Examining The Impact of Customer Satisfaction on Customer lifetime Value: The Mediating Role of Customer Loyalty and Retention: Empirical Analysis of E-Commerce Practices in the Egyptian Market

"دراسة تأثير رضا العملاء على القيمة الدائمة لهم
تحليل تجريبي لممارسات التجارة الإلكترونية في السوق المصري"

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Abstract

With the growth of competitiveness and the diversity of its mechanisms, along with the rapid and easy flow of information and technology, and the increasing expectations and power of customers, remaining competitive is no longer about who reaches the market faster or who has lower production costs. It is about who possesses a sustainable competitive advantage that enables them to acquire customers and convert them into equity of the organization. This is achieved not only by increasing the organization's market share but also by enhancing customer retention.

This necessitates transforming traditional organizational structures, which are often based on brand and product foundations, into modern, flexible structures that facilitate effective customer management. Performance is evaluated and measured by these structures based on the organization's ability to increase the value of its customer portfolio. Thus, the customer becomes a future measure of ownership rights, which in turn reflects the long-term value of each customer, considered one of the most important outcomes of competitive advantage for organizations. The current study aims to explore the impact of customer satisfaction, customer loyalty, and customer retention on customer lifetime value, maximizing customer lifetime value as a result of sustainable competitive advantage. A quantitative study was conducted to test the proposed conceptual model using a structured equation modelling analysis with a sample of 384 Amazon customers. The results confirm a significant positive correlation between the research variables.

Key words

Customer lifetime Value, Customer Loyalty, Customer Retention, Customer Satisfaction, E-Commerce.

الملخص

مع تزايد حدة المنافسة وتنوّع آلياتها، إلى جانب التدفق السريع والسهل للمعلومات والتكنولوجيا، وارتفاع توقعات العملاء وزيادة قوتهم، لم يعد البقاء في بيئة تنافسية يعتمد فقط على سرعة الوصول إلى السوق أو انخفاض تكاليف الإنتاج، بل أصبح مرهونًا بامتلاك ميزة تنافسية مستدامة تُمكّن المؤسسة من جذب العملاء وتحويلهم إلى أحد أصولها. ويتحقق ذلك ليس فقط من خلال زيادة الحصة السوقية للمؤسسة، بل من خلال تعزيز قدرتها على الاحتفاظ بالعملاء.

ويفرض هذا الواقع ضرورة التحول من الهياكل التنظيمية التقليدية القائمة على العلامة التجارية والمنتج، إلى هياكل حديثة ومرنة تُمكّن من إدارة العلاقات مع العملاء، بحيث يتم تقييم الأداء وقياسه وفقاً لقدرة المؤسسة على زيادة قيمة محفظة عملائها. ومن ثمّ، يُصبح العميل بمثابة مقياس مستقبلي لحقوق الملكية، بما يعكس القيمة طويلة الأجل لكل عميل، والتي تُعد من أهم نتائج تحقيق الميزة التنافسية للمؤسسات.

وتهدف الدراسة الحالية إلى استكشاف أثر رضا العملاء، وولاء العملاء، واحتفاظ المؤسسة بالعملاء على القيمة الدائمة للعميل، باعتبار أن تعظيم القيمة الدائمة للعميل تمثل نتيجة مباشرة لتحقيق ميزة تنافسية مستدامة. وقد تم إجراء دراسة كمية لاختبار النموذج المفاهيمي المقترح باستخدام تحليل نمذجة المعادلات الهيكلية(SEM) ، وذلك على عينة مكونة من ٣٨٤ من عملاء شركة أمازون. وقد أكدت النتائج وجود علاقة ارتباط إيجابية ذات دلالة إحصائية بين متغيرات الدراسة.

الكلمات المفتاحية:

القيمة الدائمة للعميل، ولاء العملاء، الاحتفاظ بالعملاء، رضا العملاء، التجارة الإلكترونية.

Introduction

To gain a competitive edge and enhance long-term customer value, organizations must prioritize customer satisfaction, as it significantly influences customer loyalty (Dilek et al., 2016). Satisfaction plays a crucial role in this process, affecting how likely customers are to remain loyal to the brand. Loyalty is essential for retaining customers and serves as a barrier to the switching behavior of customers to convert to another brand (Reichheld, 2019). It is not only reflected in the amount spent by customers but also in the frequency of their repeat purchases and their willingness to use the word-of-mouth market the brand to others (Diputra& Yasa, 2021).

According to (Gerpott et al., 2001) Customer satisfaction directly influences customer loyalty, which is a key factor in customer retention. In addition, Bansal and Gupta (2001) state that establishing customer loyalty is no longer optional for businesses; it is essential for creating a sustainable competitive advantage. Moreover, competitive advantages arise from a firm's resources and capabilities. According to (Zangmo et al., 2015), acquiring new customers is more expensive than the costs associated with retaining existing ones. Customer satisfaction plays a crucial role in establishing a competitive advantage for any organization, which results in maximizing CLV.

Clark, (1997) states that organizations can use customer retention as a strategic tool to adapt easily to the dynamic increase in the competitive environment. This requires customer relationship management to build long-term relationships with the organization's customers, indicating that the goal of customer management is to enhance retention by fostering trust between the organization and the customer, along with a firm commitment from management towards the customer, which increases the chances of retaining them.

Platzer and Reutterer (2016) Chamberlain et al. 2017 state that there aren't enough empirical studies on online purchase behavior. Moreover, many of these studies rely on data from just one company, as stated by (Jašek et al., 2019), This lack of diverse research in e-commerce could lead to practices that are based on insights from offline settings, which may not translate well to the online environment. Additionally, (Kaur and Kochar 2018); (Higueras-Castillo et al. 2023) state that customer behavior varies significantly between online and offline contexts.

In the case of this current research, Amazon Company, which is a digital platform for retailing, tends to increase its CLV through additional purchases. (Venkatesan and Reinartz, 2022) explain that there are two key strategies for enhancing Customer Lifetime Value (CLV): upwelling and cross-selling. The upwelling focuses on encouraging customers to choose higher-priced items or upgrades, which boosts the average transaction value and overall CLV. In contrast, cross-selling involves suggesting complementary products that enrich the customer's experience and lead to additional purchases. Therefore, online retailers like Amazon excel at cross-selling by recommending related items based on a customer's past purchases, ultimately increasing CLV through these extra sales.

Literature Review

Having considered the above introduction, the following represent the salient results and findings of previous researchers and contributions of researchers and scholars.

Relationship between customer satisfaction (CS) and customer loyalty (CL)

Pinem et al. (2019) describe consumer satisfaction as the emotional response—whether positive or negative—that individuals experience after evaluating a product's performance against their expectations. When the product does not meet expectations, consumers feel dissatisfied or

disappointed. Conversely, if the product performs as anticipated, satisfaction is achieved, and if it exceeds expectations, consumers experience a heightened sense of satisfaction or joy.

Numerous studies underscore the significance of customer satisfaction, which (Kolesar and Galbraith, 2000) define as the satisfaction derived from comparing a product's perceived performance to expectations. This satisfaction can evoke feelings of acceptance and joy (Hoyer and MacInnis, 2001). However, mere satisfaction is insufficient; less than half of satisfied customers tend to return, emphasizing the need for companies to transform satisfied customers into loyal ones. The cost of acquiring new customers is significantly higher than encouraging repeat purchases (Singh & Khan, 2012).

Customer satisfaction is characterized by the overall attitude towards a service provider and the emotional response to the disparity between expectations and actual experiences (Hansemak and Albinson, 2004). It serves as a crucial factor in fostering repeat business and loyalty, influenced by trust and emotional connection. Therefore, customer satisfaction with a company's products or services can be considered a key to the company's success and long-term competitiveness. It is viewed as a primary determinant of customer retention. (Ghavami and Olyaei, 2006).

Additionally, (Faizan et al., 2011) highlights that customer satisfaction is crucial for meeting customer needs, while loyalty reflects the likelihood of repeat purchases and relationship engagement. They assert that higher satisfaction fosters customer loyalty, leading to retention. Accordingly, (Zairi, 2000) noted that customer satisfaction positively impacts an organization's profitability, as it leads to repeat purchases, brand loyalty, and positive word-of-mouth about the organization. (Moreover, Aker,1995) states that increasing profitability rates are a measure of an organization's ability to retain customers, while the current study focuses on customer satisfaction and loyalty as indicators of the organization's capability to maintain its customer base to create a competitive advantage. The current study emphasizes that customer satisfaction and loyalty are key variables that enhance an organization's ability to retain customers and create a competitive advantage.

Relationship between Customer Satisfaction (CS) and Customer Loyalty (CL)

Customer loyalty, as defined by (Anderson and Jacobsen, 2000) results from the benefits organizations provide to their customers, encouraging them to maintain or increase their purchasing rates. (Oliver, 1997) noted that customer loyalty reflects a deep commitment to repeat purchases of a particular product or service over time, despite competitive factors and marketing efforts that may influence buying behavior. (Singh and Khan, 2012) describe customer loyalty as the customer's preference for one brand over all competing brands, driven by satisfaction with the product or service.

Ghavami and Olyaei (2006) define customer loyalty as the desire of a specific customer to buy a company's goods or services more than competing products available in the market. Since loyalty stems from positive prior experiences that encourage repeat business—regardless of whether the company offers the best product, price, or service—many organizations reward customer loyalty through discounts. Recently, loyalty programs, such as reward cards and point systems, have become common across various sectors.

Clarke (2001) points out that organizations focusing solely on customer satisfaction risk making their brand indistinct, as customers may view them as merely meeting minimum needs. Long-term customer retention requires companies to go beyond basic satisfaction and seek ways to build loyalty that can fend off competitive pressures. Thus, for satisfaction to be effective, it must lead to customer loyalty.

Relationship between Customer Satisfaction (CS) and Customer Retention (CR)

Customer satisfaction is considered the key to the success of companies and to building long-term competitive advantages. It is also a fundamental determinant for customer retention. According to (Hennig and Klee, 1997) customer retention "is the continuity of the business relationship between the customer and the company" (Gerpot, T., et al., 2001). Customer retention is also described as the consumer's tendency to keep up with the service provider. It is viewed as a form of feelings and attitudes exercised by the customer, implying a desire to continue and build a long-term relationship with the service provider (Ranaweera and Prabhu, 2003; Ranaweera & Neely, 2003).

Customer retention is defined as "the practice of working to satisfy customers to establish long-term relationships with them." Retention can be understood as the commitment to continue working or buying with a specific company on an ongoing basis (Zineldin, 2000). One of the requirements for achieving economic sustainability, success, and prosperity through organizational services today is to build a long-term relationship with the customer (Day, 199٥).

Customer experience has garnered significant attention from business practitioners over recent decades (Becker & Jaakkola, 2020). Effectively designing and delivering exceptional customer experiences has become a crucial focus in both marketing theory and practice (De Keyser et al., 2020). A positive customer experience is vital for companies to establish sustainable competitive advantages and foster strong customer relationships (Andreini et al., 2019). It is considered a fundamental factor for success across both online and offline channels (Barari et al., 2020; Bleier et al., 2019; Bustamante & Rubio, 2017).

Furthermore, the use of both traditional and digital marketing resources has been linked to improved organizational performance and higher customer retention rates. This combination not only boosts firm profitability but also enhances customer loyalty (Osakwe &Anaza, 2018).

Achieving an increase in market share, revenue, and profits is driven by enhancing customer retention, maintaining existing customers, and attracting potential clients (Rust, et al.1995.). This has led Customer Relationship Management (CRM) to focus on building long-term relationships with the organization's customers. The main goal of customer management is to strengthen retention by establishing trust between the organization and the customer, along with a consistent commitment from the management towards the customer. This approach increases the likelihood of customer retention.

Roberts and Plessis (2012) found a statistically significant positive relationship between customer relationship management, customer retention, and customer satisfaction. In other words, as the level of CRM increases, customer loyalty and retention also tend to rise.

Relationship between Customer Loyalty (CL) and Customer Retention (CR)

Customer retention is considered the cornerstone upon which many organizations across various sectors rely for their growth, survival in the market, and the creation of a competitive advantage. Loyalty plays a crucial role in helping organizations retain their most valuable customers, as it reflects the development of the relationship between the customer and the company. Customer retention signifies the continuity of this relationship. Customer retention programs aim to convert occasional customers into loyal, repeat buyers. Additionally, (Hoyer and Maclnnis, 2001) state that these programs often encourage customers to expand their purchases from a single product or category to multiple products offered by the company.

Ruiz Díaz (2017) found that customer satisfaction has a strong influence on customer loyalty, and in turn, loyalty is a key factor in retaining customers. Similarly, (Bahri Ammari and Bilgihan, 2017) demonstrated that distributive justice moderates the relationship between satisfaction with the loyalty program, relational satisfaction, and overall customer loyalty. They emphasized the importance of focusing on distributive justice to foster satisfaction and loyalty, noting that satisfaction with the loyalty program is a critical predictor of a positive relationship with the service provider and customer retention.

Relationship between Customer Satisfaction (CS) and Customer Lifetime Value (CLV)

Customer Lifetime Value (CLV) varies slightly across different studies; the core concept remains consistent. For instance, (Gupta and Lehmann, 2003) define CLV as the present value of all future profits derived from a customer. (Similarly, Pearson, 1996) describes CLV as the net present value of the stream of contributions to profit resulting from a customer's transactions and interactions with the company. Additionally, (Jain and Singh, 2002) characterize CLV as the net profit or loss that a firm experiences from a customer over the entire duration of their relationship, encompassing all transactions.

Traditionally, accounting systems have viewed customers primarily as sources of revenue. However, over time, organizations have started to regard customers as valuable assets or long-term investments, guiding decision-making based on customer-related investments (Pitt et al., 2000). Customer Lifetime Value (CLV) is generally understood as the net present value of the profits a company anticipates generating from an average customer over a specified period in CLV is the outcome of the Competitive Advantage. Accordingly, the competitive advantage refers to what a company can offer in the marketplace that is uniquely distinguished by delivering value to customers in a way that sets it apart from competitors, as mentioned by (Day and Wensley,1988). It also encompasses the company's ability to lower costs compared to others, leading to increased market share and higher profitability. Additionally, it involves the capacity to produce goods or services through methods that competitors cannot replicate. Conversely, (Itani, 2002) explains that a relative or absolute advantage is often connected to the availability of natural resources and factor endowments. However, true competitive advantage is derived from effective management, technological innovation, and creative strategies.

According to (Tanriverdi, 2017), achieving sustained competitive advantage requires an organization to consistently outperform its competitors. It is also believed that a competitive advantage is the organization's ability to leverage its internal strengths in performing its activities, thereby creating value that other competitors are unable to replicate in their operations. Some scholars also argue that a firm possesses a competitive advantage if it can create an economic edge that rivals cannot achieve (Barrey, 2006).

Furthermore, (Porter, 2008) suggests that a competitive advantage arises when an organization discovers new, more effective methods that are superior to those used by competitors. Simply put, when an organization fosters innovation, it gains a competitive edge that allows it to attract customers and turn them into a proprietary asset. This is not only about increasing the organization's market share but also about expanding its share of each customer.

Customer lifetime value- CLV

Enhancing the long-term customer value (Customer Lifetime Value - CLV) can be achieved through the following components: (Blattberg, et al., 2009; Reichheld, Teal, 1996)

1. Extending the duration of customer engagement with the company means increasing the number of years the customer maintains their relationship with the organization. This can be

accomplished by reducing the likelihood of switching to competitors or prolonging the customer's retention period.

2. Reducing costs, specifically by lowering the expense associated with serving the customer. As the cost of customer service decreases, the profit margin that can be realized in the future increases. Furthermore, reducing service costs supports customer retention, as high-value customers are typically less costly to serve because the company understands their needs and requirements. This can be facilitated by enabling customers to assist themselves and exercise greater control over accessing services through the use of modern technological tools integrated with the company.

3. Increasing sales by encouraging customers to purchase more frequently, expanding the company's share of the customers' overall purchases, or encouraging customers to buy more products from the company compared to competitors.

According to (Chamberlain et al, 2017) there are varied factors that affect the Customer Lifetime Value (CLV) such as customer loyalty and satisfaction. It also refers that understanding such factors and their effect on the marketing strategies has an impact on the organizations to fulfill the CLV and their customer long-term value. Therefore, (Lemon & Verhoef, 2021) state that satisfied customers tend to make repeat purchases, show greater loyalty, and share positive recommendations with others. By providing outstanding products, services, and experiences, companies can boost customer satisfaction and build Long-term relationships. This approach not only enhances customer loyalty but also increases customer lifetime value (CLV).

According to (Rane et al., 2023) customer loyalty is associated with Customer Lifetime Value (CLV), as loyal customers generate ongoing revenue and typically exhibit a higher CLV because of their longer relationship with the brand and increased purchasing frequency. Implementing effective loyalty programs, personalized communication, and excellent customer service can promote loyalty and boost CLV by encouraging repeat purchases and deepening the emotional bond between customers and the brand.

The current study focuses on the first approach, which relies on increasing the long-term value of the customer to transform them into equity for the organization by extending their duration of engagement with the company over many years, measured through historical quantitative analysis. Additionally, the study emphasizes the second approach, which is based on future-oriented factors such as customer satisfaction and loyalty. In other words, it considers the number of outcomes that can be translated into financial value and are directed towards customers and the future simultaneously.

Research Problem

The problem is derived from two main issues. First, it is not clear from the literature how these four variables are interrelated in the Egyptian E-commerce Sector context. Furthermore, there seems to be a paucity of research addressing customer satisfaction, customer loyalty, customer retention, and Customer lifetime value (CLV) in which the results represented by maximizing the long-term value of the customer. The outcomes of measuring Customer lifetime value are limited to increasing return on investment and market share based on historical calculations, overlooking the importance of customer satisfaction and loyalty which are future oriented. Additionally, there is a slight culture of managing CLV within companies and difficulty in identifying the sources of CLVs for reinvestment.

**The present research is attempting to answer the following questions:**

Q1: What is the degree of significance relevant to the relationship between Customer Satisfaction and Customer loyalty in the E-commerce Sector in Egypt?

Q2: What is the degree of significance relevant to the relationship between Customer Satisfaction and Customer Retention in the E-commerce Sector in Egypt?

Q3: Is there a significant relationship between Customer Satisfaction and Customer lifetime value in the E-commerce Sector in Egypt?

Q4: Is there a significant relationship between customer loyalty, customer retention, and Customer lifetime value?

Q5: What is the nature of the relationship between the research variables?

Q6: Can the structural relationship between customer satisfaction, customer loyalty, customer retention, and Customer lifetime value be modeled?

Research variables and proposed conceptual model

The research variable can be outlined as follows:

For testing the hypothesis of the research, the interrelationships between the following variables were examined: customer satisfaction (CS) as an independent variable, Customer lifetime value (CLV) as a dependent variable, customer loyalty (CL) as a mediator (M1) and customer retention (CR) as a mediator (M2).

The proposed conceptual model between the present research variables can be illustrated according
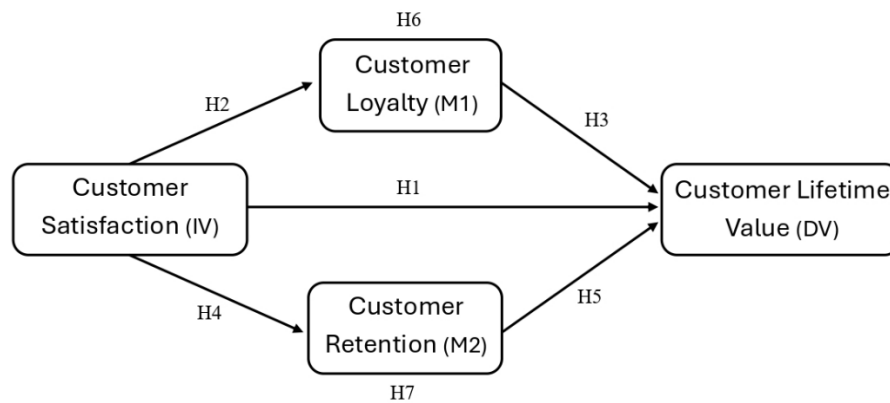
to the following figure (1):

Research Hypothesis

H1: Customer satisfaction has a direct positive effect on Customer lifetime value.

H2: Customer satisfaction positively affects customer Loyalty.

H3: Customer Loyalty positively affects Customer lifetime value.

H4: Customer satisfaction positively affects customer retention.

H5: Customer retention positively affects Customer lifetime value.

H6: Customer Loyalty mediates the relationship between customer satisfaction and customer lifetime value.

H7: Customer Retention mediates the relationship between customer satisfaction and customer lifetime value.

Research objectives

As viewed in the preceding argument and relevant literature, the present research has twofold contributions. First, it analytically fetches the relationship between Customer Satisfaction and customer lifetime value while considering customer loyalty and customer Retention as mediating variables. Second, there is limited literature that shows the relationship between these variables in the context of the E-commerce Sector in Egypt. The present study will help in adding knowledge to the existing body of literature by examining the impact of these variables in the E-commerce Sector. It will guide managers of the organizations to understand the phenomenon regarding customer satisfaction and Customer lifetime value (CLV).

The present research aims to gain knowledge of employee-organization relationships, focusing on such variables as Customer Satisfaction, customer loyalty, customer retention, and Customer lifetime value (CLV); in such a framework, the present research aims at achieving the following objectives:

1. Exploring the relationship between customer satisfaction and customer loyalty.
2. Exploring the relationship between customer satisfaction and customer Retention.
3. Exploring the relationship between customer satisfaction and Customer lifetime value
4. Exploring the relationship between customer loyalty, customer retention, and Customer lifetime value

Research Methodology and Plan

The methodology plan for this research relied on the following components: -

Research Design

The current study fundamentally relies on an analytical descriptive approach conducted single cross-sectional design with the aim of inferring significant relationships between customer satisfaction, customer loyalty, customer retention, and competitive advantage. Empirically, in the digital retail sector in Egypt, as examined in the case of Amazon Company, to achieve this objective.

Sampling design and plan

The non-probability convenience sampling technique has been adopted in the present research, which results in identifying the members in the population (represented by the customers of the Amazon company in Egypt). Amazon is selected from the digital retail sector in Egypt since it presents well well-known digital platform. Digital platforms play a crucial role, leveraging advanced data analytics and machine learning to enhance customer engagement and foster loyalty by understanding consumer behaviors, preferences, and purchasing patterns, as suggested by (Sharma and Waoo, 2023). The researcher used the formula that is used in the case of an unlimited population; due to the difficulty of obtaining a framework for the study population, this formulation is:

$$n = \frac{Z^2 pq}{D^2}$$

Where:

n: sample size

Z: The standard score corresponding to the 95% confidence co-efficient is equal 1.96.

p: The percentage of the phenomenon in the population, which can be considered 50%; because it gives the largest size for the sample.

q: (1-p).

D: The error rate is within 5%.

By applying the previous formula, the appropriate sample size (in the case of an unlimited population) is

$$n = \frac{1.96^2 (0.5)(0.5)}{(0.05)^2} \simeq 384$$

A total of 384 were received and were used for analysis. About the sample, 56.8% of the total sample were Males and 53.2% were Females. The sample was concentrated on the youth age groups, as they are the most frequent users of digital platforms from 15 to 25 years, with percentages of 39.6%.

Measurement, Scale and Data Collection

The researchers surveyed the opinions of Amazon Egypt customers through the survey list, then described and analyzed the responses, and tested the relationships between the variables to reach at scientific results that are useful in studying, describing and analyzing the study problem, and proposing appropriate means to address it, without any control by the researcher over the measured variables. In terms of measuring the research variables, a questionnaire list has been developed based on the literature and previous research. A survey consisting of Interval scaling of the main model variables relied on well-established 5-point interval scales. In this respect it might be useful to refer that: Customer satisfaction measured were measured by 4 items scale were adapted from (Singh & Singh, 2016), customer loyalty were measured by 6 items scale were adapted from (Kangu et al., 2017), customer retention were measured by 4 items scale were adapted from (Wachira & Were, 2016) and finally Customer lifetime value were measured by 5 items scale were adapted from (Ali & Shabn, 2024).

Data Analysis

The following is a set of statistical methods used in data analysis: Internal Consistency and Cronbach's Alpha Coefficient Test were used to ensure the validity and reliability of the variables, represented by the sample's responses to questions. Frequency Tables and Measures of central tendency and dispersion were used for the Description of study variables, and finally, Confirmatory Factor Analysis (CFA) and path analysis were used for data analysis and hypothesis testing.

Empirical Analysis and Findings

To achieve the study objectives and analyze the collected data, the researcher used appropriate statistical methods using the statistical programs SPSS and AMOS to analyze and process the data.

The demographic characteristics of the sample

The demographic characteristics of the sample include gender, age, family life cycle, place of residence, occupation, and income level as follows:

Table (1)

Demographic characteristics of the sample

Demographic characteristics	Values	Frequency	Percent %
Gender	Male	218	56.8
	Female	166	43.2
Age	15 - 25 Years	115	29.9
	26 - 35 Years	152	39.6
	36 - 45 Years	58	15.1
	46 - 55 Years	49	12.8
	56 Years and above	10	2.6
Family life cycle	Sigle	205	53.4
	Married	90	23.4
	Married with Children	89	23.2
Place of residence	Cairo	105	27.3
	Giza	237	61.7
	Alexandria	14	3.7
	Qalubia	5	1.3
	Others	23	6.0
Occupation	International Organization	38	9.9
	Private Organization	224	58.3
	Public Organization	53	13.8
	Self Employed	46	12.0
	Student	9	2.3
	Others	14	3.7
Income	Less than 5000 pounds	119	31.0
	5000 – 10000 pounds	93	24.2
	10001 – 20000 pounds	54	14.1
	20001 – 30000 pounds	26	6.8
	30001 – 40000 pounds	54	14.1
	Above 40000 pounds	38	9.9
Total		384	100

The table shows that:

Distribution of the sample according to Gender: 56.8% of the total sample were "Males ", 53.2% were "Females", which indicates that the sample included males and females in close proportions.

Distribution of the sample according to Age: the sample was concentrated on the youth age groups, as they are the most frequent users of digital platforms. The highest categories were "26-35 years", "15-25 years" with percentages of 39.6% and 29.9% respectively, this was followed by the "36-45 years" and "46-55 years" categories with percentages of 15.1% and 12.8% respectively, the least represented category was the elderly "56 years and above", with a percentage of 2.6%.

Distribution of the sample according to family life cycle: More than half of the sample was single, with a percentage of 53.4%, as they are the most platform users, followed by married and those married with children, with percentages 23.4% for each.

Distribution of the sample according Place of birth: A large percentage of the sample which their places of birth was Giza and Cairo, where the percentages reached 61.7% and 37.3%, followed by Alexandria and Qalyubia at a percentage of 3.7% and 1.3%, then other places included (6 of October City, Gharbia, Hurghada, KSA, Menofia, Nigeria, Saudi Arabia, and Suez) at a percentage of 6.0%.

Distribution of the sample according Occupation: The largest percentage was "Private Organization" which percentage was 58.3%, followed by "Public Organization" and "Self Employed" which percentages were 13.8% and 12.0% respectively, then "International Organization" and "Student", with percentages of 9.9% and 2.3%, and other occupations included "Business Owner", "Family business in contracting", "Graduate", "Housewife", "Not Employed yet" with percentage 3.7%.

Distribution of the sample according Income: The highest percentage was in the income categories "Less than 5000 pounds" and "5000 – 10000 pounds" where the percentages reached 31.0% and 24.2% respectively, followed by the income categories "10001 - 20000 pounds", "30001 – 40000 pounds" with 14.1 form each, while the latest categories were "Above 40000 pounds", "20001 – 30000" with percentages reaching 9.9%, 6.8% respectively.

Statistical analysis and hypothesis testing

Statistical analysis and hypothesis testing include testing internal consistency, testing the validity and reliability of the questions, then describing those responses in terms of central tendency and dispersion, and testing the relationships between the variables to confirm the validity of the study's hypotheses, arriving at the study results, as follows:

Internal consistency and reliability:

We include measures of the validity and reliability of the content of the study variables, the validity of the questionnaire in terms of the validity of the scale (internal consistency), and the reliability scale. The following are the results of those tests:

Internal consistency:

The following table shows the Spearman correlation coefficient between the phrases and the overall meaning of the dimension that belongs to:

Table (2)

Spearman correlation coefficient between phrases the and the overall mean of the dimension that belongs to

Dimension / Phrases	Spearman Correlation Coefficient	Validity coefficient	Variable	Spearman Correlation Coefficient	Validity coefficient
Customer Satisfaction			**Customer Retention**		
X_1	.856**	0.922	M2_1	.904**	0.950
X_2	.883**	0.938	M2_2	.932**	0.965
X_3	.871**	0.931	M2_4	.917**	0.957
X_4	.768**	0.869	M2_4	.854**	0.921

Dimension / Phrases	Spearman Correlation Coefficient	Validity coefficient	Variable	Spearman Correlation Coefficient	Validity coefficient
Customer Loyalty			**Customer Lifetime Value**		
M1_1	.888**	0.941	Y_1	.798**	0.888
M1_2	.899**	0.947	Y_2	.866**	0.928
M1_3	.870**	0.930	Y_3	.800**	0.889
M1_4	.842**	0.914	Y_4	.877**	0.934
M1_5	.883**	0.938	Y_5	.841**	0.914
M1_6	.815**	0.898			

** Correlation at .01 level

Validity coefficient = 2*R / (1+R) where R spearman correlation coefficient

The table shows that Spearman correlation coefficients ranged between 0.768 and 0.932, and that they are all positive and significant at the level of significance α = 0.01, which was reflected in the validity coefficients, as they ranged between 0.869 and 0.65, and thus all dimensions are considered true to what was set to measure them.

Reliability analysis

Reliability measure illustrates the possibility of generalization the results obtained from the sample, on the population, through the scale Cronbach's Alpha, The value of Alfa ranges between zero and one, If there is no stability in the data, the value of this parameter equal to zero, and on the contrary, if there is complete stability in the data, the value of this parameter equal to the one, and if this measure has equaled or increased from 0.60, then it is possible to rely on the results of the study and generalize on the population.

Table (3)

Reliability scales for the study dimension

Dimensions	No of phrases	Alfa Reliability Coefficient	Honesty Coefficient [1]
Customer Satisfaction	4	0.891	0.944
Customer Loyalty	6	0.942	0.971
Customer Retention	4	0.936	0.967
Customer Lifetime Value	5	0.913	0.956

(1) Honesty coefficient is the square root of the reliability coefficient.

It is clear from the table that the (stability coefficient) alpha values ranged between 0.891 and 0.942, on the dimensions of the questionnaire, which was reflected in the honesty coefficients as ranged between 0.944 and 0.971 on those dimensions, which means that the alpha value exceeded 90% in all cases, which indicates high stability of the sample responses and the possibility of generalization to the study population.

Descriptive statistics for study variables

Descriptive statistics for the study aim to describe these variables in terms of central tendency (arithmetic mean, relative arithmetic mean), and dispersion (standard deviation, coefficient of variation) to determine the extent of actual application of these variables and arrange them according to their importance from the point of view of the research sample. The following are the results of describing the variables:

Table (4)

Descriptive statistics for study variables

Variables	Mean	Relative mean[1]	Std. Deviation	C.V[2]	Agreement	Order
Customer Satisfaction	3.63	72.6	0.91	25.1	74.9	1
Customer Loyalty	3.60	72.0	1.05	29.3	70.7	2
Customer Retention	3.49	69.7	1.11	32.0	68.0	4
Customer Lifetime Value	3.56	71.3	0.97	27.1	72.9	3

(1) Relative mean = mean / 5 *100

(2) C.V (Coefficient of variation) = Standard deviation / mean * 100.

(3) Agreement rate = 100 - C.V (Coefficient of variation)

We conclude from the table that the variables were arranged according to their strength as follows:

First order: The highest variable in Amazon Egypt is "customer satisfaction", where the mean of responses was 3.63, the relative mean 72.6%, indicating that the sample members are inclined towards satisfaction. However, despite satisfaction, it did not reach the level of excellence where the mean of responses ranges between 4 and 5, which indicates that it needs continuous improvement, The standard deviation was 0.91, indicating that the coefficient of variation reached 25.1%, or a percentage of agreement of 74.8% among the sample members, indicating the homogeneity of the sample's responses. The mean of responses ranges from 3.72 to 3.57 about the elements of satisfaction. The following figure declares the mean of responses towards "customer satisfaction", according to their degree of strength, as follows:

Figure (2)

The mean of responses towards "customer satisfaction"
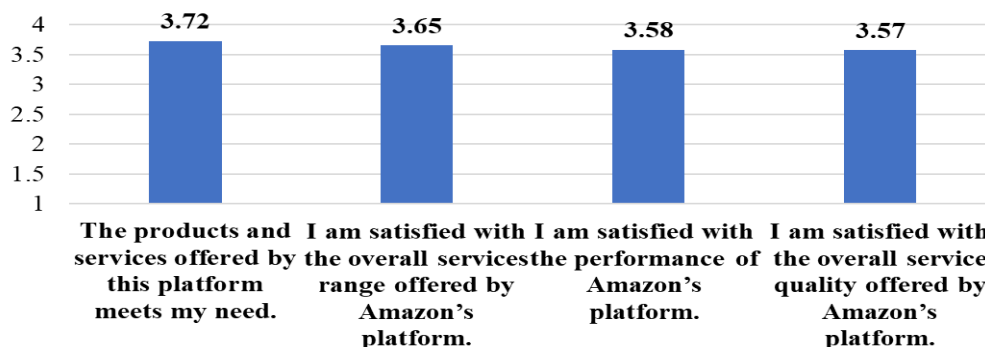
The following figure declares the relative frequencies of responses towards "customer satisfaction", according to their degree of strength, were as follows:
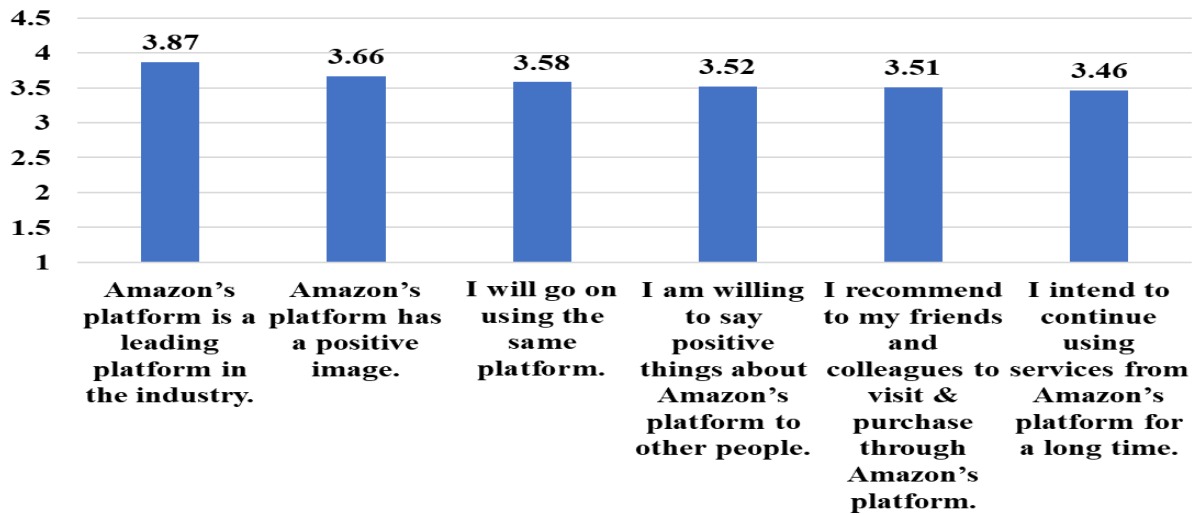
Figure (3)

The relative frequencies of responses towards "customer satisfaction"

■ Very unsatisfied ■ Unsatisfied ■ I cannot ■ Satisfied ■ Very satisfied
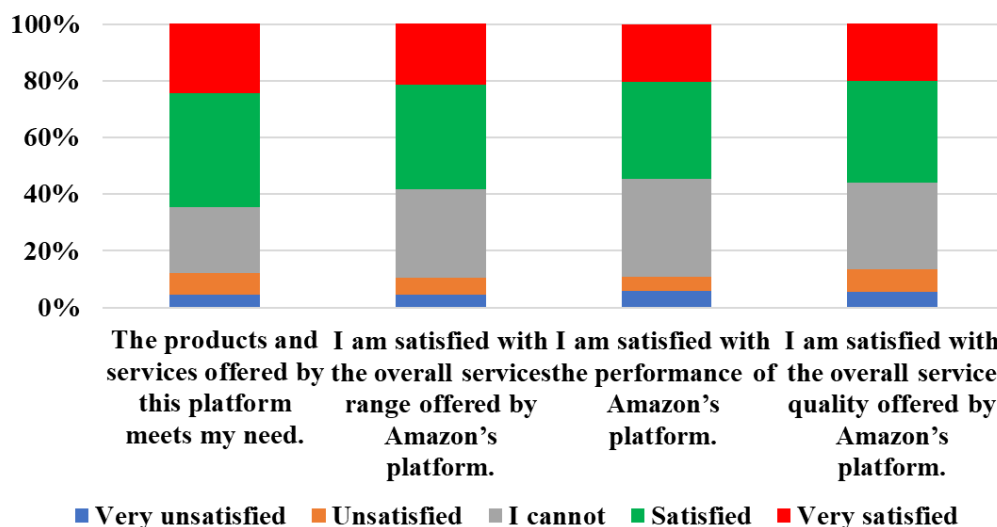
Second order: The second-order variable in Amazon Egypt is "customer loyalty", where the mean of responses was 3.60, the relative mean 72.0%, indicating that the sample members are inclined towards satisfaction. However, despite satisfaction, it did not reach the level of excellence where the mean of responses ranges between 4 and 5, which indicates that it needs continuous improvement, The standard deviation was 1.05, indicating that the coefficient of variation reached 29.3%, or a percentage of agreement of 70.7% among the sample members, indicating the homogeneity of the sample's responses. The mean of responses ranges from 3.87 to 3.46 about the elements of loyalty. The following figure declares the mean of responses towards "customer loyalty", according to their degree of strength, as follows:
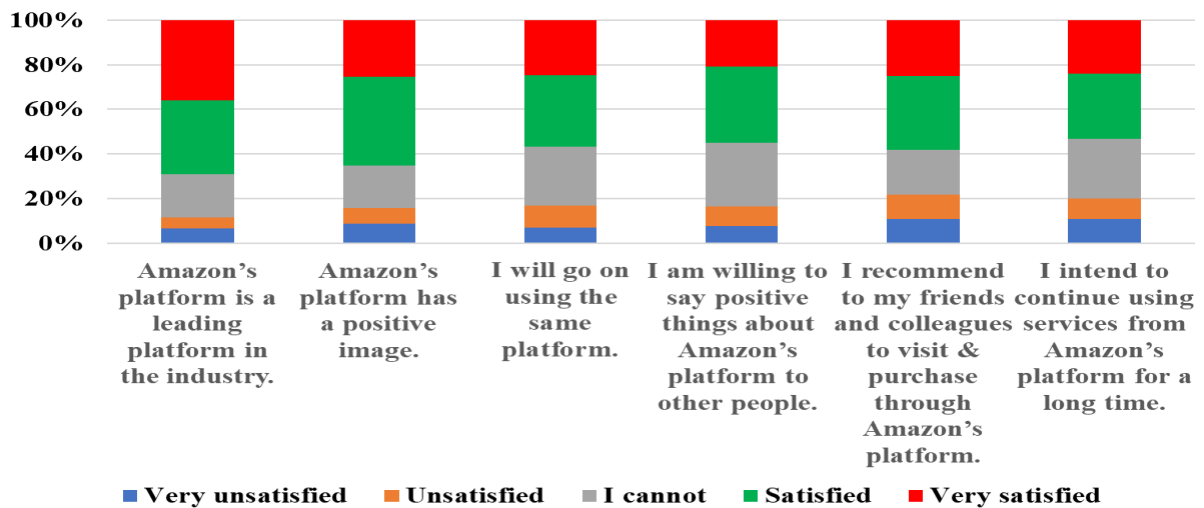
Figure (4)

The mean of responses towards "customer loyalty"

The following figure declares the relative frequencies of responses towards "customer loyalty", according to their degree of strength, as follows:

Figure (5)

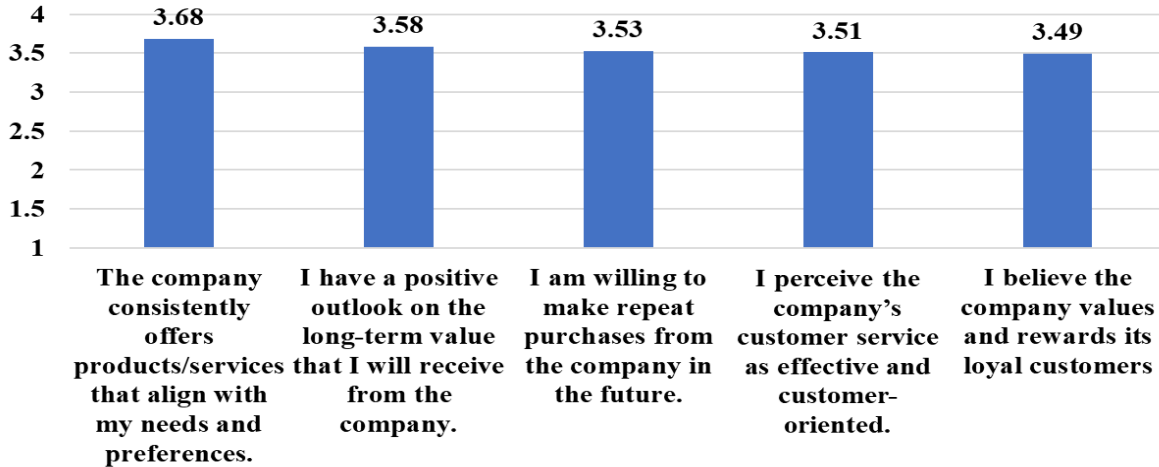**The relative frequencies of responses towards "customer loyalty"**

■ Very unsatisfied ■ Unsatisfied ■ I cannot ■ Satisfied ■ Very satisfied

Third order: The third-order variable in Amazon Egypt is "customer lifetime value", where the mean of responses was 3.56, the relative mean 71.3%, indicating that the sample members are inclined towards satisfaction. However, despite satisfaction, it did not reach the level of excellence where the mean of responses ranges between 4 and 5, which indicates that it needs continuous improvement, The standard deviation was 0.97, indicating that the coefficient of variation reached 27.1%, or a percentage of agreement of 72.9% among the sample members, indicating the homogeneity of the sample's responses, the mean of responses ranges from 3.68 to 3.49 about the elements of lifetime value.

The following figure declares the mean of responses towards "customer lifetime value", according to their degree of strength, as follows:
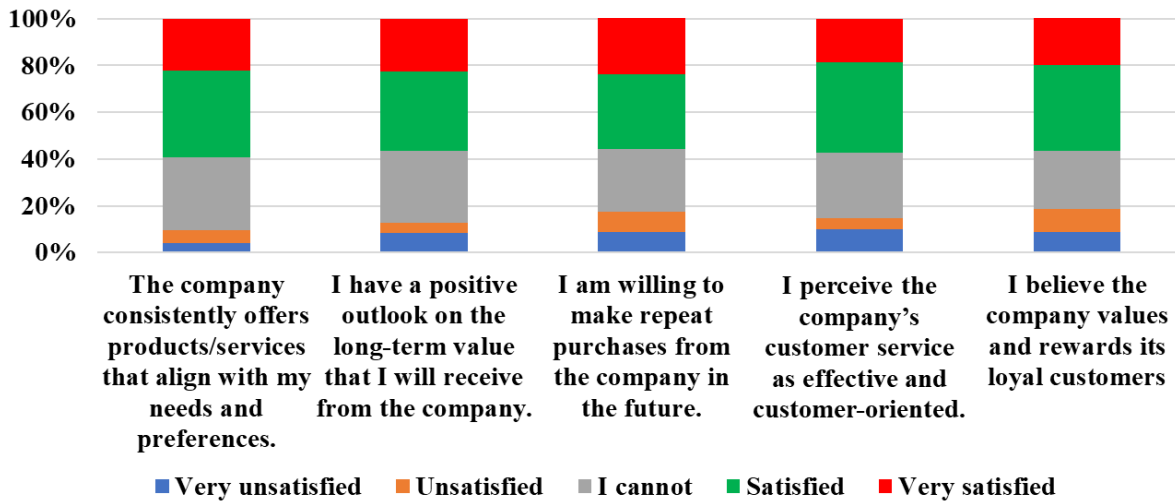
Figure (6)

The mean of responses towards "customer lifetime value"

The following figure declares the relative frequencies of responses towards "customer lifetime value", according to their degree of strength, were as follows:

Figure (7)

The relative frequencies of responses towards "customer lifetime value"


Fourth order: The fourth order variable in Amazon Egypt is "customer retention", where the mean of responses was 3.49, the relative mean 69.7%, indicating that the sample members are inclined towards satisfaction. However, despite satisfaction, it did not reach the level of excellence where the mean of responses ranges between 4 and 5, which indicates that it needs continuous improvement, The standard deviation was 1.11, indicating that the coefficient of variation reached 32.0%, or a percentage of agreement of 68.0% among the sample members, indicating the

homogeneity of the sample's responses. The mean of responses ranges from 3.54 to 3.43 about the elements of lifetime value.

The following figure declares the mean of responses towards "customer retention", according to their degree of strength, were as follows:

Figure (8)
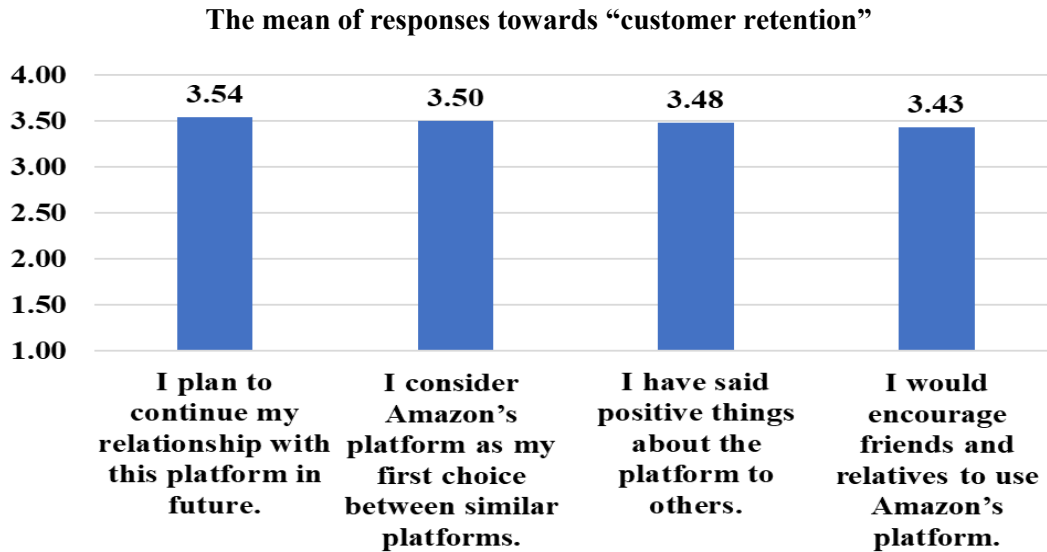
The mean of responses towards "customer retention"

The following figure declares the relative frequencies of responses towards "customer retention", according to their degree of strength, as follows:

Figure (9)

The relative frequencies of responses towards "customer retention"
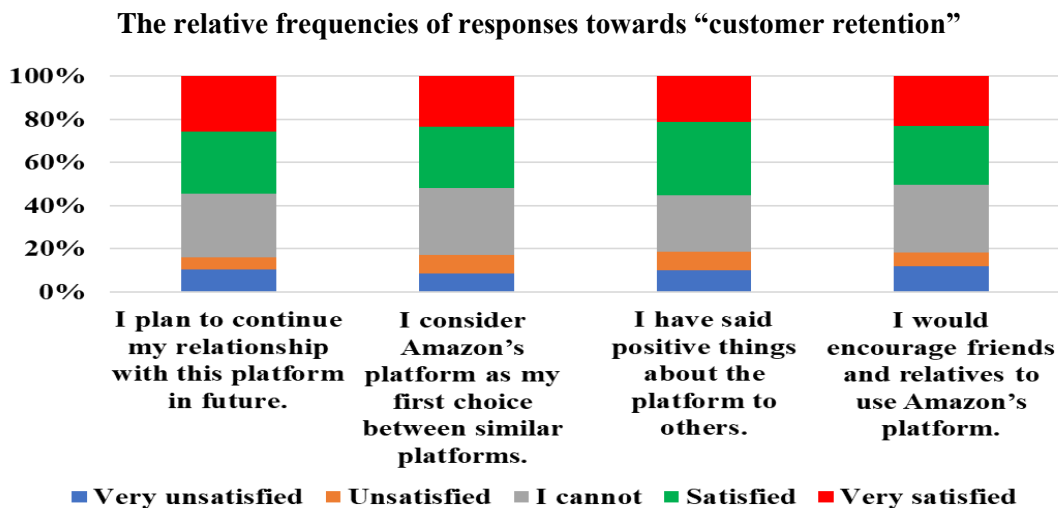
Testing the research hypothesis

Person Correlation analysis between variables

The following table declares the Pearson correlation matrix between study variables:

Table (5)

Pearson correlation matrix between study variables

Variables	Customer Satisfaction	Customer loyalty	Customer Retention	Customer Lifetime Value
Customer Satisfaction	1	.778**	.742**	.676**
Customer loyalty		1	.906**	.796**
Customer Retention			1	.765**
Customer Lifetime Value				1

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

**From the table we conclude that:**

- There is a significant positive correlation between the variable "customer satisfaction" and the variables "customer loyalty", "customer retention", customer lifetime value" since Pearson linear correlation coefficients reached 0.778, 0.742, 0.676 at significance level 0.01 respectively.

- There is a significant positive correlation between the variable "customer loyalty" and the variables "customer retention", customer lifetime value" since Pearson linear correlation coefficients reached 0.906, 0.896 at significance level 0.01 respectively.

- There is a significant positive correlation between the variable "customer retention" and the variable "customer lifetime value"," since Pearson linear correlation coefficient reached 0.765 at significance level 0.01.

Confirmatory Factor Analysis (CFA):

Confirmatory factor analysis was conducted to ensure that the phrases represented the dimensions to which they belong before we proceeded with the path analysis to test the hypotheses, The results were as follows:

Figure (10)

Confirmatory factor analysis of the study's phrases and dimensions
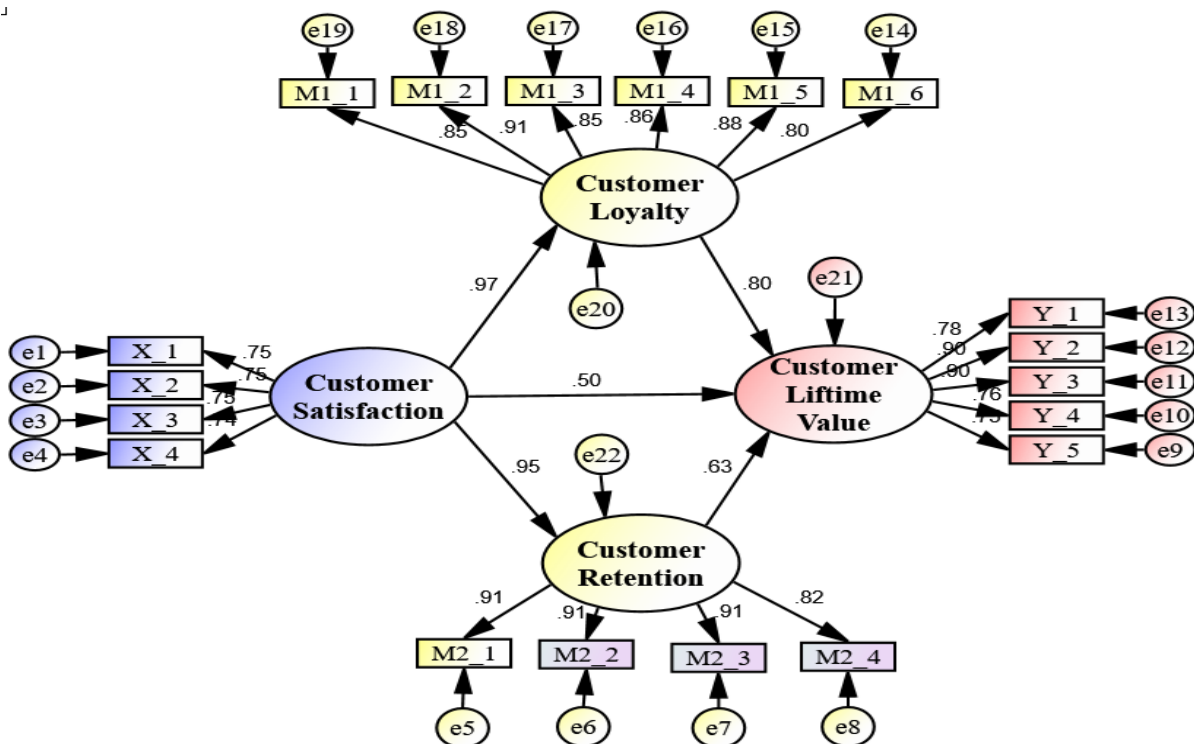
The following table shows the results of the confirmatory factor analysis of the study variables and dimensions:

Table (6)

Results of the confirmatory factor analysis of the study variables

Dimensions	Phrases	Standard Regression Weights S.R.W.	Standard Error S.E.	Critical Value C.R	P-Value
Customer satisfaction →	X1_01	.752			
	X1_02	.746	.063	15.202	***
	X1_03	.748	.066	15.248	***
	X1_04	.741	.066	15.085	***
Customer loyalty →	M1_1	.847			
	M1_2	.910	.040	24.580	***

Dimensions	Phrases	Standard Regression Weights S.R.W.	Standard Error S.E.	Critical Value C.R	P-Value
	M1_3	.850	.047	21.645	***
	M1_4	.860	.043	22.134	***
	M1_5	.879	.042	23.028	***
	M1_6	.800	.044	19.564	***
Customer retention →	M2_1	.914			
	M2_2	.911	.034	29.806	***
	M2_3	.910	.033	29.735	***
	M2_4	.817	.038	22.808	***
Customer lifetime value →	Y_1	.781			
	Y_2	.899	.064	20.059	***
	Y_3	.898	.068	20.027	***
	Y_4	.756	.070	16.037	***
	Y_5	.748	.069	15.824	***

(***) Significant at 0.001 level

It is clear from the table that the standard regression weights of the phrases are greater than 0.50 and are significant at the level of $P < 0.001$. Also, the values of the critical ratio C.R are all greater than 1.96, which means that the phrases for each dimension are capable of measuring it. Therefore, none of the statements were deleted, as the values of the standard regression weight ranged between 0.741 and 0.914, and thus the results of the analysis of the measurement model can be relied upon. The test showed high scores for the model fit index:

CMIN/DF =3.590, GFI=0.937, CFI=0.992, TLI=0.975, RMSEA=0.073

Path Analysis

Path analysis was conducted, with two mediating variables, M1 "customer loyalty" M2 "customer intention", which are affected by the independent variable X "customer satisfaction", also simultaneously affect the dependent variable Y (customer lifetime value). This path can be represented in the following figure:

Figure (11)

Path analysis for the impact of customer satisfaction, customer loyalty and customer retention on customer life- time value
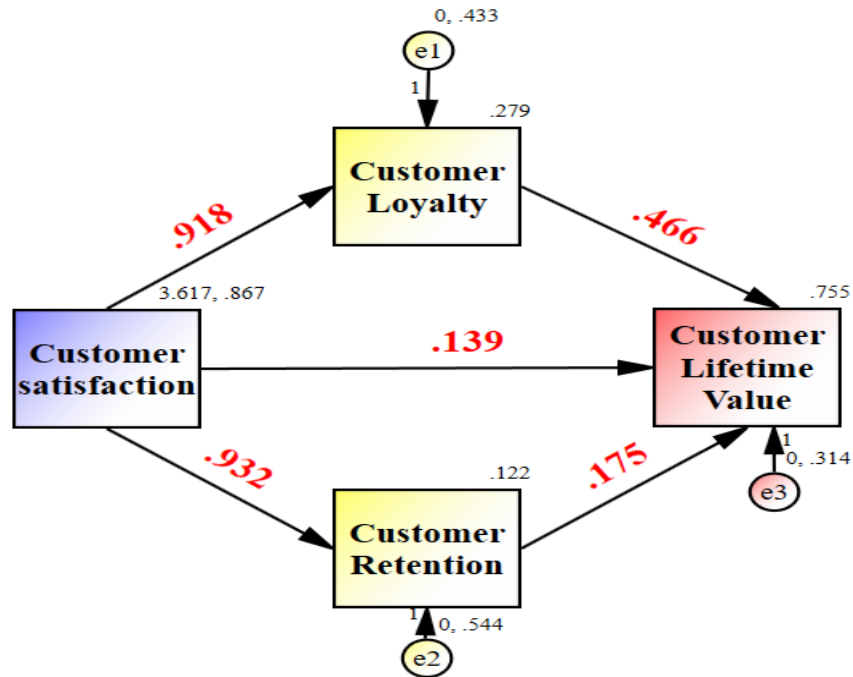
This path assumes the following:

- The independent variable "customer satisfaction" has a direct effect on both the mediating variables "customer loyalty" and "customer retention".

- Both the mediating variables, "customer loyalty" and "customer retention," have a direct effect on the dependent variable "customer lifetime value".

- The independent variable "customer satisfaction" has a direct effect on the dependent variable "customer lifetime value", and an indirect effect through its effect on the two mediating variables "customer loyalty" and "customer retention", which in turn affect the dependent variable "customer lifetime value."

Testing the validity of study hypotheses

To test the validity of the study's hypotheses (first, second, third, and fourth), the direct effect between the variables was estimated, and we obtained the following results:

Table (7)

Results of the direct effect of the variables

Hypothesis	Variables			Estimate	Standard Error S.E.	Critical Value C.R.	P-Value	Result	R square
	Intercept			.279	.135	2.071	.038		.581
H2	M1	←	X	.918	.036	25.424	***	Accept	
	Intercept			.122	.151	.806	.420		.628
H4	M2	←	X	.932	.040	23.026	***	Accept	
	Intercept			.755	.116	6.527	***		
H1	Y	←	X	.139	.062	2.236	.025	Accept	.645
H3	Y	←	M1	.466	.044	10.710	***	Accept	
H5	Y	←	M2	.175	.039	4.497	***	Accept	

- Testing the 1st hypothesis H1: "Customer satisfaction has a direct positive effect on Customer lifetime value".

There is no significant direct effect of the independent variable X "Customer satisfaction" on the dependent variable Y "Customer lifetime value", where (β=0. 139, P=0.025<0.05), and therefore we accept the 1st hypothesis.

- Testing H2: "Customer satisfaction positively affects customer Loyalty".

There is a significant positive effect of the independent variable X "Customer satisfaction" on the mediating variable M1 "Customer loyalty", where (β=0.918, P<0.01), so we accept the 2nd hypothesis.

- Testing H3: "Customer Loyalty positively affects Customer lifetime value".

There is a significant positive effect of the mediating variable M1 "Customer Loyalty" on the dependent variable "customer lifetime value", where (β=0.466, P>0.01), so we accept the 3rd hypothesis.

- Testing H4: "Customer satisfaction positively affects customer retention".

There is a significant positive effect of the independent variable X "Customer satisfaction" on the mediating variable M2 "Customer retention", where (β=0.932, P<0.01), and therefore we accept the 4th hypothesis.

- Testing H5: "Customer retention positively affects Customer lifetime value".

There is a significant positive effect of the mediating variable M2 "Customer retention" on the dependent variable Y "Customer lifetime value", where (β=0.175, P<0.01), and therefore we <u>accept the 5th hypothesis</u>.

From the table, the structural equations can be formulated as follows:

$$M1 = 0.279 + 0.918*X + \mathcal{E}$$

$$R^2 = 0.581$$

$$M2 = 0.122 + 0.932*X + \mathcal{E}$$

$$R^2 = 0.628$$

$$Y = 0.755 + +0.139*X + 0.466*M1 + 0.175*M2 + \mathcal{E}$$

$$R^2 = 0.650$$

Since that:

X "customer satisfaction".

M1 "Customer loyalty".

M2 "customer intention".

Y "customer lifetime value".

$\mathcal{E}$ "random error".

- Testing H6: "Customer Loyalty mediates the relationship between customer satisfaction and customer lifetime value".
- To test this hypothesis, the indirect effect of the variable "customer satisfaction" on the variable "customer life-time value" was measured through the mediating variable "customer loyalty," and the results were as follows:

X "customer satisfaction" → M1 "customer loyalty" = 0.918

M1 "customer loyalty" → Y "customer lifetime value" = 0.466

So, the indirect effect through the path:

X "customer satisfaction" → M1 "customer loyalty" → "customer lifetime value" = 0.918 * 0.466 = 0.428

So, the direct and indirect effects are as follows:

The direct effect through the path:

X "customer satisfaction" → Y "customer lifetime value" = 0.139   (Significant)

The indirect effect through the path:

X "customer satisfaction" → M1 "customer loyalty" → Y "customer lifetime value" = 0.428 (significant).

We conclude that: indirect effect > direct effect, and the indirect effect did not remove the direct effect, so there is <u>partial</u> mediation, and we accept the 6th hypothesis.

- Testing H7: "Customer Retention mediates the relationship between customer satisfaction and customer lifetime value".

- To test this hypothesis, the indirect effect of the variable "customer satisfaction" on the variable "customer life-time value" was measured through the mediating variable "customer retention," and the results were as follows :

X "customer satisfaction" → M2 "customer retention" = 0.932

M1 "customer retention" → Y "customer lifetime value" = 0.175

So, the indirect effect through the path:

X "customer satisfaction" → M1 "customer retention" → "customer lifetime value" = 0.932 * 0.175 = 0.163

So, the direct and indirect effects are as follows:

The direct effect through the path:

 X "customer satisfaction" → Y "customer lifetime value" = 0.139 (Insignificant)

The indirect effect through the path:

X "customer satisfaction" → M2 "customer retention" → Y "customer lifetime value" = 0.137 (Significant).

We conclude that: indirect effect > direct effect, and the indirect effect did not remove the direct effect, so there is partial mediation, and we accept the 7th hypothesis.

Results and Conclusions

After analyzing the empirical study data, the researchers achieved the following results:

Results for describing the study variables

After verifying the validity and reliability of the phrases in the questionnaire, the researchers described the study variables and obtained the following results:

- By describing "customer satisfaction," we obtained the following results"

- The sample's responses on the "customer satisfaction" variable ranged from 3.72 to 3.57, indicating that "customer satisfaction" is high on the Amazon Egypt platform, but it has not reached the level of excellence, where the average responses range between 4 and 5, meaning that it needs continuous improvement.
- Customer satisfaction factors included: the products and services offered by the Amazon platform meet customer needs, satisfaction with the overall services range offered by this platform, satisfaction with the performance of this platform, and satisfaction with the overall service quality provided by this platform.
- By describing "customer loyalty," we obtained the following results"

- The sample's responses on the "customer loyalty" variable ranged from 3.87 to 3.46, indicating that "customer loyalty" is high on the Amazon Egypt platform, but it has not reached the level of excellence, where the average responses range between 4 and 5, meaning that it needs continuous improvement.
- Elements of customer loyalty to Amazon include considering the platform an industry leader, having a positive image of the platform, continuing to use the same platform, being willing to say positive things about the platform to other people, recommending friends and colleagues to visit and purchase from the platform, and continuing to use services from the platform for a long time.

- By describing "customer retention," we obtained the following results"

- The sample's responses on the "Customer retention" variable ranged from 3.54 to 3.43, indicating that "customer retention" is high on the Amazon Egypt platform, but it has not reached the level of excellence, where the average responses range between 4 and 5, meaning that it needs continuous improvement.
- Elements of customer retention at Amazon include plans to continue relationships with the platform in the future, consider the platform the first choice among similar options, speak positively about the platform to others, and encourage friends and relatives to use the platform.
- By describing "customer lifetime value," we obtained the following results"

- The sample's responses on the "Customer lifetime" variable ranged from 3.68 to 3.49, indicating that "customer lifetime value" is high on the Amazon Egypt platform, but it has not reached the level of excellence, where the average responses range between 4 and 5, meaning that it needs continuous improvement.
- Elements of customer lifetime value to Amazon include: the company consistently provides services and products that match needs and preferences, a positive outlook on the long-term value obtained from the company, willingness to make repeat purchases from the company in the future, the customer service provided by the company is effective and customer-oriented, and the company appreciates and rewards its loyal customers.

Results concerning testing hypotheses

Correlation analysis showed the following:

- There is a significant positive correlation between the variable "customer satisfaction" and the variables "customer loyalty", "customer retention", customer lifetime value" since Pearson linear correlation coefficients reached 0.778, 0.742, 0.676 at significance level 0.01, respectively.

- There is a significant positive correlation between the variable "customer loyalty" and the variables "customer retention" and customer lifetime value" since Pearson linear correlation coefficients reached 0.906, 0.896 at significance level 0.01, respectively.

- There is a significant positive correlation between the variable "customer retention" and the variable "customer lifetime value"," since the Pearson linear correlation coefficient reached 0.765 at a significance level of 0.01.

- We accept all hypotheses as mentioned before.

Recommendations for Further research

Considering the results of the field study, the researcher recommends the following:

- Continuous communication with customers to find out their opinions about the quality of service provided by the platform.

- Use social media platforms to collect customer feedback and use that feedback to improve services.

- Focusing on understanding customer needs and making improvements that fit and meet their expectations.

- Good training for platform staff to handle and resolve customer issues.

- Providing innovative solutions to create new solutions to customer problems or meet their needs in an innovative way, which enhances customer loyalty.

- Maintaining a customer database, following up with them, and communicating with customers who have withdrawn from the platform to study the reasons for their withdrawal and resolve their problems.

- Exploring how AI chatbots and sentiment analysis tools can automate continuous customer opinion tracking.

- Using AI to combine structured survey responses (e.g., NPS) with unstructured social media feedback for deeper insights.

- How machine learning models can forecast customer expectations before they are explicitly stated.

- Investigating how AI-generated recommendations and policies can enhance loyalty.

- Applying deep learning to customer databases to identify and re-engage at-risk users.

- How AI-driven dynamic pricing, product recommendations, and ads impact satisfaction.

- Determining the optimal balance between automated and human-assisted service.

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