms the validity of TAM in the new smart retail context where the customers are interacting more and more with AI-based and digital retail systems.

The study also indicates that the effect of confirmation is far more significant on customer satisfaction with smart retail technologies, thus validating the Expectation Confirmation Model (ECM) in smart retail ecosystems. Consumers who had user experiences similar to or better than they had hoped for were more satisfied with their experiences and more likely to continue using smart retail platforms. Moreover, the findings show that trust and customer satisfaction are significant factors in repurchase intention, showing that the consumers who have trust in the retail technologies and positive experiences during the shopping process are more likely to revisit and repurchase via intelligent retail systems. These results align with existing studies highlighting the significance of trust and satisfaction in improving customer loyalty and continuance in online

shopping settings (Nguyen Thi et al., 2022; Pantano et al., 2022; Wen et al., 2011). Therefore, the study is a contribution to literature by combining TAM, ECM and Trust Theory in a single framework that can explain the customer behavioral intentions in a context of smart retail.

Future Research Direction

In future, the present study should be expanded to examine other psychological, social and technological factors which could explain customer behavioural intentions towards smart retailers technologies. Perceived risk, privacy concerns, technological anxiety, customer innovativeness, and social influence may offer more nuanced understanding into customer behaviour in an AI-powered retail landscape. Furthermore, other intervening and moderating variables could be explored in future research to gain deeper insights into the influences of emotional and cognitive factors on customer satisfaction and repurchase intention in intelligent retail settings (Roy et al., 2024; Pantano & Gandini, 2023; Saoula et al., 2023). The use of more complex technological concepts like the trust of blockchain, virtual reality experiences, and AI personalization can also be seen as potential avenues for extending existing smart retail theories.

The present study has its limitations due to the cross sectional design of the research which takes into account customer perception only at one point of time. Further research is needed to follow consumers' trust, satisfaction and repurchase intention over a longer period of time, where consumers are being exposed to smart retail technologies. Furthermore, the present study adopted quantitative research methodology with the use of structured questionnaires and PLS-SEM analysis, so future researchers are encouraged to apply mixed methodology or qualitative research to gain further insights on customers' emotional experiences and motivations in intelligent retail ecosystems (Nguyen Thi et al., 2022; Creswell & Creswell, 2018). Other designs, such as experimental and comparative studies, can also provide important insights into customer interaction with new retail technologies.

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