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Factors Influencing Customer Online Purchase Intention and  
the Moderating Effect of Age: An Empirical Study on the  
FMCG Retail Market in Egypt

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## Abstract

The technological advances are incredibly growing, especially mobile applications. For instance, in the Egyptian local market, major developments and changes are occurring in customer behavior, which have disclosed various opportunities in business. Now, the 'fast-moving consumer goods' (FMCG) hold the most market share with the highest rate. Hence, it is crucial to study customer intention to purchase online. The customer perception plays a fundamental role that indirectly influences customers' purchasing intentions through their attitudes. Based on the investigated behavioral models, the technology acceptance model (TAM), the studied variables were the perceived ease of use, perceived usefulness, perceived interactivity, social influence, and online purchase intention. The current survey was administered to 184 mobile app users. Based on the results of the regression analysis of the collected data, two independent variables, perceived ease of use and perceived usefulness, had significantly impacted the online purchase intention of FMCG. While the perceived interactivity and social influence had insignificant impacts on the purchase intention. The moderator variable (age) indicated a significantly negative impact on the online purchase intention as a dependent variable. This research adds value as it focuses on the significant role of customer perception about FMCG mobile apps on online purchase intention.

**Keywords:** Perceived Ease of Use; Perceived Usefulness; Social Influence; Perceived Interactivity; Online Purchase Intention.

## الخلاصة

تزدهر التطورات التكنولوجية الآن بسرعة لا تصدق خاصة في مجال تطبيقات الهاتف المحمول. فعلى سبيل المثال بالسوق المحلية المصرية طرأت تطورات وتغيرات كبرى في سلوك العملاء والتي كشفت عن الكثير من الفرص المختلفة في مجال الأعمال. تتمتع السلع الاستهلاكية سريعة الحركة (FMCG) بأكبر حصة بالسوق وأعلى معدل بيع بالتجزئة. لذا يتم تطبيقها الآن من أجل تكييف المنصات الرقمية في العمليات التجارية. فإنه من الأهمية القصوى القيام بدراسة نية الشراء عبر الإنترنت للعملاء. يلعب تصور العملاء دورًا حيويًا لأنه يمكن أن يؤثر بشكل غير مباشر على نوايا الشراء لدى العملاء من خلال مواقفهم. واستنادًا إلى النماذج السلوكية (TAM) فإن العوامل التي تم دراستها هي الفائدة المتصورة، وسهولة الاستخدام المتصورة، والتفاعلية المتصورة، والتأثير الاجتماعي ونية الشراء عبر الإنترنت. وقد تم إجراء مسح على 184 من مستخدمي تطبيق الجوال. ووفقًا لتحليل الانحدار للبيانات والتي تم الحصول عليها، استنادًا إلى نتائج تحليل الانحدار للبيانات التي تم جمعها، كان هناك متغيرين

مستقلين، وهما الفائدة المتصورة، وسهولة الاستخدام المتصورة، قد أثرا بشكل كبير على نية الشراء عبر الإنترنت للسلع الاستهلاكية سريعة الحركة. بينما كان للتفاعلية المتصورة، والتأثير الاجتماعي تأثير غير معنوي على نية الشراء. أما بالنسبة للمتغير الوسيط (العمر) فيشير إلى وجود تأثير سلبي كبير على نية الشراء عبر الإنترنت كمتغير تابع. هذا البحث قام بإضافة قيمة حيث أنه قام بالتركيز على ذلك الدور المهم الذي يلعبه في التأثير على تصور العملاء لتطبيقات الأجهزة المحمولة الخاصة بالسلع الاستهلاكية سريعة الاستهلاك في نية الشراء.

## 1. Introduction

Online shopping has become a basic necessity of customers' daily lives, which in turn is significantly influencing their purchasing behavior (Lee et al., 2024). Also, this increases the expectations (Al Mughairi et al., 2024), specifically "the mobile shopping apps," which improve transaction services and purchase operational efficiency for customers. The Egyptian market has been significantly affected by the COVID-19 pandemic, which has considerably changed the customers' purchasing behavior as well as many other industries, especially the Fast-Moving Consumer Goods (FMCG) or Consumer Packaged Goods (CPG) sector (Adel Fakhry et al., 2023). In addition, facing a huge change within the recent years, this is due to the high apps' penetration. This actually offers new opportunities and increases the competitiveness of different retail businesses. The FMCG sector has undergone a substantial shift in the customer preferences and demands. This has led to forcing the FMCG businesses to adapt their strategies and enhance their services to boost sales and profitability. This is in addition to sustaining the online marketplace and to have a competitive edge (Senachai & Julagasigorn, 2024). The online purchase intention (OPI) is essential for achieving these aspects because it helps in promoting the expansion of online retail (Le et al., 2024). Customer perception plays an important role in influencing the purchase intention as it can directly affect customers' purchasing behavior by shaping their behavior (Le et al., 2024). The relationship between online customer perceptions and purchase intentions has been extensively investigated. However, previous research has often shown customer perception as an independent variable when studying its impact on purchase intention (Wang et al., 2023; Le et al., 2024; Abdelmonem et al., 2024). The customer perceptions are found to be related to many factors, such as social influence and interactivity, which influence their intention to purchase. With the widespread usage of mobile apps, the social influence can be

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identified as “a core variable influencing customer intention to use new technology” (Liang, 2024).

The problem statement of the current study: The rapid penetration of online shopping platforms with challenges and opportunities, specifically in mobile applications, has significantly changed customer behavior, especially within the fast-moving consumer goods (FMCG) sector. This sector is characterized by a highly competitive, intense market that is sold quickly and at relatively low cost and high customer demand. FMCG is the most retail sector with low margins and high sales volume (Mulyawan et al., 2022). Businesses invest heavily in the digital presence, such as mobile apps, making it crucial for them to quickly adapt and understand how digital transformation can impact the customers' online purchase intentions. So, it's important to understand and recognize how customers perceive them to differentiate themselves and improve sales and profitability, in addition to having a competitive advantage in influencing the customers' purchasing intentions and eventually influence the customers actual purchases (Stocchi et al., 2021).

Moderator variables are commonly employed in empirical studies of customer purchase intention behaviors. Recently, a study age as a moderator on the retailing sector and customer behavior shows how moderators can produce a deeper understanding of the trend researched. Understanding the impact of age on online platforms is vital, especially as technology becomes more available to customers of different ages. However, there is a significant gap in understanding how customers' perceptions, moderated by age, affect their intentions to use mobile applications for FMCG purchases (Stocchi et al., 2021). As such, the study suggests the following research question. How does age influence online purchase intention?

The objectives of this study are as follows: how customer perception impacts online purchase intentions, specifically age-moderating within the context of FMCG Egyptian mobile application users. The current research also discovered how the correlation between customer perceptions and online purchase intention is linked to age-moderating factors on the platform of FMCG mobile applications.



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## 2. Literature Reviews

This section was classified into the following two broad categories: (i) theoretical definitions and (ii) previous studies.

### 2.1 Theoretical Definitions

The following section explains the dependent, and independent variables, the TAM model, and the age as a moderator variable.

#### 2.1.1 Customer Perception

Perception is “a process of recognition and interpretation of environmental stimuli through human senses: vision, hearing, taste, smell, and touch.” In other words, perception means a cognitive contact with the surrounding environment (Le et al., 2024). Customer perception includes the customer's impression, awareness, and consciousness regarding how they perceive the online business entity marketed (Singh & Srivastava, 2022).

##### 2.1.1.1 Perceived Ease of Use

Perceived ease of use (PEOU) is defined as “the degree to which a person believes that using a system would be free of effort” (Qing & Jin, 2022). PEOU is one of the essential variables of the TAM model that has a significant role in influencing the acceptance of new technology. In the field of FMCG mobile application shopping, PEOU means the overall physical and mental effort (Le et al., 2024). In the context of this study, to measure PEOU, there are four indicators, which are clear and understandable, easy to learn, effortless, and easy to operate, which indicates how convenient and easy it is to navigate platform apps (Suryatenggara & Dahlan, 2022).

##### 2.1.1.2 Perceived Usefulness

Perceived usefulness (PU) is the customer perception that adopting a given technology will enhance the task performance (Gelaw et al., 2023). In the

following online mobile application shopping, PU means the perception of the positive effects of using a technological system for meeting performance expectations and adding value (Nga & Tam, 2024). In the context of the FMCG retail sector on mobile applications, there are four indicators to measure PU: enhancing the shopping performance, convenience, and decreasing the time needed for the purchasing processes with higher accuracy and efficiency (Mohd Tanos et al., 2024).

### **2.1.1.3 Perceived Interactivity**

Mobile apps' perceived interactivity (PIN) is defined as users' psychological impression of a system with convenient, efficient service, perceived responsiveness, and real-time interactions (Jiang et al., 2021). Moreover, responsiveness means "the accuracy and relevance of responses provided after the application to resolve issues faced by users" (Kumari, 2022). Online interactivity is such as two-way communication with automated responses to user-resolved queries in a relatively short time. This study has examined the interactions between customers and the customer service representatives of a mobile application. The perceived responsiveness and two-way communication on online customers' purchase intentions were also investigated (Jia et al., 2022).

### **2.1.1.4 Social Influence**

Social influence (SI) refers to "the extent to which consumers perceive that other (e.g., family and friends) believe they should use a particular technology." In other words, users change their behavior due to the direct or indirect influence of social media pressure (Abbas et al., 2022). However, the current study examined the effect of SI on online purchase intention. SI is measured using three indicators: the first indicator is the views of people who are using the mobile apps; the second indicator is family and friends; and the third indicator is social media recommendations (Rizkalla et al., 2024). SI includes subjective norms, social factors, and perceptions of TRA and TAM2. These aspects can reflect that individuals are mainly affected by the others' behaviors based on opinions or because they identify with social norms and social media (Abegao Neto & Figueiredo, 2022).

### **2.1.1.5 Online Purchase Intention**

Purchase intention is “a component of a customer's cognitive behavior or the customer’s willingness or preference for purchasing a specific product or service” (Puriwat & Tripopsakul, 2021). Online purchase intention (OPI), originating from purchase intention, refers to the desire or willingness to carry out specified purchasing behavior via the Internet or online shopping carts (Le et al., 2024). In the context of this study, the online purchase intention indicates the extent to which customers are intending in their future online purchases to use mobile apps’ platforms to purchase FMCG products or services.

### **2.1.2 Technology Acceptance Theory**

The Technology Acceptance Model (TAM) is one of the most influential models used to determine customer adoption of new technology. The model evaluates the variables as a predictor of online purchase intentions, which is used to explain how perception will affect the intention to use technology, such as shopping applications (Abegao Neto & Figueiredo, 2022; Ghosh, M. 2024). The variables include PU and PEU of technology, which directly influence purchase intention (Nguyen et al., 2023). TAM implementation should be continuous rather than one time. This would capture the factors of customer attitudes and perceptions about adopting new technology systems (Le et al., 2024).

### **2.1.3 The Moderator Effect of Age**

As a demographic characteristic, age plays a crucial role in predicting individuals’ behavior, which has directly affected technology adoption and acceptance. Some researchers use age as one of the variables explaining customer online shopping, specifically on the customer’s online purchase intention (Abegao Neto & Figueiredo, 2022; Jin et al., 2024). Age is studied in marketing to categorize the target markets into customer segments using the term "generation," referring to the age groups. Age moderates the relationship of attitude, intention, and influence, which is more on young users to utilize mobile apps (Chawla & Joshi, 2020). Another study has shown an age gap between young individuals who use mobile applications and those who are new to using the mobile applications (Rybackzewska & Sparks, 2021). Regarding



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mobile app usage, the younger generations are significantly affected by both PU and PEU (Liu & Tang, 2022). The digital literature has evidenced that Generation Z is the most preferring to shop online compared to other generations (Abdelmonem et al., 2024).

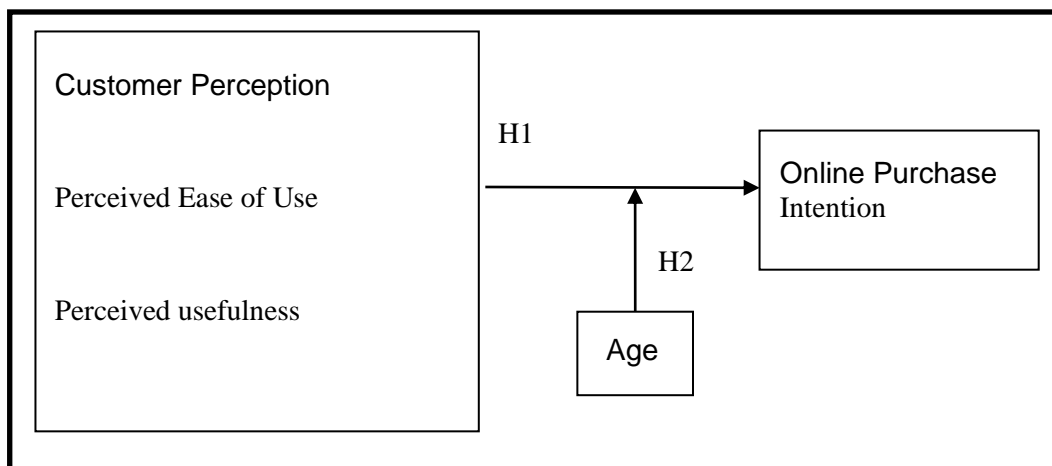
## 2.2 Previous Studies

Relationships between customers' perceptions and online purchase intentions have been studied from different directions. In a study by Joshi (2021), there's a significant relationship between customer perception and digital marketing of FMCG in India. Abdelmonem et al. (2024) and Mulyawan et al. (2022) have examined how digital platforms change customers' ways of purchasing FMCG products via online mobile app platforms. The factors of easy access and effortless use positively influence customer perceptions and OPI. A previous study by Phetnoi et al. (2021) investigated how the variables PEU, PU, and SI significantly influenced online purchase intention. Additionally, the study of Bailusy et al. (2022) examined how customers' perceptions significantly impacted online shopping in Indonesia. The variables were the ease of use, usefulness, self-efficacy, personalization, and responsiveness and their effect on purchase intention.

Parmar & Ghelani (2022) found in their research that both PU and SI have positively influenced customers' purchase intentions. Setyoadi & Rahmawati (2024) evaluated the same variables influencing customers to switch from online shopping to mobile retail applications. Other studies have revealed that TAM can be used to evaluate the intention of adopting an online shopping application. Several studies have consistently proven TAM validity in which PU, PEOU, and SI have a direct influence on purchase intentions (Kelly & Palaniappan, 2023; Musakwa & Petersen, 2023). Other investigators stated that the usefulness of mobile apps increases customers' willingness to adopt technology by influencing customers' traffic and driving customers' purchase intention of mobile applications (Handayani & Puspitasari, 2023). Our study result indicated that perceived interactivity can significantly impact online purchase intentions in live-stream commerce (Joo & Yang, 2023).

### 3. Research Methodology and Hypothesis

This section presents the research model, testing hypotheses, variables' measurements, population, sampling, reliability assessment, and descriptive statistics. Figure (3.1) presents the research framework, where the independent, and dependent variables and the moderator are presented.



**Figure (3.1) Research Model**

#### 3.1 Research Hypothesis

H1 The customer perception of online shopping platform applications has a significant impact on purchasing intention (OPI).

H1a: There is a significant impact of perceived ease of use on online purchasing intention (OPI).

H2b: There is a significant impact of perceived usefulness on online purchasing intention (OPI).

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H1c: There is a significant impact of perceived interactivity on online purchasing intention (OPI).

H1d: There is a significant impact of social influence on online purchasing intention (OPI).

H2: There is a significant impact of consumer perception of online shopping platform applications on online purchasing intention (OPI) moderated by age.

### **3.2 Measurements**

This explanatory research aimed to explain the relationship between variables using a quantitative approach. A systematic self-administered questionnaire using Google Forms was posted through social media platforms. The respondents in the study were mobile retail application users; all variables were operationalized. The first section of the survey asked open questions regarding the respondents' usage. The Likert Scale Questions (18 questions): Participants were asked to rate their agreement on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The questionnaire had three main sections. The first part is the introduction part that starts with a question, according to Gupta (2022), to select the appropriate sample to answer the questionnaire as follows: Have you ever tried a retail application for shopping? The second section is the main part, which tested the relationship between the independent and dependent variables based on the Likert scale as shown in table (3.1). Finally, the third section, which included demographic questions about the user age to know more about the participants if it is below 18, from 21-30, from 31-40, or above 40 (Khare & Sarkar, 2020).

**Table (3.1) Measurement indicators of consumer perception and online purchase intention**

Variables	Items	References
Perceived Ease of use	<ol style="list-style-type: none"> <li>1. Mobile apps are easy to use.</li> <li>2. The interaction with the mobile application is very simple and easy to understand.</li> <li>3. Learning how to operate a mobile app is very easy.</li> <li>4. It is simple to compare products and prices.</li> </ol>	<p>(Hanjaya et al., 2019) (Purba &amp; Setyaningrum, 2022)</p>
Perceived usefulness	<ol style="list-style-type: none"> <li>1. Using the mobile phone apps for shopping enables me to accomplish shopping tasks more quickly.</li> <li>2. Using mobile phone apps for shopping improves the performance of my shopping tasks.</li> <li>3. Using mobile phone apps for shopping improves the quality of my shopping task.</li> <li>4. Using mobile phone apps for shopping increases the productivity of my shopping tasks.</li> <li>5. Mobile apps allow me to perform various tasks more easily and conveniently.</li> </ol>	<p>(Aslam et al., 2021) (Khare &amp; Sarkar, 2020) (Coelho.,2022) (Vo &amp; Wu, 2022)</p>

Perceived interactivity	<ol style="list-style-type: none"> <li>1. The application has the ability to respond to my specific questions efficiently.</li> <li>2. The application quickly responds to my input.</li> <li>3. The application facilitates two-way communication.</li> </ol>	(Lu et al., 2019) (Kumari, 2022)
Social influence	<ol style="list-style-type: none"> <li>1. I would adopt apps based on friends' and relatives' perspectives.</li> <li>2. I would adopt apps based on individuals who influence my behavior.</li> <li>3. I started using a mobile application by seeing ads on social sites.</li> </ol>	(Wu et al., 2022) (Raikwar & Bhagat, 2020) (Gunawan et al., 2023)
Online purchase intention	<ol style="list-style-type: none"> <li>1. I intend to use it as it can accomplish my target shopping quickly.</li> <li>2. I expect to continue to use the app in the future.</li> <li>3. Given the chance, I intend to shop using a mobile phone app.</li> </ol>	(Lu et al., 2019) (Chakraborty et al., 2022) (Vo & Wu, 2022)

### 3.4. Population and Sample Techniques

The population of the current study is customers who are purchasing FMCG products from mobile applications in Egypt. The target population in this research is customers aged 18 years and above who have used mobile applications for shopping. Sample Size: The sample size chosen for this study is 184 questionnaires collected through online surveys.



### 3.5 Reliability Assessment

For reliability assessment, Cronbach's Alpha was calculated for this questionnaire. This test is used for checking the reliability of the data collected for different variables taken in this model. The value of Cronbach's Alpha determines the reliability of the data; 0.70 or above is regarded as acceptable. Here, the value of Cronbach's alpha for all the variables is greater than 0.7, which shows the used instrument and the collected data are reliable and appropriate for further tests. This study's results are shown below:

**Table (3.2) Cronbach's alpha coefficients**

Independent Variables	Alpha	Statistical Decision
Online purchase intention	0.814	Greater than 0.70 (Reliable)
Perceived ease of use	0.788	Greater than 0.70 (Reliable)
Perceived usefulness	0.723	Greater than 0.70 (Reliable)
Perceived interactivity	0.765	Greater than 0.70 (Reliable)
Social influence	0.719	Greater than 0.70 (Reliable)

As a result, the items have been checked for reliability, showing the Cronbach's Alpha result for 5 variables. These results indicate that all variables have good internal consistency with Cronbach's Alpha from 0.719-to-0.814.

### 3.6 Descriptive Analysis

Descriptive statistics describe particular data of the properties concerning 184 Egyptian mobile app users in the following table: **Table (3.3) Descriptive Analysis**

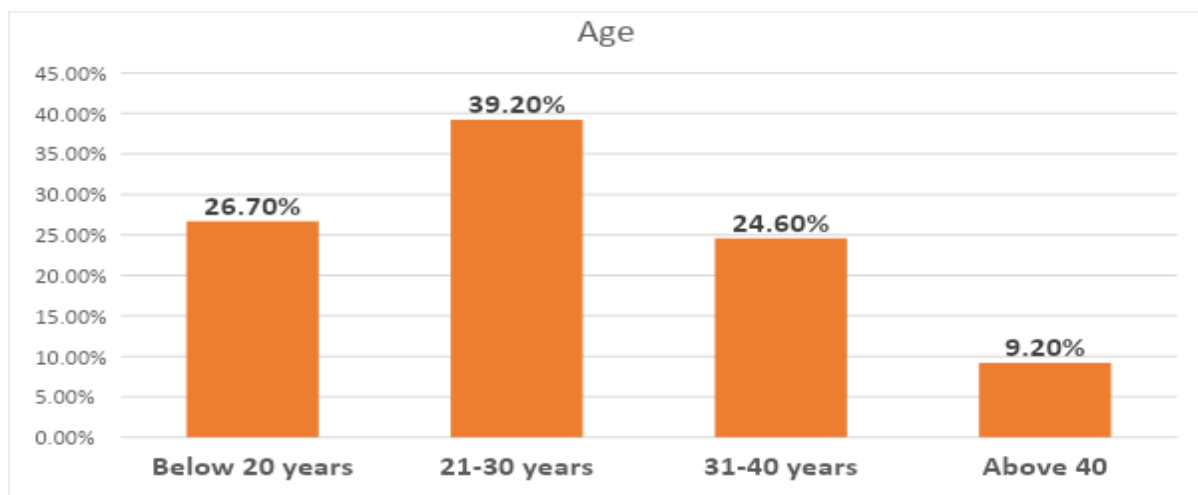
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Online purchase intention	184	10.00	15.00	13.1630	1.65808
Perceived ease of use	184	16.00	20.00	17.7717	1.36789
Perceived usefulness	184	20.00	25.00	23.3207	1.12615
Perceived interactivity	184	10.00	14.00	13.4293	.92648
Social influence	184	11.00	15.00	13.4837	1.27170
Valid N (listwise)	184				

- For the dependent variable (the online purchase intention), the minimum value = 10 and the maximum value = 15, and the mean = (13.16) with a standard deviation = (1.65).
- For the first independent variable X1 (PEU), the minimum value = 16, the maximum value = 20, and the mean = (17.77) with a standard deviation = (1.36).
- For the second independent variable X2 (the perceived usefulness), the minimum value = 20, the maximum value = 25, and the mean = (23.32) with a standard deviation = (1.126).
- For the third independent variable X3 (the perceived Interactivity), minimum value = 10, and the maximum value = 14 and Mean = (13.42) with standard deviation = (0.92).

- For the fourth independent variable X4 (the social Influence), minimum value = 11, and the maximum value = 15 and Mean = (13.48) with standard deviation = (1.27).

### 3.7 The Frequency Distribution of Age (as moderator variable)

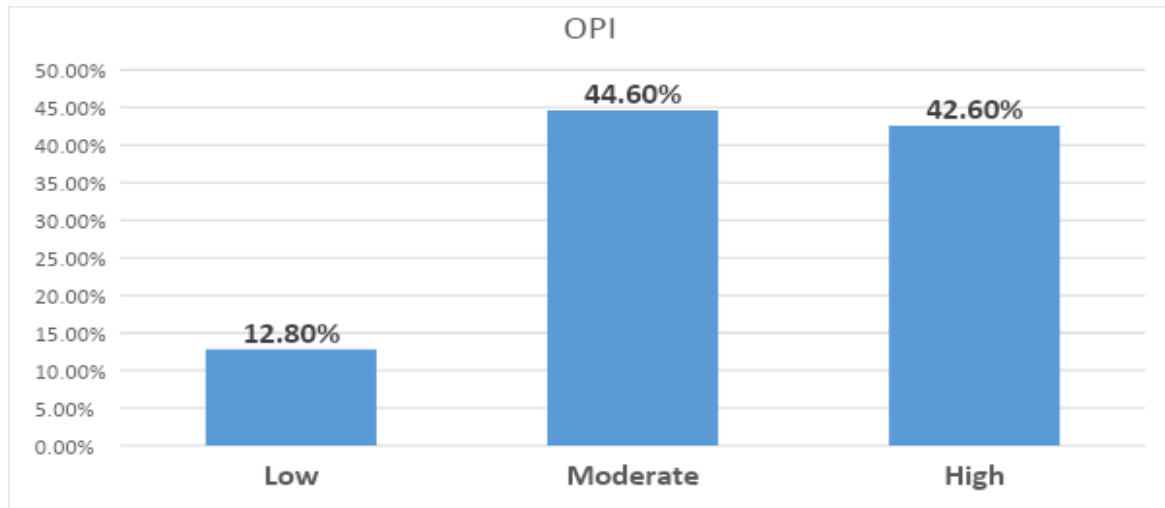
Of the 184 customers who participated in the survey, the surveyed respondents were primarily young consumers in the 21–30 age group.



**Figure (3.1): The Frequency Distribution of Age**

The questionnaire was distributed to respondents of different age groups to determine the distribution percentage of the customers' age groups who responded to the given questionnaire. As shown in figure 4.2, the frequency of age distribution: 26.70% of the studied sample were under 20 years, 39.20% of the studied sample were 21–30 years, 24.60% of the studied sample were 31–40 years, and finally 9.20% of the studied sample were above 40. These results reflected that the majority of the customers' purchase intentions of the respondents were between 21 and 30 years old.

### 3.8 The Frequency Distribution of Online Purchases Intention



**Figure (3.2):** The frequency distribution of OPI.

The figure showed that the purchase intention of respondents representing 12.80% of the studied sample is low, with respondents representing 44.60% of the sample classified at the moderate level of purchase intention. Finally, respondents representing 42.60% of the sample were categorized at a high level of purchase intention. This result indicated that the moderate and high levels represent 87%, which means the customers with high intention to purchase online were categorized.

#### 4. Testing Research hypothesis:

Hypothesis testing is a statistical method to investigate whether the results of a study support a particular hypothesis about a population.

##### 4.1. Multiple Regression linear Analysis

H1: There is a significant impact on consumer perception of online shopping platform applications on purchasing intention (PI).

**Table (4.1):** ANOVA analysis between Dependent Variable and predictors

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	183.402	4	45.851	25.671	.000 <sup>b</sup>
	Residual	319.706	179	1.786		
	Total	503.109	183			
a. Dependent Variable: OPI						
b. Predictors: (Constant), X4, X2, X1, X3						

The F value (25.671) was calculated as the mean square regression is (45.851) / mean square of the residual (1.786) and the significant studied equation is (0.000), (less than 0.01) and it is statistically accepted with confidence interval of 99%.

#### Table (4.2): Model Summary

##### Dependent Variable and predictors

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604 <sup>a</sup>	.365	.350	1.33644
a. Predictors: (Constant), X4, X2, X1, X3				



- Multiple correlation R is equal to 0.604 and R square is equal to 0.365, so the independent variables explain about 36.5 % of the variance of the Online Purchase Intention as the dependent variable and the unexplained variance is equal to 63.5 %.

**Table (4.3): Coefficients analysis of Dependent Variable and predictors**

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.435	2.353		.610	.543
	X1	.698	.077	.576	9.058	.000
	X2	.242	.113	.135	2.145	.033
	X3	.247	.131	.168	1.881	.062
	X4	.014	.093	.013	.146	.884
a. Dependent Variable: OPI						

- The first independent variable X1 (Perceived Ease of Use) indicates the B value is 0.698 with a standard error of 0.077 and the t value equals 9.058 and significant at 0.000 (less than 0.01). So, the Perceived Ease of

Use significantly impacts the Online Purchase Intention as a dependent variable. Accordingly, the H1a hypothesis is accepted.

- The second independent variable X2 (Perceived usefulness) is 0.242. The B value has a standard error of 0.113, and the t value is equal to 2.145 and significant at 0.033 (less than 0.05). So, the perceived usefulness significantly impacts online purchase intention as the dependent variable. Accordingly, the H1b hypothesis is accepted.
- The third independent variable X3 (Perceived Interactivity) indicates the B value is 0.247 with a standard error of 1.803 and the t value equal to 1.881 and Significant at 0.062 (greater than 0.05). So, perceived interactivity has an insignificant impact on online purchase intention as the dependent variable. Accordingly, the H1c hypothesis is not accepted.
- The fourth independent variable X4 (Social Influence) indicates the B value is 0.014 with a standard error of 0.093 and the t value equals 0.146, and significant at 0.884 (greater than 0.05). So, social influence has an insignificant impact on the online purchase intention as the dependent variable. Accordingly, the H1d hypothesis is not accepted.

#### **4.2 Results of the Analysis of Moderating Effects**

H2: There is a significant impact on consumer perception of online shopping platform applications on purchasing intention (PI) that is moderated by age. Hierarchical multiple regression was utilized to examine the second hypothesis, which determines if the variables of interest significantly account for variance in the dependent variable (DV) after accounting for the effects of the moderator variable. This is a framework for model comparison rather than a statistical method. In this framework, our study has built regression models by adding variables to a former model at each step; the earlier models included smaller models in previous steps. This study's major aim was to evaluate whether the additional variables significantly improve the R-squared, reflecting the amount of variance in the DV (OPI) that the model explains.

The hierarchical regression predictors are entered in blocks, each one represents a step in the modeling process. The researcher decided the order in which predictors are introduced based on theoretical considerations. The first block contains moderator variables, which are controlled to account for their variability. This structured approach allows researchers to account for the variability of the control variables by removing it before analyzing the relationship between the predictors and the outcome.

**Table (4.4): ANOVA analysis predictors and Gender as moderator**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	183.402	4	45.851	25.671	.000 <sup>b</sup>
	Residual	319.706	179	1.786		
	Total	503.109	183			
2	Regression	266.932	5	53.386	40.236	.000 <sup>c</sup>
	Residual	236.177	178	1.327		
	Total	503.109	183			
a. Dependent Variable: OPI						
b. Predictors: (Constant), X4, X2, X1, X3						
c. Predictors: (Constant), X4, X2, X1, X3, Age						

Table (4.4) shows the overall model statistics. The first model is illustrated with only the studied independent variables. Obviously, this model has an insignificant F value (25.671), and the significant studied equation is 0.000 (less than 0.01). It is statistically accepted with a confidence interval of 99%. The

second model included the studied independent variables with Age. The F value (40.236), and the significant studied equations were 0.000 (less than 0.01), and it is statistically accepted with a confidence interval of 99%

**Table (4.5): Regression results of predictors and Gender as moderator**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604 <sup>a</sup>	.365	.350	1.33644
2	.728 <sup>b</sup>	.531	.517	1.15188
a. Predictors: (Constant), X4, X2, X1, X3				
b. Predictors: (Constant), X4, X2, X1, X3, Age				

- For the first model, the multiple correlation R is equal to 0.604 and the R Square is equal to 0.365, so the independent variables explain about 36.5 % of the variance of the Online Purchase Intention as the dependent variable and the unexplained variance is equal to 63.5 %
- For the second model, the multiple correlation R is equal to 0.728 and R Square is equal to 0.531, so the independent variables explain about 53.1%. This indicates that the change in the value of R square is equal to 16.6%. This confirms that the effect of the age variable on the studied model has a significant effect in terms of changing the value of F as well as the value of the R-square or the coefficient of explained variance. Accordingly, the second hypothesis is accepted.

**Table (4.6): Coefficients of predictors and Gender as moderator**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.435	2.353		.610	.543
	X1	.698	.077	.576	9.058	.000
	X2	.242	.113	.135	2.145	.033
	X3	.247	.131	.168	1.881	.062
	X4	.014	.093	.013	.146	.884
2	(Constant)	.374	2.041		.183	.855
	X1	.619	.067	.511	9.215	.000
	X2	.280	.097	.157	2.878	.004
	X3	.179	.113	.122	1.581	.116
	X4	.047	.081	.045	.584	.560
	Age	-1.068	.135	-.424	-7.934	.000

a. Dependent Variable: OPI

For the moderator variable (age), it indicates the B value (-1.068) with standard error 0.135, the t value equal to -7.934 and significant at 0.000 (less than 0.01). So, the age as moderator variable has a significant negative impact on the



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online purchase intention as the dependent variable. Accordingly, the H2 hypothesis is accepted.

## 5 Research Conclusions and Discussion

The current study investigated the effect of customer perception variables on online purchase intention via FMCG mobile apps in the Egyptian marketplace. A quantitative approach was used as well as convenience samples for data collection from customers. Overall, statistical analysis findings supported all the proposed hypotheses. This result shows empirical support for the TAM model variables that perceived ease of use and usefulness both have significant impacts on online purchase intention of FMCG through mobile apps. The (H1a) hypothesis result is in line with previous research conducted by Yuen et al. (2022) and Le et al. (2024). PEOU showed that customers are confirming the following: the lower effort means higher value for them; therefore, they have a positive attitude toward using technology (Ju et al., 2022).

The second hypothesis (H1b) validates this finding about perceived usefulness having significant impacts on customers' OPI of FMCG through mobile apps. This is also the logic, as the adoption of mobile applications increases the overall users' purchasing efficiency in terms of usefulness and more straightforwardness of the application in terms of ease of use. This is indicating that the easier the mobile app, the higher the intention that the customer will adopt it to purchase (Jaska et al., 2024).

The following result is about the relationship between perceived interactivity and online PI. This showed that perceived interactivity has an insignificant impact on OPI, which indicates customers of mobile apps are not much familiar with or aware of the technology interactivity. So, this hypothesis result (H1c) is not significant. This result is also in line with previous research that has investigated virtual interactivity. The results showed that it had an insignificant impact on customer PI (Jia et al., 2022; Pang & Ruan, 2024).

The hypothesis (H1d) results showed that SI can insignificantly impact OPI. Our study results showed that SI had an insignificant impact on performance expectancy and continuous intention (Chen et al., 2021). Also, study results indicated the insignificant impacts of social influencers on users' behavioral intentions toward FinTech services (Bajunaied et al., 2023). Another study found that SI did not affect the behavior intention of online shopping (Nuswantoro et al., 2024).

Age has been identified to have a moderating effect on customers' perceptions. Also, purchase intention had negatively significant moderation effects of age on the purchase intention relationship; this means that when customer age increases, the effect on OPI decreases, while when the age decreases, the effect on OPI increases. The findings of the study found that the technology adoption demonstrates older customers, due to their limited exposure to new technology, mobile applications, and the internet, have lower perceptions of self-efficacy learning internet services and less access to technologically innovative or perceived apps that are difficult to use it compared to younger users who behave differently as compared to their counterparts (Harnadi et al., 2024). Age moderation analysis in another study showed that age has a mediating effect on relationships between perceived usefulness and the attitude towards mobile app use (Vahdat et al., 2020). Therefore, the results of this study have shown the effect of customer perception on online purchase intention through mobile apps in the increasingly mobile app marketplace in Egypt.

### 5.1. Academic Implications

In developing countries' markets such as Egypt, the influence of mobile apps on customer purchase intentions is newly emerging. Therefore, this study is significant for scholars as it contributes to the fields of online shopping through mobile apps and purchase intention by exploring how customer perception affects online purchase intentions through the variables in a developing context.

The results of this study offer several important implications. Firstly, they highlight the significant role of customer perception and its impact on

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purchasing intention in business and underscore its effectiveness in the target audiences. Additionally, the findings explain how businesses can enhance TAM factors and social influence, which have a significant impact on increased sales and provide a competitive advantage for businesses. Finally, it suggests that the importance of mobile apps is expected to rise as technology and customer purchase behaviors continue to evolve in the online shopping era.

## 5.2. Practical Implications

In the competitive business landscape of today, online shopping marketing must be to stay competitive. Businesses that use mobile apps for online shopping must effectively leverage online platform channels to reach their target customers, build superior value, and deliver a unique experience, as a result impact the purchase intentions.

Improving TAM elements: Research proved that perceived ease of use and perceived usefulness had significantly impacted online purchases' intention towards mobile app use. However, the current study results showed that only two practicality variables significantly affected purchase' intentions. Therefore, there's a suggestion that app developers should be up to date and enhance potential users' perceptions of ease of use and usefulness by focusing on user experience and effectively communicating these qualities. Therefore, they should highlight aspects like customers' expectations of effort, which should be clear with an easy purchasing experience (Vahdat et al., 2020). Also, the current study findings proved that age plays a moderating role in the relationship between customer perception and purchasing intention. So, marketers should maintain plans for improving marketing strategies and designing apps targeting young generation users according to their expectations, as well as the findings for both females and males are relevant. Promoting social influence has a greater influence on customer intention towards using mobile apps; hence, makers of mobile apps should work on encouraging customers to share their thoughts and experiences on social media. In order to influence customers' perspectives, managers should also make an effort on social media influencers' platforms.

### **5.3. Research limitations**

This study was in the FMCG sector; other studies can test the same model in different sectors. This research only focuses on specific variables, while future studies take into account more variables that enhance the continuity to follow technological development to optimize more data and affect the actual purchase intention.

### **5.4. Conclusion**

This research examined the impact of customer perception and its impact on online purchase intention using mobile apps for online shopping within the Egyptian users. This research examined the five hypotheses in the FMCG sector. Based on the descriptive statistical approach, all variables show a high perception of consent from respondents except perceived interactivity and social influence, which need to be improved. As well as the moderator effect, it indicates that when age increases, the OPI decreases and vice versa. Which means businesses should focus more on the role of age, as a younger group leads to having more positive online purchase intention.

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