



The Impact of Smart Shopping Applications on Impulsive Purchasing Behavior: The Mediating Role of Perceived Ease of Use applied on Online Egyptian Customers

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Dr. Basma Tawfik Ahmed

Abstract:

The current research aims to study the impact of smart shopping applications (perceived usefulness, enjoyment, security/ privacy, personalization) on impulsive purchasing behavior through the mediating role of perceived ease of use applied on Online Egyptian customers. The research employs a quantitative approach to assess how these smart shopping applications influence impulsive purchasing behaviour. The data collection was carried out through online surveys targeting 312 online customers, aiming to gather their insights and experiences related to smart shopping applications under review. The results show that there is a positive effect of smart shopping applications (perceived usefulness, enjoyment, security/ privacy, personalization) on impulsive purchasing behavior and perceived ease of use. Also, the results show that there is positive effect of smart shopping applications (on impulsive purchasing behavior through the mediating role of perceived ease of use applied on Online Egyptian customers).

Keywords: Smart Shopping Applications, Perceived Usefulness, Enjoyment, Security/ Privacy, Personalization, Impulsive Purchasing Behavior, Perceived ease of Use.

Introduction:

Consumer purchase patterns have clearly changed over the last ten years, with a noteworthy shift from traditional offline to online channels. Online shopping is the process by which customers buy products or services via the Internet, usually with the help of a mobile application or web browser (Suttharattanagul & Jirakasemwat, 2025).

Due to the expansion and dispersion of mobile infrastructure, as well as the falling costs of smartphones and data, mobile shopping is becoming more and more popular among customers worldwide. Retailers invest heavily in the mobile shopping industry to take advantage of its growing popularity. Mobile shopping is made possible by marketers all around the world. Numerous smartphone apps have been made available to users in order to make shopping safer (Bruwer et al., 2023).

Dr. Basma Tawfik Ahmed

The term "smart" is frequently used to describe any invention that makes use of the internet and other technologies that facilitate communication and interaction, among other things. In the era of the Internet, cellphones are now seen as the central component of the technological revolution. Consumer attention in life and business has shifted to the cell phone, particularly the smartphone. These days, smartphones are just as intelligent as computers. They offer a variety of information services that are accessible from anywhere at any time. The market for mobile applications, or apps, is one of the fastest-growing media sources in consumer technology history due to the increasing use of smartphones (Hassan & El-Gheit, 2024).

Businesses are using mobile applications to promote and display their goods. Mobile platforms are used to market and sell goods and services ranging from luxury cars and pricey antique antiques to cosmetics and fashion items. Impulsive buying behaviour (IBB) has become a notable phenomenon as a result of the significant shift in consumer purchasing habits brought about by mobile commerce (Soomro & Habeeb, 2025).

Impulse buying, also known as unplanned and immediate purchase, is the sudden desire to buy. Researchers are now trying to understand the human behaviour that leads to impulsive purchases. Previous studies have shown that 40–80% of purchases are made on impulse. Customers have a sudden want to purchase something while shopping online, even though they are unsure if they actually need the good or service (Hussain, 2023).

Customers use the online shopping decision-making process to weigh their options before making a purchase of certain goods or services. Their decision to make an online purchase, their attitude towards buying, the quality of the website, and their personal character all play a role in these decisions. Research from the past indicates that consumers will be more confidence in their selections when making purchases if technology is easy for them to use (Sirda et al., 2024).

A person's opinion of how simple a certain technology or system is to use is known as perceived ease of use. According to research, consumers' opinions on how simple a product is to use have a favourable impact on their intention to buy (Cynthia, 2024). So, the current research aims to investigate the impact of smart shopping applications on impulsive purchasing behavior through the mediating role of perceived ease of use applied on online Egyptian customers.

Problem Statement:

Despite extensive research smart shopping applications, impulsive purchasing behavior and perceived ease of use, a gap remains in understanding how smart shopping applications on impulsive purchasing behavior within the mediating role of perceived ease of use. This research aims to address this gap and provide a thorough framework for examining the impact of smart shopping applications on impulsive purchasing behavior within the mediating role of perceived ease of use. So, the study problem is represented in the following main question: What is the impact of smart shopping applications on impulsive purchasing behavior through the mediating role of perceived ease of use applied on Online Egyptian Customers?

1. What is the impact of smart shopping applications on impulsive purchasing behaviour?
2. What is the impact of smart shopping applications on perceived ease of use?
3. What is the impact of perceived ease of use on impulsive purchasing behaviour?

Research objectives:

The current study aims to investigate the impact of smart shopping applications on impulsive purchasing behavior within the mediating role of perceived ease of use: Applied on online Egyptian customers. To achieve this goal, it will be divided into the following sub-goals:

1. To investigate the impact of smart shopping applications on impulsive purchasing behavior.
2. To investigate the impact of smart shopping applications on perceived ease of use.
3. To investigate the impact of perceived ease of use on impulsive purchasing behavior.

Research importance:

The importance of this research is evident on two levels: the scientific and practical levels:

Scientific importance: This research derives its scientific importance from its treatment of three important variables in marketing thought, namely smart shopping applications, impulsive purchasing behavior and perceived ease of use, and its endeavor to provide theoretical foundations for these three variables and help in determining the nature of the relationship between these variables.

Dr. Basma Tawfik Ahmed

Practical importance: This research is practically relevant amid today's economic transformations, enabling marketers to understand these behavioral patterns and help design more effective and flexible purchasing applications. The research highlights how smart purchasing applications can stimulate customer responsiveness and drive impulse buying and explores how smart purchasing applications influence impulse buying behavior through perceived ease of use. The research will also help e-commerce stores improve their presence through these applications and work to create positive shopping experiences for customers, enhancing customer satisfaction and loyalty, while reducing the negative effects of impulse shopping on both the customer and the environment.

Previous studies and hypothesis development:

Smart Shopping Applications and Impulsive Purchasing Behaviour:

Effects of mobile augmented reality apps on impulse buying behavior: An investigation in the tourism field. (Do et al., 2020)

The current study examines how mobile augmented reality (AR) apps affect tourists' impulsive purchasing behaviour by combining the Technology Acceptance Model (TAM), Stimulus-Organism-Response (SOR) framework, and flow theory. The findings indicate that the features of mobile augmented reality apps are crucial in controlling the behaviour of tourists who make impulsive purchases. Specifically, as the apps' usefulness, usability, and interaction grows, so does the user's felt pleasure and contentment, which in turn leads to a larger propensity for impulsive purchases. The findings also show that the flow experience has a mediating role in the relationship between the user's pleasure with the mobile augmented reality app and how easy they believe it to be to use.

The Effect of Mobile Promotions and Application Quality on Consumers' Mobile Buying Impulsiveness: A Case of Comparison Between Zubizy and Hopi. (Yıldırım & Bayraktar, 2021)

The use of mobile promotions and its impact on impulsive purchasing are the main topics of this study. This study looks at how consumers' impulsive mobile purchase is affected by sales promotions that appeal to both hedonic and utilitarian customers as well as the quality of mobile applications. Two frequently used applications are chosen from a large number of mobile applications that represent both hedonic and utilitarian customers in Turkey in order to fulfil this research goal. Impulsive and suggestion-based are the two elements of impulsive purchase behaviour that were identified in the

Dr. Basma Tawfik Ahmed

research's findings. The findings show that mobile promotions had a beneficial impact on both impulsive and suggestion-based purchasing, with impulsive purchasing being more affected than suggestion-based. However, the quality of the application has a favourable impact on suggestion-based purchase behaviour but no influence on impulsive buying.

Examining the role of consumer impulsiveness in multiple app usage behavior among mobile shoppers. (Chopdar et al., 2022)

This study looks at how customer impulsivity affects the use of various shopping apps for online purchases, both directly and indirectly. With the exception of the app's aesthetic appeal, the results support the substantial influence of mobility, personalization, product variety, and hedonic motivation on impulsiveness. Users' intention to install another shopping app was found to be substantially connected with impulsiveness, whereas their behavioral intention was a major predictor of their multiple app using behavior. The results inform managers about how impulsivity contributes to split loyalty among mobile shoppers and suggest new tactics for consistent platform usage.

How does TAM affect impulsive buying on halal fashion products via shopping mobile apps? (Anwar, 2024)

The goal of this study is to find out how consumers' flow experience, attitude, impulse purchasing propensity (IBT), and desire to make impulsive purchases of halal fashion items are impacted by their perceptions of the utility and usability of shopping mobile apps. Perceived utility, flow experience, attitude, IBT, and the desire to make impulsive purchases were all found to have strong positive correlations in this study. The study's findings demonstrate that flow experience is influenced by perceived utility and usability. While perceived utility had no effect on attitude, ease of use did. Additionally, attitude was unaffected by flow experience. Nonetheless, IBT is influenced by both attitude and flow experience. Additionally, IBT considerably buffered the attitude and flow experience that led to the need for impulsive purchases.

Pure and suggestive impulse buying in mobile shopping app: shopping pattern of young consumers. (Gupta et al., 2024)

Using the app stimuli (performance expectancy, effort expectancy, layout, atmosphere, privacy, and security), this study attempts to evaluate the

Dr. Basma Tawfik Ahmed

mediating effects of impulse buying intention (IBI) and user satisfaction (US), as well as the moderating effects of instant discount and cashback promotional offers. The findings demonstrated that, for the mediating variable IBI, cashback offers and quick discounts varied from one another. With the exception of layout, the SEM results for pure impulse buying indicated that all other variables had a positive correlation with IBI. Layout and effort expectancy had a substantial relationship with both mediating variables for suggestive impulse purchase. Lastly, there were notable distinctions between pure and suggestive impulse purchase behaviour.

H1: There is positive effect and relationship between Smart Shopping Applications and Impulsive Purchasing Behaviour.

Smart Shopping Applications and Perceived Ease of Use:

Factors Affecting Purchasing Intention by Using Mobile Shopping Applications in Malaysia. (Lim et al., 2020)

This study's primary goal is to look at the variables influencing Malaysian consumers' intentions to buy when using mobile shopping apps. The dependent variable in this study is purchasing intention, and the five criteria that are included are perceived enjoyment, perceived utility, perceived ease of use, perceived trust, and social influence. The main conclusions of this study demonstrated a strong association between purchase intention and each of the five independent factors. To sum up, this research could assist marketers of mobile shopping applications in creating more thorough tactics to enhance their company plan.

Factors Influencing Actual Usage of Mobile Shopping Applications: Generation Y in Thailand. (Rattanaburi & Vongurai, 2021)

This study looks at the factors—behavioral intention, compatibility, perceived cost, perceived ease of use, perceived utility, perceived risk, and personal innovativeness—that affect how Gen Y (Gen Y) consumers in Thailand actually utilise mobile shopping applications. According to the main finding, behavioural intention is most positively and significantly impacted by perceived utility, which is followed by compatibility and personal innovativeness. On the other hand, behavioural intention is significantly impacted negatively by perceived cost. Additionally, perceived utility is significantly positively impacted by perceived simplicity of use. However, there is little correlation between behavioural intention and perceived utility.

Dr. Basma Tawfik Ahmed

Likewise, the findings indicated that perceived danger had little bearing on behavioural intention. Lastly, the findings also showed that Gen Y consumers' actual use of mobile shopping apps in Thailand was influenced by their behavioural intentions.

The Impact of Perceived Usefulness and Perceived Ease-Of-Use on Repurchase Intention of Online Shopping App User. (Priyatma & Eka, 2022)

The purpose of this study is to investigate how repurchase intention is impacted by perceived utility and perceived simplicity of use in relation to the Shopee application in Indonesia. Perceived utility and perceived ease of use are the study's independent variables, and repurchase intention is its dependent variable. This study employs a descriptive methodology and is quantitative in nature. 182 respondents provided the primary data used in this study. This study's sample collection strategy combines a purposive sampling method with a nonprobability sampling technique. Using the respondent's criteria—those who have used the Shopee application and are residents of Indonesia—the questionnaire was distributed. The variables perceived utility and perceived simplicity of use had a positive and significant impact on repurchase intention on the Shopee application in Indonesia, according to the study's multiple regression analysis results.

The Mediating Role of Interactivity between Perceived Usefulness, Perceived Enjoyment and Intention to Use Augmented Reality Application for Shopping. (Chaudhry et al., 2023)

In order to ascertain the causal influence of numerous augmented reality applications on college students, this study employs a survey method and statistically evaluates the gap. For the purpose of conducting tests to examine impacts on behavioural intentions, a suitable sample of executive students has been selected. In summary, there will be a retail focus that will impact users' behavioural intents and motivate them to make purchases through AR apps, and the perceived utility and enjoyment of AR will be noticeably high. The impact of enjoyment, perceived utility, and behavioural intention to use AR shopping apps were all mediated by interaction, which was found to be a major motivator.

Dr. Basma Tawfik Ahmed

The Impact of Mobile Service Quality, Perceived Value, Perceived Usefulness, Perceived Ease of Use, Customer Satisfaction Towards Continuance Intention to Use MyTelkomsel App. (Azzahra & Kusumawati, 2023)

This study highlights the elements that significantly influence consumers' intents to keep using MyTelkomsel by analysing the conceptual model developed by previous related studies. This study uses both quantitative surveys and qualitative semi-structured interviews with MyTelkomsel customers. PLS-SEM was used to analyse the questionnaire results, and open coding was used to assess the interview findings. The results show that Continuance Intention to Use is positively impacted by Perceived Value, Perceived Usefulness, Perceived Ease of Use, and Customer Satisfaction. Customer satisfaction and perceived value are positively impacted by the quality of service content and customer service. It has been shown, meanwhile, that Perceived Value is not much impacted by Mobile Network Quality. These findings ought to guide the creation of more effective retention strategies for mobile apps in Indonesia's telecom industry and other pertinent industries.

H2: There is positive effect and relationship between Smart Shopping Applications and Perceived Ease of Use.

Impulsive Purchasing Behaviour and Perceived Ease of Use:

Impulse Buying Behaviors in Live Streaming Commerce Based on the Stimulus-Organism-Response Framework. (Lee & Chen, 2021)

The impulsive purchasing habits of customers in live streaming commerce are the main subject of this study. To investigate how consumers, react and behave in response to specific stimuli, we put forth a study model based on the stimulus organism response (S-O-R) framework. Following the empirical study, we discovered that the desire to make an impulsive purchase is positively impacted by perceived delight. Perceived satisfaction is strongly impacted by perceived usefulness. Perceived usefulness, however, has no beneficial effect on the impulse to buy. Perceived satisfaction is positively impacted by attractiveness and expertise. Perceived usefulness is positively impacted by product utility and ease of purchasing. We discovered that the presentation and prompting of the live broadcaster make it simpler for customers to make impulsive purchases in live streaming commerce.

The Extended S-O-R Model Investigating Consumer Impulse Buying Behavior in Online Shopping: A Meta-Analysis. (LE et al., 2022)

In addition to trying to identify the elements that affect consumers' impulsive purchasing behaviour in the context of online shopping, the study aims to shed light on how to promote such behaviour on commercial websites. According to the research findings, customers' hedonic value is increased when they shop online due in large part to intrinsic reasons such perceived ease of use, perceived enjoyment, and online flow experience. Furthermore, these findings support the use of suitable marketing stimuli by online retailers, including the provision of pricing incentives, promotion strategies, and enhanced communication efficacy. Additionally, having a better understanding of how to create a website that enhances the user experience usually encourages customers to act without hesitation and make impulsive purchases.

Effects of Mobile Financial Services' Acceptance on Impulse Buying Behavior: A Study on Lifestyle and Fast Fashion Retailers. (Himel & Airin, 2023)

The purpose of this research is to examine how the acceptance of mobile financial services contributes to impulsive purchasing. Researchers looked at how customers' inclination to make impulsive purchases was affected by their perceptions of the usefulness and convenience of use of mobile financial services (MFS), based on the Technology Acceptance Model (TAM). The findings imply that consumers' impulsive propensity to buy fast fashion labels is positively correlated with their perceptions of the usefulness and usability of mobile finance services. Additionally, the study discovered that customers' impulsive purchasing behaviour is more influenced by the perceived usefulness of mobile financial services than by their perceived ease of use.

Impact of website usage on consumers' impulse buying behavior during online shopping (A Technology Acceptance Model Approach). (Hussain, 2023)

The purpose of the study was to empirically investigate how website usage affects customers' impulsive buying behaviour when they shop for fashion companies online. Perceived simplicity of use was proven to have a beneficial direct impact on impulsive purchases. On the other hand, brand awareness regulated the framework in the opposite way. The study added to the body of knowledge on consumer behaviour and the technological acceptance model.

Dr. Basma Tawfik Ahmed

It also offers useful information for website developers, fashion brand managers, and marketers. The study is unique since it examined how websites contribute to the growing tendency of impulsive purchases made when purchasing fashion items online in Pakistan.

Impact of perceived ease of use on impulsive buying behaviour through mobile commerce with hedonic and utilitarian effects. (Soomro & Habeeb, 2025)

The authors investigate how smartphone users' impulsive tendencies are impacted by perceived ease of use using a technology acceptance model. In order to comprehend the moderating role of utilitarian and hedonistic values in the relationship between perceived ease of use and impulsive buying behaviour, we also employ a motivation orientation paradigm. The results show a significant negative relationship between impulsive purchasing behaviour and perceived ease of use. It's intriguing to note that this inverse link suggests that user-friendliness might not be sufficient to encourage impulsive purchases. Nonetheless, the relationship between perceived ease of use and impulsive purchasing behaviour was mitigated by hedonic and utilitarian values.

H3: There is positive effect and relationship between Impulsive Purchasing Behaviour and Perceived Ease of Use.

Smart Shopping Applications, Impulsive Purchasing Behaviour and Perceived Ease of Use:

The effect of augmented reality in mobile applications on consumers' online impulse purchase intention: The mediating role of perceived value. (Trivedi et al., 2022)

The cosmetics category under internet purchases is the main focus of this investigation. First, it looks at how women users' incentive to use augmented reality in a smartphone app relates to how well the augmentation is judged to be. Second, it examines the connection between impulsive internet purchases and perceived value. Thirdly, it looks at how two exogenous variables and the impulsive intention to buy something online are mediated by perceived value. It also examines how product involvement influences the relationship between impulsive online purchase intention and perceived value. The findings demonstrate how millennial women's impulsive purchasing intentions may be influenced by augmented reality in smartphone applications.

Dr. Basma Tawfik Ahmed

Business strategic insight: understanding the impact of perceived value and impulsiveness on consumer response in global mobile shopping. (Negash et al., 2024)

By examining the marketing cues that influence consumer response and promote impulsiveness and perceived value in mobile shopping (MS) platforms, this study seeks to add to the body of literature on international business. The research results showed that the most important elements influencing perceived value are ratings, reviews, awards, and recognition. Furthermore, the findings showed that the most important elements influencing the impulsiveness state were personalised offerings and aesthetically pleasing encounters. This study also emphasises the detrimental effects of MS's widespread use on impulsive purchasing, underscoring the significance of giving customers the information they need to make wise choices. According to this study, impulsiveness and perceived value have a strong positive correlation that influences MS.

H4: There is positive effect and relationship between Smart Shopping Applications and Impulsive Purchasing Behaviour within the mediating role of Perceived Ease of Use.

Research Gap:

After reviewing previous studies that linked the study variables, it becomes clear that there is a scarcity of studies that addressed the relationship between the three variables applied to Egyptian customers. Therefore, this study will be an addition to the Arabic library regarding the three variables.

Literature Review:

Smart Shopping Applications:

The way people shop has changed dramatically in the digital age, and smart shopping apps are now commonplace. Such pace is brought on by the inclusion of retail stores in smart apps (Paulino et al., 2025). Apps for smart shopping have grown in popularity as a convenient method of making purchases. In fact, this is a typical strategy used in the digital age. Smart purchasing is more common than ever before, whether it's for gadgets, apparel, or animals. To meet the growing need for speedy shopping, numerous browsers and applications are developed all year long (Rahi et al., 2025).

Applications that give consumers a better shopping experience are known as smart shopping apps, and they are typically smartphone-based. Since the majority of users own smartphones and are already familiar with mobile applications, they are inexpensive to implement. Because smart apps have more security protections and let users circumvent rivals' information to access the marketer's self-contained environment, they give marketers a number of advantages over regular mobile websites (Kuo et al., 2016).

Customers frequently behave differently on mobile applications than on websites, which contributes to the significance of smart apps. When compared to websites or physical establishments, smart apps have unique features. For instance, consumers with an internet connection can easily access smart apps at any time and from any location. Additionally, it has been demonstrated that consumers' search habits alter while viewing websites on smart devices because smartphones often have a significantly smaller screen than desktops (Ba et al., 2022).

When it comes to e-commerce brand experiences, smart apps are important marketing triggers. In order to satisfy customer needs and improve business-consumer interactions and interactive platforms to boost client stickiness, smart apps can offer online commerce, community integration, smart push, and information transmission. Customers may search, compare, and order brands, categories, and goods via smart apps. The use of consumer apps has grown by more than 100% in the last several years. Online shopping is popular because it offers a wide variety of goods and services. Customers on the go can place orders and pick them up at home. Retail transactions as well as reservations for hotels and flights are examples of smart shopping (Shetu, 2025).

Perceived Usefulness:

Davis (1989) asserts that consumers' perceptions of usefulness influence their behaviour. The degree to which a person believes that using a particular technique can enhance his or her performance is known as perceived usefulness (Saleem et al., 2022). When a buyer believes that shopping online will make their purchase more efficient, this is known as perceived usefulness (Alhaimer, 2022). There is proof that the intention to shop online is significantly influenced by perceived usefulness (Ha et al., 2021).

Additionally, perceived utility describes how much users believe a shopping app offers relevant and helpful information to help them make decisions (Xue

Dr. Basma Tawfik Ahmed

et al., 2020). The concept emphasises the practical benefits that customers receive from shopping apps, such as making product comparisons easier, offering comprehensive information, and accelerating decision-making. Perceived utility is a key element influencing customer engagement in the context of shopping apps. Customers see shopping apps as efficient and reliable when they offer clear, personalised, and easily navigable product information. In consequence, this impression increases their faith in shopping apps and increases their propensity to make last-minute purchases. Previous studies have consistently demonstrated that consumers' adoption of mobile and internet purchasing technology is significantly influenced by perceived usefulness (Maharani et al., 2025).

Enjoyment:

It has been researched how important perceived enjoyment is in relation to technology features. The act of utilising a particular system that is pleasurable in and of itself, independent of any performance issues brought on by system use, is known as perceived delight (Chaudhry et al., 2023). The term "enjoyment" describes the short-term and long-term pleasure people derive from using mobile shopping apps. Mobile shoppers' loyalty is positively impacted by enjoyment, which raises satisfaction. The degree to which mobile shopping apps are entertaining, delightful, and engaging is indicated by their level of enjoyment (Chung et al., 2016).

"The degree to which the use of the computer is perceived as pleasant, regardless of all consequences of execution which may be envisaged" is the definition of perceived enjoyment, which is regarded as a type of intrinsic motivation. Users may view mobile shopping apps as enjoyable, and closing the performance-perception gap will encourage users to embrace new technology (Gharaibeh & Gharaibeh, 2021). A person's degree of enjoyment may influence how they use mobile app technology, according to the literature (Holdack et al., 2022). Users can expect an enjoyable and captivating experience from smart shopping apps, according to Akdim et al. (2022). Therefore, perceived satisfaction is one of the most important aspects in deciding how new technology is adopted and used.

Security/ Privacy:

One of the most important features of a buying and selling application is security. Because it involves preventing or at least identifying fraud in an information-based system where the information itself has no physical

Dr. Basma Tawfik Ahmed

existence, security is essential while conducting online transactions. The ability of an e-commerce site to shield users from several possible risks is generally referred to as security in online transactions. Online transaction decision-making is influenced by security; users or consumers will make choices once their security is assured. Purchase decisions are positively impacted by security, according to some study. Customers will feel more at ease when making an online purchase if the website contains a clear privacy policy statement or a declaration about handling their personal data (Ranti et al., 2023).

Security is the degree to which users of smart shopping apps are confident in the apps' ability to protect and secure their personal data. Additionally, users of smart shopping applications have faith in the system to ensure that no unauthorised party is monitoring the shopping process and that financial transactions are secure. Customers are at ease knowing that their purchases are secure. Malicious applications run the danger of stealing their personal data. These are some of the issues that mobile shoppers have when choosing to utilise smart shopping applications, and they could be a primary factor in some consumers' reluctance to use them at all (Chung et al., 2016).

Personalization:

The capacity of broadcasters to instantly adapt information and material to each individual customer's particular requirements and preferences is known as personalisation, and it makes the buying experience more interesting and relevant (Khoi et al., 2023). By providing pertinent, tailored suggestions that closely align with customer interests, personalisation in social commerce enhances user experiences. In addition to reducing information overload, this tactic improves the effectiveness and calibre of shopping decisions. Personalisation is used by live streaming e-commerce platforms to help streamers deliver detailed and accurate product information in real time. Such tailored communication fosters trust and gives the seller a sense of accountability and integrity. (Maharani et al., 2025).

Streamers can, for instance, highlight products that cater specifically to a viewer's stated needs, provide a detailed explanation, or suggest personal preferences based on live interaction. These initiatives boost consumers' confidence in their decisions and reduce perceived dangers, such as the fear of purchasing incorrect goods (Xue et al., 2020). Additionally, by making purchasing more convenient and relevant, personalisation has an impact on

perceived utility. Customers are likely to view the platform as genuine and helpful if they believe it understands their own preferences and offers helpful information. This improves their ability to socialise and make impulsive purchases (Khoi et al., 2023). Therefore, in dynamic, interactive online purchasing platforms, personalisation becomes a crucial factor in determining customer happiness and behavioural response.

Impulsive Purchasing Behaviour:

The term "impulse buying" describes impulsive, last-minute purchases. Researchers have taken notice of this behaviour, and research on impulsive purchases is expanding globally. In daily life, impulsive purchases are also frequent, particularly on social media platforms where users may unexpectedly come across influencer marketing content. On the surface, impulsive buying is defined as a habit that involves making snap decisions and acting right away, motivated by the desire for instant self-fulfilment rather than any pre-purchase objectives. Internally, impulse buying is a powerful psychological drive to make a purchase that might result in emotional distress thereafter (Liu et al., 2025).

An unanticipated and frequently emotion-driven need to buy is the hallmark of impulsive purchasing behaviour, a complicated psychological phenomena that typically results in a quick transition from the identification of desire to the completion of the transaction (Gulfraz et al., 2022). In a groundbreaking study on unintentional purchasing, Rook (1987) defined it as a conduct characterised by spontaneity and instant reward. Impulses that promote impulsive purchasing behaviour frequently circumvent the logical evaluation processes of decision-making, resulting in purchases driven more by psychological factors than by need (Kakkar et al., 2022). As a result, traditional decision-making processes, which usually provide a logical and methodical approach, differ from impulsive purchasing behaviour (Verma et al., 2021).

Four different types of impulsive buying have been identified: pure impulsive buying, which occurs when a consumer breaks a typical shopping pattern; reminder impulsive buying, which occurs when a consumer is reminded of a need to buy a product after seeing it on display; suggestion impulsive buying, which occurs when a consumer visualises a product and then makes a purchase later; and planned impulsive buying, which occurs when a consumer is prompted by sales promotions or advertisements and makes partial plans beforehand (Arthur et al., 2020).

Without much consideration or assessment of the product, the purchase is typically motivated by an unexpected need or desire that arises during the buying process. Impulsive purchases have also been found to be influenced by reference groups. Customer personality, culture, materialist tendencies, impulsive buying propensity, and degree of enjoyment of shopping are additional elements that have been identified to influence impulsive purchases. Numerous internal and external triggers for impulse purchase have been found by research on the components that influence this behaviour. These include elements pertaining to cost and product, the function of the retail setting, individual characteristics, materialistic views, and consumer attributes such as a propensity to enjoy shopping (John et al., 2024).

Customers spend a large portion of their money on impulsive buying behaviour (IBB), which contributes significantly to sales in the modern retail industry and brings in billions of dollars in profit for merchants annually. This pattern has been especially apparent since the COVID-19 epidemic, highlighting the enduring impact of impulsive purchasing on consumer behaviour and economic conditions (Doan et al., 2025).

Perceived Ease of Use:

According to the TAM3 framework (Ji et al., 2019), perceived ease of use is the degree to which using a technology application requires no mental or physical effort (Li et al., 2020). The foundation of TAM3 is the identification of antecedents of perceived ease of use, which are divided into two categories: adjustments (perceived enjoyment and objective usability) and anchors (computer self-efficacy, perceptions of external control, computer anxiety, and computer playfulness). To put it simply, when users must put in a lot of work to finish a task on a digital platform, they will see the technology negatively and are less likely to use it again (Hsu & Yeh, 2018).

Giving the user the resources they need to finish the work at hand with ease might improve perceived ease of use (Evelhoch, 2016). Tasks could include finding and retrieving content, making payments, and using the program with ease in the context of a mobile shopping application (Li et al., 2020). The consumer will be less frustrated and irritated if they have an easy time finding what they are looking for. Consequently, utilitarian value—which is equivalent to efficacy and efficiency—is produced (Kesari & Atulkar, 2016). However, a tough or demanding digital platform engagement might have a detrimental impact on the online experience's utilitarian value (Parker & Wang, 2016).

It is seen as a crucial element for both the initial adoption of technology and its continued use over time. Researchers feel that a technology's likelihood of being employed increases with its perceived simplicity of use (Prastiawan et al., 2021). According to earlier research, perceived simplicity of use is seen as a critical component for customer retention (Vatolkina et al., 2020). Furthermore, repurchasing is positively impacted by perceived simplicity of use (Alkhateeb, 2020; Basha et al., 2020). Consumers' perceptions of how easy it is to shop at an online store can boost their e-trust and e-retention for subsequent purchases (Silitonga et al., 2020). Consumers steer clear of technology-enabled platforms that are hard to understand. They will instead search for substitutes that offer the same activities but are simpler to understand (Wilson et al., 2021).

For example, recent research by Daud et al. (2018) and Balci (2021) found that in the e-commerce sector, perceived ease of use significantly influenced customers' repurchase intentions through trust. Additionally, Maryanto and Kaihatu (2021) found that perceived ease of use greatly and favourably boosts customer loyalty by fostering trust. Similar to this, Mulyaningsih (2022) observed that customers' perceptions of perceived ease of use had a significant impact on their levels of trust in a system or technology, which in turn affected and influenced the development of loyalty in the customers' perceptions.

Research Methodology:

This study explains the impact of smart shopping applications on impulsive purchasing behaviour through the mediating role of perceived ease of use applied on online Egyptian customers. The research employs a quantitative approach to assess how these smart shopping applications influence impulsive purchasing behaviour. Online surveys were used to collect data from 312 online shoppers in order to learn more about their opinions and experiences with the smart shopping apps that were being examined. A non-probability sampling technique was used because there was no set sample frame and there was a wide variety of possible participants. 384 surveys were distributed once the sample size was determined to be sufficient at a 95% confidence level. 384 questionnaires were completed, resulting in an 81.25% response rate. The final responses were gathered from 312 users after 72 of them were eliminated for reasons like invalidity or missing information. AMOS (Analysis of Moment Structures) and SEM (structural equation

Dr. Basma Tawfik Ahmed

modelling) were used to analyse the gathered data and determine the correlations between the variables. In order to assess how smart shopping apps influence impulsive buying behaviour through the mediating function of perceived ease of use, ten hypotheses have to be tested. To ascertain the direction and strength of these associations, SPSS (Statistical Package for the Social Sciences) was used to perform both regression analysis and SEM.

Through the mediating function of perceived ease of use, the study's methodology seeks to offer insightful information about how smart shopping applications affect impulsive buying behaviour. This knowledge is essential for creating smart retail apps that work and enhancing consumer behaviour. It is anticipated that the results will direct researchers and practitioners in maximising marketing initiatives to improve customer engagement and business results. Accordingly, the variables of the research can be discussed as follows:

Independent Variable: Smart Shopping Applications.

Dependent Variable: Impulsive Purchasing Behaviour.

Mediating Variable: Perceived Ease of Use.

The variables in this study were assessed using a questionnaire directed at Online Egyptian Customers. The survey was designed to evaluate how smart shopping applications effect on impulsive purchasing behaviour through the mediating role of perceived ease of use. Table (1) outlines the specific questions used to measure these variables and provides the references from which they were sourced. All variables were rated using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Dr. Basma Tawfik Ahmed

Table 1: Questionnaire Statement

Variables	Statements	Reference
Smart Shopping Applications (Independent Variable)		
Perceived Usefulness	1. Smart Shopping Applications can support more shopping activities for me. 2. Smart Shopping Applications reduces the time spent on those useless shopping activities. 3. Smart Shopping Applications enhances my shopping effectiveness. 4. Overall, Smart Shopping Applications is useful to personal shopping activities.	Chung et al., (2016)
Enjoyment	1. Using Smart Shopping Applications is enjoyable. 2. Using Smart Shopping Applications is pleasurable. 3. I have fun using Smart Shopping Applications. 4. I find Smart Shopping Applications to be interesting.	Chung et al., (2016)
Security/ Privacy	1. The risk of an unauthorized third party overseeing the Smart Shopping Applications is high. 2. The risk of abusing usage information (e.g. names of business partners, payment amount) is high when doing Smart Shopping Applications. I would find Smart Shopping Applications unsecure when payment transactions are conducted. 3. I believe my personal information (i.e. address, credit card, date of birth) would be shared with other unauthorized third parties. 4. I feel uncomfortable with the information being collected about me by the Smart Shopping Applications. 5. I believe the information being collected during the Smart Shopping Applications is more than needed.	Chung et al., (2016)
Personalization	1. I believe accessing to Smart Shopping Applications would not require a lot of my mental effort.	Chung et al., (2016)

Dr. Basma Tawfik Ahmed

	2. I believe Smart Shopping Applications provide more personalized services.	
Impulsive Purchasing Behaviour (Dependent Variable)	1. When using Smart Shopping Applications, I often buy things spontaneously. 2. "Just do it" describes the way I buy things while using Smart Shopping Applications. 3. When using Smart Shopping Applications, I often buy things without thinking. 4. "I see it, I buy it" is the way I buy things while using Smart Shopping Applications. 5. When using Smart Shopping Applications, I often have the idea "buy now, think about it later". 6. When using Smart Shopping Applications, sometimes I feel like buying. 7. When using Smart Shopping Applications, I often buy things according to how I feel at the moment. 8. When I using Smart Shopping Applications, I carefully plan most of the products which I bought. 9. When using Smart Shopping Applications, sometimes I am a bit reckless about what I buy.	Do et al., (2020)
Perceived Ease of Use (Mediation Variable)	1. It is easy to learn how to use Smart Shopping Applications. 2. The use of Smart Shopping Applications makes it clearer and more understandable. 3. The use of Smart Shopping Applications makes it more flexible. 4. Smart Shopping Applications are user friendly. 5. Smart Shopping Applications require the fewest steps possible to accomplish what I want to do with them.	Soomro & Habeeb (2025)

The purpose of this study is to reveal the effect of smart shopping applications on impulsive purchasing behaviour through the mediating role of perceived ease of use. In this direction, the following model has been developed (figure 1).

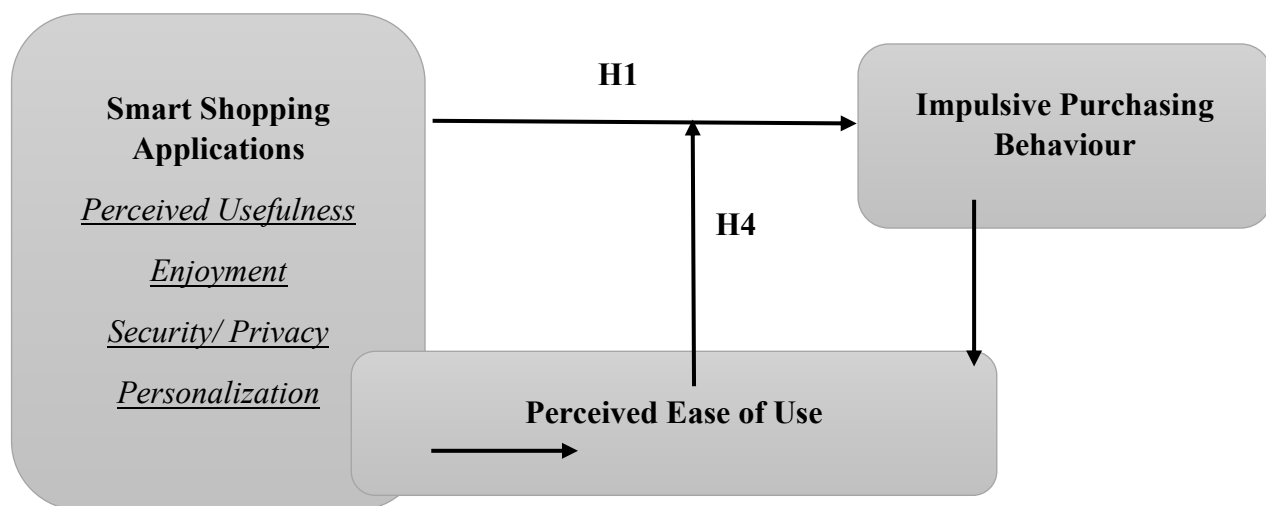


Figure 1: Theoretical Model and Hypothesis Development

Results:

Descriptive Analysis of Research Sample

Table (1) presents the descriptive analysis of the demographic characteristics of the study's respondents, providing insights into their gender, age, education and frequency of using smart shopping applications in the last 6 months. Understanding these demographic variables is crucial for interpreting the study's findings, as they offer context regarding the composition of the sample and its potential influence on perspectives related to smart shopping applications, perceived ease of use, and impulsive purchasing behavior.

Dr. Basma Tawfik Ahmed

Table (1): Descriptive Analysis of Respondent

Demographic Variables	Sub Variable	Frequency	Percent
Gender	Male	208	66.7
	Female	104	33.3
	Total	312	100.0
Education	Undergraduate	156	50.0
	Master	52	16.7
	Ph.D.	104	33.3
	Total	312	100.0
Age	20-35	52	16.7
	36-45	104	33.3
	46-55	104	33.3
	More than 55	52	16.7
	Total	312	100.0
Frequency of Using Smart Shopping Applications in the last 6 months	0	15	4.8
	1-3	104	33.3
	4-10	104	33.3
	11-20	52	16.7
	More than 20	37	11.9
	Total	312	100.0

Source: Statistical analysis results.

- The gender breakdown indicates that male respondents (66.7%) considerably exceed female respondents (33.3%).
- The educational attainment of respondents indicates a highly competent sample, with 50.0% possessing Undergraduate, 16.7% holding a Master's degree, and 33.3% having a Ph.D.
- The age distribution is equitable, with representation from several age cohorts. The respondents are distributed uniformly, with 16.7% in the 25 to under 35 years group, 33.3% in both the 36 to under 45 and 46 to under 55 categories, and 16.7% in more than 55 years.
- The variable representing Frequency of Using Smart Shopping Applications in the last 6 months, 33.3% of respondents indicating that have been used smart shopping applications 1-3 in month and another 33.3% indicating that 4-10 in month. Also, 16.7% have been used smart shopping applications 11-20 in month, while another 11.9% have been more than 20.

The Reliability and Validity Assessment of the Research Scales:

An exhaustive evaluation of reliability and validity is essential for guaranteeing the strength and precision of the measuring scales utilized in this research. This section carefully assesses the constructs of smart shopping applications, perceived ease of use and impulsive purchasing behaviour to determine their efficacy in encapsulating the desired theoretical features.

Table (2) Coefficient of Reliability & validity of smart shopping applications, perceived ease of use and impulsive purchasing behavior

Basic Axes of the Questionnaire	Number of statements	reliability coefficients
Perceived Usefulness	4	0.836
Enjoyment	4	0.944
Security/ Privacy	6	0.928
Personalization	2	0.854
Smart Shopping Applications	16	0.884
Impulsive Purchasing Behaviour	9	0.772
Perceived Ease of Use	5	0.883

Source: researcher's calculation SPSS V27 output

The table presents the reliability coefficients for smart shopping applications, perceived ease of use and impulsive purchasing behavior across, demonstrating strong internal consistency with values ranging from 772 to 0.954. Enjoyment and Security/ Privacy exhibit high reliability (0.944 and 0.928, respectively). Other dimensions, such as Perceived Usefulness and Personalization, maintain high and stable reliability, with the latter achieving the highest coefficient (854). Also, perceived ease of use and impulsive purchasing behavior exhibit high reliability (0.833 and 0.772 respectively). Overall, the results affirm the robustness of the study's measurement model, demonstrating the effectiveness of the instrument while underscoring the significance of iterative validation in ensuring measurement accuracy.

Descriptive Analysis of Research Variables:

This section presents the descriptive statistical analysis of the research variables, focusing specifically on smart shopping applications, perceived ease of use and impulsive purchasing behavior. The objective of this analysis is to assess customer' perceptions of various dimensions of smart shopping applications, perceived ease of use and impulsive purchasing behavior and identify areas of strength and improvement. The summary of this analysis is illustrated in Table (3), which presents the mean scores and standard deviations for each item.

Table (3): Descriptive Analysis of smart shopping applications

Statements	Mean	Std.
Smart Shopping Applications can support more shopping activities for me	4.02	0.896
Smart Shopping Applications reduces the time spent on those useless shopping activities	4.1	0.84
Smart Shopping Applications enhances my shopping effectiveness	3.94	0.988
Overall, Smart Shopping Applications is useful to personal shopping activities	4.03	0.897
Perceived Usefulness	4.0225	0.80067
Using Smart Shopping Applications is enjoyable	4.02	0.856
Using Smart Shopping Applications is pleasurable	3.89	0.958
I have fun using Smart Shopping Applications	3.85	0.886
I find Smart Shopping Applications to be interesting	3.67	0.97
Enjoyment	3.8575	0.7193
The risk of an unauthorized third party overseeing the Smart Shopping Applications is high	3.88	0.883
The risk of abusing usage information (e.g. names of business partners, payment amount) is high when doing Smart Shopping Applications	3.53	0.999
I would find Smart Shopping Applications unsecure when payment transactions are conducted	3.67	0.953
I believe my personal information (i.e. address, credit card, date of birth) would be shared with other unauthorized third parties	3.63	0.952
I feel uncomfortable with the information being collected about me by the Smart Shopping Applications	3.73	0.843
I believe the information being collected during the Smart Shopping Applications is more than needed	3.55	0.993
Security/ Privacy	3.665	0.785
I believe accessing to Smart Shopping Applications would not require a lot of my mental effort	3.89	0.891
I believe Smart Shopping Applications provide more personalized services	3.86	0.911
Personalization	3.875	0.892

Source: Statistical analysis results

- The Perceived Usefulness dimension, has an overall mean of 4.0225 with a standard deviation of 0.80067. The lowest-rated statement in this dimension is "Smart Shopping Applications enhances my shopping effectiveness", with a mean of 3.94 and a standard deviation of 0.988. While, the highest-rated statement in this category is "Overall, Smart Shopping Applications is useful to personal shopping activities", with a mean of 4.03 and a standard deviation of 0.897.
- The Enjoyment dimension, has an overall mean of 3.8575 with a standard deviation of 0.7193. The lowest-rated statement in this

Dr. Basma Tawfik Ahmed

category is *"I find Smart Shopping Applications to be interesting"*, with a mean of 3.67 and a standard deviation of 0.97. While, the highest-rated statement in this category is *"Using Smart Shopping Applications is enjoyable"*, with a mean of 4.02 and a standard deviation of 0.856.

- The Security/ Privacy dimension, has an overall mean of 3.665 with a standard deviation of 0.785. The lowest-rated statement in this category is *"The risk of abusing usage information (e.g. names of business partners, payment amount) is high when doing Smart Shopping Applications"* with a mean of 3.53 and a standard deviation of 0.999. While, the highest-rated statement in this category is *"The risk of an unauthorized third party overseeing the Smart Shopping Applications is high"*, with a mean of 3.88 and a standard deviation of 0.883.
- The Personalization dimension, has an overall mean of 3.875 with a standard deviation of 0.892. The lowest-rated statement in this dimension is *"I believe Smart Shopping Applications provide more personalized services"* with a mean of 3.86 and a standard deviation of 0.911. While, the highest-rated statement in this category is *"I believe accessing to Smart Shopping Applications would not require a lot of my mental effort"*, with a mean of 3.89 and a standard deviation of 0.891.

Table (4): Descriptive Analysis of Perceived Ease of Use

Statements	Mea	Std.
It is easy to learn how to use Smart Shopping Applications	3.97	0.889
The use of Smart Shopping Applications makes it clearer and more understandable	3.77	0.905
The use of Smart Shopping Applications makes it more	3.64	0.904
Smart Shopping Applications are user friendly	3.77	0.925
Smart Shopping Applications require the fewest steps possible to accomplish what I want to do with them	4.00	0.881
Perceived Ease of Use	3.83	0.764

Source: Statistical analysis results

- The Perceived Ease of Use variable, has an overall mean of 3.83 with a standard deviation of 0.764. The lowest-rated statement in this dimension is *"The use of Smart Shopping Applications makes it more flexible"* with a mean of 3.64 and a standard deviation of 0.904.

Dr. Basma Tawfik Ahmed

While, the highest-rated statement in this category is "*Smart Shopping Applications require the fewest steps possible to accomplish what I want to do with them*", with a mean of 4.00 and a standard deviation of 0.881.

Table (5): Descriptive Analysis of Impulsive Purchasing Behaviour

Statements	Mean	Std.
When using Smart Shopping Applications, I often buy things spontaneously	3.50	1.226
"Just do it" describes the way I buy things while using Smart Shopping Applications	3.59	1.147
When using Smart Shopping Applications, I often buy things without thinking	3.75	1.176
"I see it, I buy it" is the way I buy things while using Smart Shopping Applications	3.59	0.887
When using Smart Shopping Applications, I often have the idea "buy now, think about it later"	3.62	1.214
When using Smart Shopping Applications, sometimes I feel like buying	3.39	1.201
When using Smart Shopping Applications, I often buy things according to how I feel at the moment	3.48	1.177
When I using Smart Shopping Applications, I carefully plan most of the products which I bought	3.35	1.136
When using Smart Shopping Applications, sometimes I am a bit reckless about what I buy	3.33	1.134
Impulsive Purchasing Behavior		

Source: Statistical analysis results

- The Impulsive Purchasing Behavior variable, has an overall mean of 3.83 with a standard deviation of 0.764. The lowest-rated statement in this dimension is "*The use of Smart Shopping Applications makes it more flexible*" with a mean of 3.64 and a standard deviation of 0.904. While, the highest-rated statement in this category is "*Smart Shopping Applications require the fewest steps possible to accomplish what I want to do with them*", with a mean of 4.00 and a standard deviation of 0.881.

Correlation matrix:

To test this the correlation between the study variables, the Spearman correlation coefficient was employed at a 5% significance level ($p \leq 0.05$) because the variables does not follow the normal distribution. The Spearman correlation was selected due to its ability to measure the strength and direction of linear relationships between smart shopping application dimensions, perceived ease of use and impulsive purchasing behaviour. The correlation results are presented in Table 6.

Table (6): Correlation Coefficients Matrix

Variables	Perceived usefulness	Enjoyment	Security	Personalization	perceived ease of use	impulsive purchasing behaviour
Perceived usefulness	1	.667**	.563**	.848**	.718**	.588**
Enjoyment	.667**	1	.772**	.716**	.716**	.628**
Security	.563**	.772**	1	.882**	.732**	.625**
Personalization	.848**	.716**	.882**	1	.435**	.696**
perceived ease of use	.718**	.716**	.732**	.435**	1	.772**
impulsive purchasing behaviour	.588**	.628**	.625**	.696**	.772**	1

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient matrix provides insightful relationships between smart shopping application dimensions, perceived ease of use and impulsive purchasing behavior. The results indicate that all dimensions of smart shopping application (perceived usefulness, enjoyment, security, and personalization) are positively correlated with both perceived ease of use and impulsive purchasing behavior, with values ranging from .435 to .882.

Testing Hypothesis:**Testing the first hypothesis:**

The first hypothesis of this study was formulated as follows: *There is positive effect and relationship between Smart Shopping Applications and Impulsive Purchasing Behavior.*

A multiple linear regression analysis was performed to assess the direct impact of Smart Shopping Applications on Impulsive Purchasing Behavior. This statistical method is suitable for

Dr. Basma Tawfik Ahmed

evaluating the degree to which fluctuations in the independent variable (Smart Shopping Applications) account for alterations in the dependent variable (Impulsive Purchasing Behavior). Due to the non-normal distribution of the data, the regression model offers a reliable method for analyzing the predictive influence of Smart Shopping Applications on Impulsive Purchasing Behavior. The results of this analysis are presented in Table 7.

Table (7): Results of Simple Regression Analysis for Smart Shopping Applications on Impulsive Purchasing Behavior

dependent Variable	Independent Variables	B	Std. Error		T	P-value
Impulsive Purchasing Behavior	Perceived usefulness	0.266	0.058	0.278	4.605	0.000
	Enjoyment	0.211	0.083	0.199	2.530	0.000
	Security	0.307	0.069	0.315	4.444	0.000
	Personalization	0.432	0.102	0.323	4.24	0.000
R= 0.697 R ² = 0.485			F- Value = 80.503 Sig = 0.000			

Source: Statistical analysis results

- The results of the simple regression analysis demonstrate that the model is statistically significant, as indicated by an F-value of 80.503 and a significance level of 0.000. The R-value of 0.697 suggests a strong positive correlation between Smart Shopping Applications on Impulsive Purchasing Behavior, while the R² value of 0.485 indicates that approximately 48.5% of the variation in Impulsive Purchasing Behavior can be explained by the Smart Shopping Applications dimensions included in the model. These findings provide empirical support for accepting H1.
- All three independent variables— Perceived usefulness (B = 0.266, p = 0.000), Enjoyment (B = 0.211, p = 0.00), Security (B = 0.307, p = 0.000), and Personalization (B = 0.432, p = 0.00)—exhibit a statistically significant positive effect on Impulsive Purchasing Behavior.

Testing the second hypothesis:

The second hypothesis of this study was formulated as follows:
There is positive effect and relationship between Smart Shopping Applications and Perceived ease of use.

A multiple linear regression analysis was performed to assess the direct impact of Smart Shopping Applications on Perceived ease of use. This statistical method is suitable for evaluating the degree to which fluctuations in the independent variable (Smart Shopping Applications) account for alterations in the dependent variable (Perceived ease of use). The results of this analysis are presented in Table 8.

Table (8): Results of Simple Regression Analysis for Smart Shopping Applications on Perceived ease of use

dependent Variable	Independent Variables	B	Std. Error		T	P-value
Perceived ease of use	Perceived usefulness	0.224	0.075	0.260	2.995	0.003
	Enjoyment	0.038	0.078	0.055	0.491	0.624
	Security	0.222	0.072	0.306	3.069	0.002
	Personalization	0.239	0.067	0.313	3.585	0.000
R= 0.475 R ² = 0.225			F- Value = 24.848 Sig = 0.000			

Source: Statistical analysis results

- The results of the simple regression analysis demonstrate that the model is statistically significant, as indicated by an F-value of 24.848 and a significance level of 0.000. The R-value of 0.475 suggests a strong positive correlation between Smart Shopping Applications on Perceived ease of use, while the R² value of 0.225 indicates that approximately 22.5% of the variation in Perceived ease of use can be explained by the Smart Shopping Applications dimensions included in the model. These findings provide empirical support for accepting H2.

Dr. Basma Tawfik Ahmed

- All three independent variables— Perceived usefulness ($B = 0.224$, $p = 0.003$), Enjoyment ($B = 0.038$, $p = 0.624$), Security ($B = 0.222$, $p = 0.002$), and Personalization ($B = 0.239$, $p = 0.000$)—exhibit a statistically significant positive effect on Perceived ease of use.

Testing the third hypothesis:

The second hypothesis of this study was formulated as follows:
There is positive effect and relationship between Perceived ease of use and Impulsive Purchasing Behavior.

A multiple linear regression analysis was performed to assess the direct impact of Perceived ease of use on Impulsive Purchasing Behavior. This statistical method is suitable for evaluating the degree to which fluctuations in the independent variable (Perceived ease of use) account for alterations in the dependent variable (Impulsive Purchasing Behavior). The results of this analysis are presented in Table 9.

Table (9): Results of Simple Regression Analysis for Perceived ease of use and Impulsive Purchasing Behavior

dependent Variable	Independent Variables	B	Std. Error		T	P-value
Impulsive Purchasing Behavior	Perceived ease of use	0.165	0.064	0.257	2.559	0.011
R= 0.465 R ² = 0.215			F- Value = 23.487 Sig = 0.000			

Source: Statistical analysis results

- The results of the simple regression analysis demonstrate that the model is statistically significant, as indicated by an F-value of 23.487 and a significance level of 0.000. The R-value of 0.465 suggests a strong positive correlation between Perceived ease of use on Impulsive Purchasing Behavior, while the R² value of 0.215 indicates that approximately 21.5% of the variation in Impulsive Purchasing Behavior can be explained by Perceived ease of use included in the model. These findings provide empirical support for accepting H3. Perceived ease of use ($B = 0.165$, $p = 0.011$)—exhibit a statistically significant positive effect on Impulsive Purchasing Behavior.

Testing the fourth Hypothesis:

To evaluate the fourth hypothesis, Structural Equation Modeling (SEM) was utilized using AMOS, a sophisticated statistical instrument intended to analyze intricate interactions among various variables. Structural Equation Modeling (SEM) is very effective for analyzing both direct and indirect effects, rendering it ideal for assessing mediation effects in this research. The objective is to ascertain if perceived ease of use mediates the link between smart shopping application and impulsive purchasing behavior, hence verifying the suggested conceptual framework.

The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using AMOS. The mediation study will evaluate the direct pathways and the indirect influence of smart shopping application on impulsive purchasing behavior via perceived ease of use. Critical statistical metrics, such as path coefficients (β), R^2 values, t-statistics, and p-values, will be analyzed to assess the robustness and significance of these associations. Should the mediation effect prove substantial, it would provide empirical proof that perceived ease of use is pivotal in directing the influence of smart shopping application on impulsive purchasing behavior. The results of this analysis are presented in Table 10.

Table (10): Results of Analysis for smart shopping application on impulsive purchasing behavior and mediating of perceived ease of use

dependent Variable	Independ ent Variables	B	Std. Error	T	P-value	Direct impact	Indirect impact	Total impact
perceived ease of use	smart shopping application	0.372	0.048	7.76	0.000	0.405	0	0.372
impulsive purchasing behavior	smart shopping application	0.612	0.028	22.24 9	0.000	0.154	0.138	0.751
	perceived ease of use	0.375	0.031	12.02 4	0.000	0.682	0	0.375

Source: Statistical analysis results

Dr. Basma Tawfik Ahmed

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- The regression analysis results provide strong evidence of the impact of smart shopping application on perceived ease of use and impulsive purchasing behavior. The first model shows that smart shopping application have a significant positive effect on perceived ease of use ($B = 0.372$, $p = 0.000$).
 - Regarding impulsive purchasing behavior, smart shopping application exhibit a significant direct effect ($B = 0.612$, $p = 0.000$) and a total impact of 0.751, which includes both direct (0.154) and indirect (0.138) effects mediated by perceived ease of use. The significant positive relationship between perceived ease of use and impulsive purchasing behavior ($B = 0.375$, $p = 0.000$) confirms the mediating role of perceived ease of use. The following table shows the model goodness for the previous model

Table (11) model Goodness-of-Fit Measures

	R-square	R-square adjusted
perceived ease of use	0.137	0.135
impulsive purchasing behavior	0.686	0.684

The Goodness-of-Fit Measures indicate the explanatory power of the regression models. The R-square value for perceived ease of use (0.137) suggests that smart shopping application explain 13.7% of the variance in perceived ease of use, indicating a moderate but meaningful impact. In contrast, the R-square for impulsive purchasing behavior (0.686) demonstrates that the model explains 68.6% of the variance in impulsive purchasing behavior, suggesting a strong predictive ability. The adjusted R-square values (0.135 and 0.684, respectively), which account for the number of predictors, show minimal reductions, reinforcing the robustness of the models. These results confirm that while smart shopping applications has a moderate direct influence on perceived ease of use, its impact on impulsive purchasing behavior is significantly stronger.

Dr. Basma Tawfik Ahmed

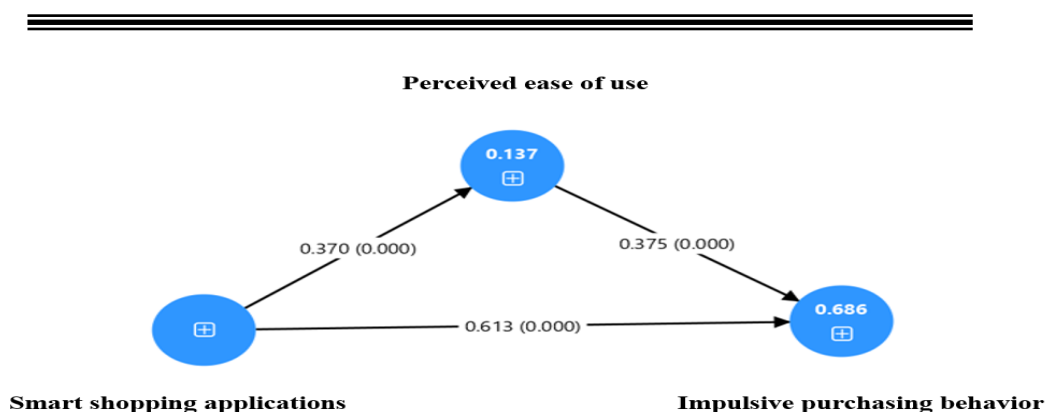


Figure (2): Results of Analysis for smart shopping applications on impulsive purchasing behavior and mediating of perceived ease of use

Research Discussion:

After analyzing 312 questionnaires collected from online users via online surveys, using reliability and validity analysis, then descriptive analysis of the data. The SPSS program was used for regression analysis to study the relationship between variables, as well as the AMOS program for SEM analysis. Based on the results of these analyses, this section will discuss these results for four hypotheses.

Based on the results from the regression analysis and Structural Equation Modeling (SEM), Hypothesis 1 was fully supported. The coefficient was statistically significant at the 0.05 level in the regression analysis and was confirmed by the SEM results, which showed a P-value of 0.000. This demonstrates that the impact of Smart Shopping Applications on Impulsive Purchasing Behavior is both positive and statistically significant. The findings largely aligns with previous research, confirming the significant roles of smart shopping applications in influencing impulsive purchasing behaviour. These findings are consistent with Chopdar et al. (2022), Do et al. (2020), Gupta et al. (2024), and Yıldırım & Bayraktar (2021).

Additionally, Hypothesis 2 was Fully Supported, as the coefficient was statistically significant at the 0.05 level in the regression test result, confirmed by the SEM analysis result with a P-value of 0.000. This confirms that the effect of Smart Shopping Applications on Perceived ease of use is positive and statistically significant. The findings largely aligns with previous research, confirming the significant roles of smart shopping applications in influencing Perceived Ease of Use. These findings are consistent with Azzahra & Kusumawati (2023) and Chaudhry et al. (2023).

Additionally, Hypothesis 3 was Fully Supported, as the coefficient was statistically significant at the 0.05 level in the regression test result, confirmed

Dr. Basma Tawfik Ahmed

by the SEM analysis result with a P-value of 0.000. Furthermore, the results indicate the effect of Perceived ease of use on Impulsive Purchasing Behavior is positive and statistically significant. The findings largely aligns with previous research, confirming the significant roles of Perceived Ease of Use in influencing Impulsive Purchasing Behaviour. These findings are consistent with Himel & Airin (2023), Lee & Chen (2021), LE et al. (2022), and Soomro & Habeeb (2025).

Lastly, Hypothesis 4 was Fully Supported, as the coefficient was statistically significant at the 0.05 level in the regression test result, confirmed by the SEM analysis result with a P-value of 0.000. This indicates that the effect of smart shopping application on impulsive purchasing behaviour through mediating of perceived ease of use is positive and statistically significant. The findings largely aligns with previous research, confirming the significant roles of Smart Shopping Applications in influencing Impulsive Purchasing Behaviour through the mediation role of Perceived Ease of Use. These findings are consistent with Negash et al. (2024) and Trivedi et al. (2022).

Research Conclusion and Limitations:

This research provides a deeper understanding of the mechanisms underlying the relationship between smart shopping apps and impulse buying behavior. By incorporating the mediating role of perceived ease of use, it highlights how perceived usefulness, enjoyment, personalization, and security influence individuals' impulse buying decisions. The research also highlights the importance of perceived ease of use as a mediator between smart shopping apps and impulse buying behavior. It demonstrates that the ease of use of smart shopping apps can enhance the use of smart shopping apps and impulse buying behavior. The findings of this research contribute to the development of more accurate theoretical models of consumer behavior by incorporating the complex interaction between smart shopping apps and impulse buying. Overall, research examining the relationship between smart shopping apps, perceived ease of use, and impulse buying provides valuable insights into the complex relationship of consumer behavior under the influence of modern technologies.

Despite the contributions the current study attempted to achieve, there were some limitations that, if taken into account within the limits of the researcher's knowledge, could provide new insights for future studies. More diverse studies are needed that explore the relationship between smart shopping apps and different types of impulse buying across different demographics and

Dr. Basma Tawfik Ahmed

cultures to build a more comprehensive understanding of this phenomenon. Examining the influence of demographic and psychological factors on the relationship between smart shopping apps and impulse buying behavior is also recommended. The researcher also recommends exploring the role of personal factors such as values and self-identity in moderating the relationship between smart shopping apps and impulse buying behavior. The researcher also sees the need to study these variables in conjunction with other variables such as brand liking, customer experience, gender, perceived risk, and financial well-being.

Recommendations:

In light of the study results, the researcher can make the following recommendations:

- Developers of smart shopping apps should pay attention to perceived ease of use and the steps needed to achieve their goal of enhancing impulse buying behavior among customers and encouraging them to shop via smart shopping apps. The study found a significant positive effect of perceived ease of use on impulse buying. Therefore, researchers recommend that developers of these apps pay attention to the perceived ease of use of smartphone apps.
- Focus on the product display for a longer period of time as customers are more likely to browse the smart shopping app by displaying the product in an attractive way. Videos and 3D screens should be added to display the product, while on the other hand, allowing zooming in images helps the customer to examine the product better. Many shopping apps use only mannequins to display products, while conducting research that customers are not influenced by mannequins and may be inclined to buy products displayed by display hangers if they have sufficient information about these products.
- It's important to pay attention to the online store environment, focusing on making it fun and simple. It's also important to ensure the shopping app is easy to use, as this will encourage customers to browse more. Researchers recommend highlighting promotional banners, which will help attract more customers, and ensuring the app's colors match the brand's and product colors. Adding more colors to the main color theme may also support the app even more.

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