

## *Electronic Customer Relationship Management as a Mechanism to Enhance Customer Value – A Case Study on a sample of Algeria Telecom customers*

إدارة علاقات العملاء الإلكترونية كألية لتعزيز قيمة العميل – دراسة حالة على عينة من عملاء اتصالات الجزائر

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### **Abstract:**

The research aims to examine the influence of electronic customer relationship management (E-CRM) dimensions on enhancing customer value among service companies. To this end, we conducted a field research by distributing questionnaires to 420 customers from various customers of Algeria Telecom, state of Mila. The data for the studies was processed using the Statistical Package for the Social Sciences (SPSS), employing various statistical methodologies.

The research arrived at some conclusions of which the most important one is that there existed a statistically significant positive effect of implementing E-CRM towards customer value creation and 40% correlation between the variables. The study recommended that service enterprises should pay attention to electronically managing their relationships with customers due to its positive impact on enhancing customer value in its three dimensions (monetary, social, and emotional).

**Keywords:** Electronic Customer Relationship Management (E-CRM); Customer value (CV); E-CRM dimensions; Algeria telecom.

**Jel Classification Codes :** O32 ; M31

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## **Introduction:**

The environment in which the enterprise operates has witnessed a series of changes and developments. This era is characterized by rapid and continuous evolution aimed at meeting the ever-growing and changing needs and desires of customers. Marketing has evolved through various stages to reach relationship marketing, where modern marketing focuses on the customer as a partner in the institution's success, sustainability, and continuity. From this concept emerged the idea of Customer Relationship Management (CRM), which focuses on building long-term relationships with current and prospective customers. With the internet and information technology permeating various aspects of life and administrative work in modern institutions, databases and processes have transformed into electronic operations.

With all these technological advancements, the concept of CRM has evolved into a more sophisticated and modern approach, now known as Electronic Customer Relationship Management (E-CRM). Its reliance and implementation carry numerous benefits, including increased customer loyalty and improved service quality. It also achieves greater marketing efficiency and effectiveness.

Furthermore, the survival and success of institutions today depend on the value they provide to their customers, defined as the exchange of benefits with costs—what the customer receives versus what they pay, whether these benefits are monetary, emotional, or social.

## **Research Problem**

Based on the above, the following research problem can be posed:

To what extent does Algeria Telecom Mila Agency's commitment to Electronic Customer Relationship Management (E-CRM) influence the growth of its customer value?

## **Research Hypotheses**

The central hypothesis of this study posits that aspects of Electronic Customer Relationship Management (E-CRM) have a statistically significant positive influence on customer value growth at a significance level of  $\alpha \leq 0.05$ .

This main hypothesis is made up of the following sub-hypotheses:

**Sub-hypothesis 1:** Website design has a statistically significant positive impact on customer value enhancement at a significance level of  $\alpha \leq 0.05$ .

**Sub-hypothesis 2:** Website search capability has a statistically significant positive impact on customer value enhancement.

**Sub-hypothesis 3:** There is a statistically significant positive impact of loyalty enhancement programs on customer value enhancement.

**Sub-hypothesis 4:** There is a statistically significant positive impact of privacy and security on customer value enhancement.

**Sub-hypothesis 5:** Payment methods have a statistically significant positive impact on enhancing customer value.

**Sub-hypothesis 6:** Customer support services have a statistically significant positive impact on enhancing customer value.

## **Research Objectives**

This Research seeks to shed light on the application of E-CRM for marketing at Algerian Telecommunications Agency and its impact on creating value from the customer's perspective. Therefore, our study aims to achieve the following objectives:

- Define Electronic Customer Relationship Management as a new concept in marketing field;
- Gather customer feedback via a survey on the integration of E-CRM dimensions in the company's marketing function.
- Measure the degree to which the six dimensions of E-CRM increase customer-perceived monetary, emotional, and social value at Algeria Telecom - Mila Agency.

### Prior Research

• **Study by Researcher Benturki Zineb: The Contribution of Electronic Customer Relationship Management in Creating Customer Value, Article published in the Journal of Humanities, Vol 17, No 02, 2017:**

This study has reached several findings, the most important of which is that businesses should establish strong and positive relationships with their customers and ensure the quality of managing these relationships to guarantee their sustainability. Additionally, The performance of customer relationship management efforts is largely contingent on the degree to which the enterprises exploits and benefits from advancements in these technologies. This supports electronic customer management activities and enhances the institution's productivity.

• **Study by researcher KADI Abderrazzak and al, (2021), "Use of Electronic Customer Relationship Management during the Stages of Electronic procurement and Its Impact on Customer Value Development, A Study on a Sample of Shoppers on the website of Jumia Algeria," North African Economics Journal, vol 17, No 3**

This study analyzes the effect of electronic customer relationship management (E-CRM) in boosting customer value. in online purchasing. To achieve this objective, a descriptive methodology was adopted, utilizing an electronic questionnaire directed at a sample of shoppers on the Jumia Algeria website. The study surveyed 328 participants, and data analysis was conducted using SPSS version 26. The findings revealed that most respondents expressed satisfaction with Jumia as an e-commerce platform. Additionally, the study emphasized the need for website administrators to prioritize factors such as user-friendliness, an efficient search engine, robust security measures, high-quality service, and transparent information, as these elements significantly contribute to improving customer value and trust.

• **Study by Researcher Ghrieb Taoues : The Impact of Electronic Customer Relationship Management on Building Brand Equity According to Aaker's Model, Article published in Namaa Economy and Trade Journal, vol 06, no 2, 2022**

This research sought to explore the influence of electronic customer relationship management (E-CRM) on brand value creation at Algeria Telecom, using Aaker's model as a framework. The study targeted key brand value factors such as brand quality, brand awareness, brand associations, and brand loyalty. A questionnaire served as the primary data collection tool to assess customer perceptions of these variables, with a purposive sample of 222 customers. The findings revealed a significant relationship between E-CRM and brand value enhancement, with the regression model explaining 63.7% of Algeria Telecom's brand value as a result of effective electronic customer relationship management.

• **Study by Researcher Kilani Sonia: The influence of electronic customer relationship management on customer value creation in Algeria Telecom - a state Batna, Article published in the Journal of Economics and Sustainable Development, vol 04, No 01, 2022:**

This research focused on how electronic customer relationship management (E-CRM) drives customer value creation across multiple aspects, including monetary, social, and emotional aspects. The findings indicate a moderate correlation between E-CRM and customer value creation in the context of Algeria Telecom in Batna.

### Research Gap

Drawing from the literature review of prior studies and the problem of our ongoing research, the research gap for this study becomes evident. The present study linked two variables, E-CRM and customer value creation, in a telecommunications company, which is Algeria Telecom, at the level of a province in eastern Algeria, Mila. It is the first study to address electronic customer relationship management at this level. Additionally, the studies were conducted with a large sample size, which rendered the studies more representative of the study population, using a

sample of 420 customers. The sample possessed diverse demographic characteristics, such as age and education level, to render diverse responses.

### **I- The Concept of Electronic Customer Relationship Management (E-CRM):**

E-CRM is defined by Philip Kotler as: "a part of e-business which explains use of tools and platforms for running companies and enables them to serve their customers more rapidly and widely with lower costs and customizes products and services"(Kotler & Keller, 2014, p. 52)

Additionally, it is described as "marketing activities over the internet using technologies such as websites, email, data points, storage, and retrieval, with the specific goal of building and enhancing long-term relationships with customers to maximize their individual potential".(Farooqi & Dhusia, 2011)

Talat Al-Mohammedi defined it as "using internet technology to facilitate the implementation of customer relationship processes, Enabling organizations to deliver tailored services and products that effectively meet customer needs while fostering loyalty. Moreover, it has specific functions and various tools that differ depending on the organization applying the system".(Ben Turki, 2017)

Based on the previous definitions, a more comprehensive definition can be given as a strategy that includes a set of operational steps and tools delivered via the internet, based on using internet technology, managing electronic processes, and electronic communication channels, which help the organization better understand customer needs, how to meet them, and maintain a strong and positive relationship with them

#### **I-1- The Importance of E-CRM:**

It's importance lies in several aspects, the most significant being:(Sophonthummapharn, 2011)

- Understanding more about customer needs and behaviors to strengthen relationships with them.
- Boosting sales, minimizing costs, and ensuring customer satisfaction.
- Promoting customer engagement and perfecting service delivery.
- Acquiring new customers while retaining the loyalty of existing ones.
- Improving service efficiency and effectiveness, reducing costs, and achieving competitive advantages.

The importance of E-CRM can also be more clearly illustrated by the following points:

- Increasing Customer Loyalty:(Lee□Kelley, Mannicom, & Gilbert, 2003)

When a company has an effective electronic marketing program through customer relationships, it enables the company to communicate more effectively with its customers. Everyone in the company has access to customer information, helping to focus time and effort on matters that bring more profit and benefits to customers. One way the company can increase customer loyalty effectiveness is by personalizing customer relationships, increasing the time dedicated to dealing with each customer.

- Enhancing Marketing Process Effectiveness:(Scullin, Allora, & Lloyd, 2002)

Having detailed information from an electronic marketing program through customer relationships enable the company to offer products that align with customers' potential purchasing preferences and when they might do so. Such a program enhances the effectiveness of advertising campaigns and their follow-up, allowing for an analysis of the customer information database from various perspectives to discover elements that can help the marketing campaign achieve its goals.

- Increasing Customer Support and Service Effectiveness:(Scullin, Allora, & Lloyd, 2002)

The best way to improve customer support and service effectiveness is through email and direct mail, helping expand customer connections. Direct contact with customers through the company's call center also helps. When a customer contacts the call center, they expect high-quality service in

the shortest time possible. E-CRM call center technology aids significantly in managing incoming calls effectively. Sales representatives can provide customers with information and solutions quickly, leaving a positive impression on those seeking a service or product.

- Increasing Efficiency and Reducing Costs:(Abdul-Muhmin, 2012, p. 91)

E-CRM offers 24/7 service without additional costs, thereby reducing expenses. By integrating customer data into a centralized system, it enhances efficiency, allowing different departments, including marketing and sales, to exchange information and work cohesively toward company goals.

### **I-2- Components of E-CRM:**

The components of E-CRM include:(Kelani, 2022)

- Selecting the Most Profitable Customer:

It consists of targeting specific customer groups and designing products that suit their unique needs. Integrating the internet with CRM allows for customer data analysis through monitoring their behavior on the company's website, increasing customer loyalty and reducing the likelihood of them switching to other service providers. Marketers can thus understand customer desires and establish personal relationships, ensuring continuous service in the best possible way.

- Attracting Customers:

E-CRM focuses on advertising and other incentives to attract new customers and serving current customers through the internet. Organizations need customer data such as email, address, age, interests, and role in purchasing decisions to offer incentives like gifts or free samples, often through online advertisements and marketing tools like email and SMS.

- Retaining Customers:

Achieved through continuous online interaction, ensuring privacy by meeting specific needs, and creating influential customer networks through online communication, leading to increased customer retention.

- Creating Customer Value:

advancements allow organizations to communicate directly with customers via email, the internet, and mobile phones, facilitating understanding and meeting their needs promptly, thereby achieving various values (monetary, social, emotional, etc.).

- Extending Customer Value Duration:

E-CRM aims to maximize the value provided to customers. Organizations expand this by directly selling to current customers, utilizing variables like customer address changes, marital status changes, financial transactions, etc., to offer new or complementary services. (Ghrieb, 2022)

### **I-3-Dimensions of Electronic Customer Relationship Management (E-CRM)**

The following dimensions were adopted for studying E-CRM: (Matlib Al-Shabeil , 2012, p. 42)

#### **• Website Design:**

- The importance of an attractive website design lies in its ability to attract and retain customers. Considerations include:
  - Clear and purposeful content.
  - Brief and concise text, images, and graphics for quick page loading, encouraging user engagement.
  - Clear, easy-to-use interface, accessible to users of all cultural backgrounds.

#### **• Website Search Capability:**

Large organization websites should offer a powerful search tool, providing comprehensive information and easy usage to retain customers.

#### **• Loyalty Enhancement Programs:**

These integrated marketing systems aim to make customers more loyal through personal relationship development.

- **Security and Privacy:**

Ensuring the protection of customer information and preventing unauthorized access.

- **Payment Procedures :**

Offering several types of payment, e.g, credit card, cash on delivery, or electronic money, to be customer-friendly.

- **Customer Support Services:**

Providing essential post-sale and purchase support to keep pace with online business demands.

#### **I-4-Challenges of Implementing Electronic Customer Relationship Management (E-CRM):**

Several challenges in implementing E-CRM include: (Grover, 2011, p. 31)

- Risks related to profitability using the internet and uncertainties about when and how to achieve it.
- Customer mistrust regarding organizational data privacy, especially online.
- Although many customers are keen on online shopping, many are not, a concept known as "reliability."
- Certain legislations threaten the internet's ability to grow as a commercial business medium.

#### **II-Concept of Customer Value Creation:**

Marketing attention has shifted towards identifying marketing opportunities that enhance customer value, as it is the most customer-centric activity. This involves diagnosing and meeting customer requirements by offering products of value that help the organization achieve its objectives. (Payne, & Holt, 2001)

Customer value is "the difference between total customer value and total cost" (KOTLER, 2003, p. 85). The concept of value involves comparing two components: inputs (both monetary and non-monetary costs) and outcomes (benefits received by the customer). Customers compare the total benefits against the total costs resulting from product usage in a competitive environment. Value perception varies among different customer segments for the same product. (Matlib Al-Shabeil , 2012, p. 50)

From the above definitions, creating customer value is a necessary strategic choice aimed at differentiation in the business environment. Organizations strive to deliver expected value to their customers to secure staying power, maximize profits, and market share compared to competitors. Larger firms aim beyond mere customer satisfaction to delight and engage customers by creating marketing experiences that surpass customer expectations and fulfill multiple types of value (monetary, emotional, social, etc.).

#### **II-1- Stages of Creating Customer Value:**

Value-based marketing extends beyond traditional functional marketing to a comprehensive business process focusing on understanding and meeting customer value expectations. This process includes five dynamic steps defined as follows (Abu Zaanona , 2014, p. 11)

- Understanding customer values, needs, expectations, and brand perception through market planning.
- Committing to customer seriousness and expectations by segmenting markets, understanding value expectations, assessing competitive status, and choosing market segments.
- Creating customer value by developing commitment culture, planning value creation from operations and activities, and identifying necessary skills and competencies.
- Feedback on customer perceptions of added value and product evaluation through proactive feedback collection, complaint reviews, or performance evaluation against customer expectations.

- Measuring and improving value by evaluating marketing impact on customer value, contributing to profitability, customer support, and enhancing value.

## **II-2- Elements of Customer Value:**

Organizations perceive value through total costs translated into selling prices. However, customers view value through a set of benefits they will receive, necessitating alignment between all parties. There are two fundamental elements according to Kotler for customer value formation. Here, we clarify the elements of the customer value chain, which includes both total customer value dimensions and total customer costs. These elements are divided into two parts:

**Total Customer Value:** A package of customer benefits obtained from the product or service divided into: (Kadi & and , 2021)

- **Product Value:** Refers to the physical characteristics of the commodity and may include (durability, aesthetics, performance, practicality, consistency ....)
- **Service Value:** This also requires the delivery of services and refers to the distinction in its provision and may include (accounts and credit, demand facilities, delivery, installation, after-sales services, guarantee ...)
- **Personal Value (Individuals):** Individuals have become an important source for achieving distinction, particularly in service-oriented marketing, and relatively high quality. difficult to copy by competitors because it depends on the organization's culture and service delivery skills or institutional management (professionalism, courtesy, trust, perseverance ...)
- **Mental status value (perception):** Mental status is a convenient way to refer to a cohesive set of psychological rewards that the customer receives from purchasing, owning, and consuming the product. Mental status is highlighted through the advertising message."

**Total Customer Cost:** This is further divided into:

- **Monetary Cost:** the financial expense, or the exchange value of a product, which influences the perceived value.
- **Time Investment:** The duration spent acquiring the product, which some customers consider time cost higher than monetary cost, which is evident among those who do not want to waste time.
- **Effort Cost:** The effort a customer expends to acquire the product is considered a cost paid by the customer.
- **Psychological Cost:** This includes the psychological costs of dealing with new people, the need to understand new procedures, and the efforts made to adapt to new things. It may also include a certain level of frustration for the customer when added value is perceived in acquiring a particular product.

## **II-3- Importance of Creating Customer Value**

Creating value is of great importance to the customer and can be summarized in the following points:(Abu Zaanona , 2014, p. 12)

- Providing superior value to the customer helps the organization secure leading positions, especially in highly competitive markets.
- The fundamental principle for the customer is that they do not pay more than the product is worth, which subsequently determines the organization's turnover, profit margins, and market presence.
- Perceived value is the key to successful business strategies in the twenty-first century.
- The perceived value, understands how to achieve, and maximizes is the basis for achieving competitive advantage. A company's competitive advantage must be embedded in the value it delivers to its customers.
- It's the primary driver for purchasing decisions, leading to high levels of satisfaction and loyalty, which in turn guides financial performance.

## **II-4- Dimensions of Customer Value**

According to experts and researchers, customer value dimensions can be grouped into three main dimensions: (Williams & Soutar, 2000)

### **Financial-Related Value:**

Measured as the worth of superiority of benefits (characteristics, faith, quality) over costs (financial, non-financial) and their impact on customer satisfaction (Idris & Al-Morsi, 2004). Therefore, it is the value derived from the product or service achieving the desired task or benefit.

### **Emotional Related Value:**

Symbolizes perceived value from direct experience or contact with products and services causing feelings and affective states. It is the feelings that the consumer gets when interacting with a service, acquiring this value from the affective response incurred upon use.

### **Social-Related Value:**

Represents the perceived value that is associated with connecting the product to a cultural, social, ethnic, or demographic group to fulfill the belonging need. It represents the value a customer derives from a product based on the recognition and appreciation of others. According to the theory of reasoned action, the customer tends to behave as expected by significant others. Thus, it is a benefit derived from the product or service's ability to enhance self-concept, linked to social acceptance, and improving one's image in the eyes of others in the community. (Yan & Chiou, 2020, p. 4639)

## **III-The Electronic Customer Relationship Management Role in Value Creation**

The function of (E-CRM) in creating value for customers can be illustrated through the relationship between E-CRM and each type of value as follows: (Haudi, 2022)

### **III-1-The Role of E-CRM in Creating Monetary Value**

Monetary value represents the benefit derived from a product or service by fulfilling the intended purpose or utility when purchased. E-CRM contributes to creating monetary value for clients by:

- Helping in the creation of monetary value by synchronizing product prices on the site, which is accepted by customers.
- Contributing to the creation of monetary value by ensuring a balance between the price and quality of available products.
- Contributing to the creation of monetary value by simplifying and facilitating access to good purchasing deals easily on the website.
- Contributing to financial savings through online shopping by reducing transportation costs.

### **III-2- Role of E-CRM in Creating Social Value:**

Social value represents the benefit derived from a product or service's ability to enhance social status or self-concept. E-CRM contributes to creating social value for customers by:

- Contributing to social value creation through acquiring socially acceptable image and status by purchasing products through electronic platforms.
- Creating social value by leaving a positive impression on others through ownership of products and services available on the website.
- Generating social value through the use of products on the website that enhance social acceptance.

### **III-3-Role of E-CRM in Creating Emotional Value:**

Emotional value refers to the feelings that customers experience when using an organization's product or service. E-CRM contributes to creating emotional value for customers by:

- Creating emotional value through providing clear and transparent information on the website.

- Generating value by satisfying the need for information through electronic marketing.

#### **IV-Methods and Materials:**

##### **IV-1- Sampling**

The study population is the most commonly used statistical concept in descriptive statistics. It refers to the set of elements or individuals upon which the study is based. Since conducting research on an entire population is often impractical, the researcher selects a sample or multiple samples to represent the population.

The population under study in the present research includes all customers who engage with Algeria Telecom in the state of Mila. Accordingly. The selected sample size comprised 420 customers of Algeria Telecom in this eastern state.

The adequacy of the sample size was verified by referring to the guidelines provided by Uma Sekaran for determining the required sample size: (Uma , 2003, p. 494)

- 30 to 500 elements are suitable for most research studies.
- The number of elements in each stratum should not be less than 30 in stratified samples.

The present study utilized a convenience sampling method, recruiting participants through an online questionnaire. It is worth motioning that convenience sampling may introduce a potential limitation in terms of generalizability, but this approach was chosen due to its practicality and accessibility, allowing us to gather data from a diverse group of participants efficiently.

The questionnaire was conducted online using Google Forms from the second semester of 2023 to the first semester of 2024. To reach the desired participants, we distributed the questionnaire link through two primary channels: social media platforms and email lists.

The target population for this study encompassed customers who have used or are still using the electronic services of Algeria Telecom, A screening question at the questionnaire's start was used to determine this. In total, 420 valid responses were collected and analyzed during the data collection phase.

At the questionnaire's outset, participants were informed in detail about the study's objectives and the nature of their participation. A clear and straightforward informed consent process was implemented, emphasizing the voluntary nature of their involvement and ensuring the confidentiality of their responses. By adhering to these guidelines, ethical standards were adhered to throughout the study.

##### **IV-2- Study Tool**

The questionnaire is divided into two parts as follows: (Appendix No. 01)

Part One: the independent variable (E-CRM): This section contains 22 items that measure the independent variable, divided to the six dimensions as follows:

- Website Design: 4 items
- Website Search Capability: 4 items
- Loyalty Enhancement Programs: 4 items
- Security and Privacy : 4 items
- Payment Methods :3 items
- Major Customer Support Services: 3 items

Part Two: the dependent variable (CV): This section contains 12 items divided according to the three dimensions as follows:

Monetary Value: 4 items;

Emotional Value: 4 items;

Social Value: 4 items.

The researcher developed the items for both the independent and dependent variables based on insights from previous studies that explored these variables. Among these studies are:

**Table n°1: References for the Questionnaire items**

Axes	References
<b>Electronic Customer Relationship Management</b>	(Kelani, 2022, p. 154) (Ben Turki, 2017, p. 24) (Mekkamol, Piewdang, & UntachaI, 2013)
<b>Customer Value</b>	(Matlib Al-Shabeil , 2012, p. 41) (Cengiz & Kirkbir, 2007)

**IV-3- Reliability of the research instrument**

To guarantee the validity and reliability of the research instrument, the Cronbach's alpha coefficient is calculated to evaluate its consistency. Cronbach (Cronbach) derived a general formula for estimating the reliability of various types of tests and measurements. This method leads to an internal consistency coefficient for the test structure, also known as the homogeneity coefficient, as follows:

$$RTT = \left( \frac{N}{N-1} \right) \left( 1 - \frac{\sum sdi^2}{sdi^2} \right)$$

There is a near consensus among researchers that a Cronbach's alpha coefficient for reliability above the acceptable rate (60%) is considered sufficient and acceptable, while a coefficient reaching (80%) is deemed ideal, indicating an excellent level of confidence and reliability. g value through providing enjoyment during shopping on the website.

**Table n°2: Cronbach's Alpha Reliability Measure for Study Dimensions**

Symbol	Dimensions	Number of Items	Cronbach's Alpha Reliability Coefficient	Validity Coefficient
X	E-CRM	22	0.877	0.936
Y	CV	12	0.794	0.891
<b>TOTAL</b>	<b>All dimensions</b>	<b>34</b>	<b>0.885</b>	<b>0.940</b>

Source: Tabluated by the researcher based on SPSS outputs.

The above results are considered satisfactory and good in such a study. The study's questionnaire attained a Cronbach's alpha coefficient of 88.5%, which is well above the 60% reliability threshold, ensuring the validity of the statements in each section.

In addition, the validity coefficient was 94%, which is greater than 70%, indicating the validity of the statements constituting each axis of the study. Therefore, we can rely on these responses to achieve the study's objectives and generalize the research findings.

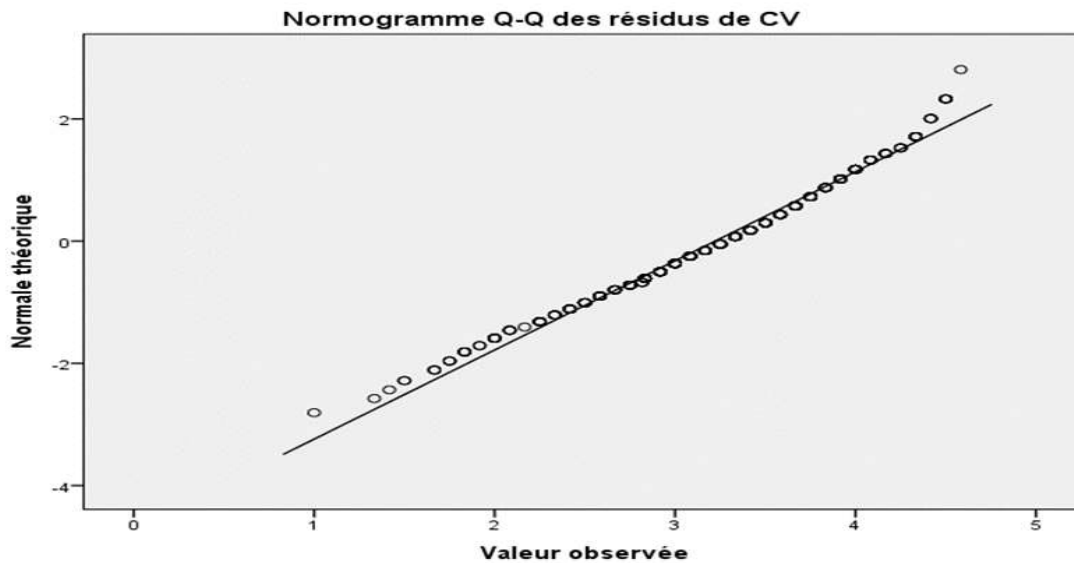
**Table n°3: Normal Distribution Test (Kolmogorov-Smirnov Test)**

Number	Dimension	Z Value	Significance Level)
01	E-CRM	0.976	0.296
02	Customer Value	1.456	0.059

The test results table provides evidence that the significance value (sig) exceeded the threshold (alpha = 0.05) across all dimensions. Additionally, the table indicates that the significance value for the calculated Z statistic is greater than 0.05, confirming the normal distribution of the study variables.

Supporting evidence for this conclusion comes from the normal distribution curve and the linear arrangement of data points, which confirm normality and facilitate an analysis of the study variables' relationships. Thus, various statistical tests can be performed.

Figure n°1: The normal distribution curve:



Source: SPSS outputs

#### IV - 4- Statistical Methods Used

Several statistical procedures were employed to analyze the data in this study:

- **Cronbach's Alpha Coefficient:** Assesses how reliable and consistent the questionnaire items are.
- **Kolmogorov-Smirnov Test:** Checks whether the given sample data adheres to a normal distribution.
- **Pearson Correlation Coefficient (R):** Measures both the intensity and direction of the correlation between independent and dependent variables.
- **t-test:** Determines the significance of each independent variable's effect on the dependent variable in the model.
- **ANOVA (Analysis of Variance):** Compares group means to test research hypotheses.
- **Simple Regression Analysis:** Assesses how the independent variable (E-CRM dimensions) influences the dependent variable, with a separate evaluation of each dimension.
- **Coefficient of Determination (R<sup>2</sup>):** Represents the proportion of variance in the dependent variable that is explained by the independent variable within the regression model.
- **Likert Scale:** A commonly used measurement tool that captures respondents' levels of agreement or disagreement with specific statements, typically ranging from "Strongly Disagree" to "Strongly Agree."

#### V-Results and discussion :

##### Analyzing the Core Hypothesis and Interpreting the Results

**First - Testing the Main Hypothesis:** The results of our analysis depict a statistically significant effect of electronic customer relationship management (E-CRM) on customer value enhancement, with significance level ( $\alpha \leq 0.05$ ).

In order to ascertain the validity of the model to test this hypothesis, regression variance findings were utilized, as presented in the table:

**Table n°4: Regression Variance Analysis Results for Testing Core Hypothesis**

Sources of Variation	∑Sum of Squares	(DF)	Mean Squares (MS)	Computed F-Value	Significance Level
Regression	31.028	1	31.028	79.028	0.000
Error	163.111	419	0.398		
Total	194.139	420			

The table demonstrates the stability of the model in testing the primary hypothesis, as the calculated F value is 79.705, which exceeds the critical value, with a probability of 0.000—well below the significance threshold ( $\alpha \leq 0.05$ ). This confirms the model's validity for hypothesis testing.

To determine the relationship between the independent variable (E-CRM) and the dependent variable (customer value) using simple regression, the key findings are summarized in table 5

**Table n°5: Regression Analysis Results on the Effect of E-CRM on Customer Value Enhancement**

Independent Variable	B Regression Coefficient	Computed t-Value	Significance Level (sig)	Computed F-Value	Correlation Coefficient (R)	Coefficient of Determination (R <sup>2</sup> )	Level of Significance (sig)
E-CRM	0.421	8.928	0.000	79.705	0.400	0.160	0.000

The table reveals a statistically significant relationship between E-CRM and customer value creation at a significance level of ( $\alpha \leq 0.05$ ) within the studied sample. This suggests a positive connection between the two variables.

This finding is supported by the calculated F-value of 79.705, which exceeds the critical one, and a t-value of 8.559 with a significance level of 0.000. Additionally, the correlation coefficient of 0.400 confirms a positive association between E-CRM and customer value creation.

Furthermore, the determination coefficient (R<sup>2</sup>) of 0.160 indicates that 16% of the variations in customer value can be attributed to changes in E-CRM. Based on these results, the simple linear regression equation is as follows:

$$y=0.421x+1.836$$

The equation suggests that for every one-unit increase in E-CRM, customer value increases by 0.421 units. This means that E-CRM plays a meaningful role in shaping customer value.

As a result, the null hypothesis—which claimed there is no significant impact of E-CRM on customer value at a significance level of ( $\alpha \leq 0.05$ )—is rejected. Instead, the alternative hypothesis is confirmed, indicating that E-CRM does, in fact, have a significant positive effect on customer value.

**Table n°6: Regression analysis results for the impact of website design on enhancing customer value**

Independent Variable	(B)	t-value	Significance Level (sig)	F-value	(R)	(R <sup>2</sup> )	(sig)
Website Design	0.172	4.759	0.000	22.651	0.226	0.051	0.000

The findings displayed in the table indicate a statistically significant relationship between website design and customer value at a significance level of ( $\alpha \leq 0.05$ ), based on the perspectives of the study participants. This suggests a positive connection between the two variables.

This conclusion is supported by the calculated F-value of 22.651, which exceeds the tabulated one, and a t-value of 4.759 with a significance level of 0.000—lower than the adopted threshold of 0.05.

Additionally, the correlation coefficient of 0.226 demonstrates a direct relationship between website design and customer value. Meanwhile, the coefficient of determination ( $R^2$ ) of 0.051 indicates that variations in website design account for 5.1% of the changes in customer value.

The corresponding simple linear regression equation for this relationship is as follows:

$$Y=0.172X+2.671$$

According to this equation, a one-unit improvement in website design results in a proportional increase of 0.172 units in Y (customer value). Based on this, the null hypothesis—which suggests that "there is no statistically significant effect of website design on customer value creation at a significance level of ( $\alpha \leq 0.05$ )"—is rejected. Instead, the alternative hypothesis is confirmed, indicating that "website design does have a statistically important effect on customer value creation at ( $\alpha \leq 0.05$ )."

**Sub-hypothesis 2:** There is a statistically significant positive impact of website search capability on enhancing customer value at a significance level of  $\alpha \leq 0.05$ .

**Table n°7: Regression analysis results on the impact of website search capability on enhancing customer value**

Independent Variable	(B)	t-value	(sig)	F-value	(R)	(R <sup>2</sup> )	(sig)
Search Capability	0.237	7.323	0.000	53.619	0.337	0.113	0.000

The table results indicate a statistically significant correlation between the website's search functionality and the creation of customer value at a significance level of ( $\alpha \leq 0.05$ ) in the studied sample. This suggests a positive connection between the two variables.

This finding is supported by the calculated F-value of 53.619, which exceeds the critical (tabulated) value, and a t-value of 7.323 with a significance level of 0.000—lower than the established threshold of 0.05.

Furthermore, the correlation coefficient of 0.337 indicates a direct link between website search functionality and customer value creation. Meanwhile, the coefficient of determination ( $R^2$ ) of 0.113 indicates that 11.3% of the variation in customer value is explained by changes in search functionality.

The simple linear regression equation for this relationship is as follows:

$$Y=0.237X+2.425$$

According to this equation, a one-unit improvement in the website's search functionality results in a proportional increase of 0.237 units in Y, representing customer value creation.

Based on this, the null hypothesis—which states that "there is no statistically significant effect of the website's search functionality on customer value creation at a significance level of ( $\alpha \leq 0.05$ )"—is rejected. Instead, the alternative hypothesis is confirmed, indicating that "the website's search functionality has a statistically significant effect on customer value creation at ( $\alpha \leq 0.05$ )."

### Third Sub-Hypothesis

There is a statistically significant positive impact of Loyalty Enhancement Programs on enhancing customer value at an important level of  $\alpha \leq 0.05$ .

**Table n°8: Results of Regression Analysis on the impact of Loyalty Enhancement Programs on enhancing Customer Value**

Independent Variable	B	t-Value	(sig)	F-Value	(R)	(R <sup>2</sup> )	(sig)
Loyalty Enhancement Programs	0.186	5.538	0.000	30.239	0.261	0.068	0.000

The results presented in the table show a statistically significant relationship between loyalty enhancement programs and customer value creation at a significance level of ( $\alpha \leq 0.05$ ) in the studied sample. This suggests a positive connection between the two variables.

This conclusion is supported by the calculated F-value of 30.239, which exceeds critical or tabulated value, and a t-value of 5.538 with a significance level of 0.000—lower than the established threshold of 0.05.

Furthermore, the correlation coefficient of 0.261 indicates a direct link between loyalty enhancement programs and customer value creation, The coefficient of determination (R<sup>2</sup>) of 0.068 reveals that loyalty enhancement programs account for just 6.8% of the variation in customer value

The simple linear regression equation for this relationship is as follows:

$$y=0.186X+2.682$$

According to this equation, a one-unit improvement in loyalty enhancement programs leads to a proportional increase of 0.186 units in **Y**, representing the focus dimension of sustainable development.

Based on this, the null hypothesis—which states that "loyalty enhancement programs have no statistically significant effect on customer value creation at a significance level of ( $\alpha \leq 0.05$ )"—is rejected. Instead, the alternative hypothesis is confirmed, indicating that "loyalty enhancement programs have a statistically significant effect on customer value creation at ( $\alpha \leq 0.05$ )."

#### **Fourth Sub-Hypothesis**

There is a statistically significant positive impact of Security and Privacy on enhancing customer value at an important level of  $\alpha \leq 0.05$ .

**Table n°9: Results of Regression Analysis for the Effect of Security and Privacy on Customer Value enhancement**

Independent Variable	B	t-Value	(sig)	F-Value	(R)	(R <sup>2</sup> )	(sig)
Security and Privacy	0.132	3.687	0.000	13.593	0.177	0.031	0.000

The results presented in the table indicate a statistically significant relationship between security and privacy and customer value creation at a significance level of ( $\alpha \leq 0.05$ ), based on the responses of the study sample. This suggests a positive connection between the two variables.

This finding is supported by the calculated F-value of 13.593, which exceeds the critical (tabulated) value, and a t-value of 3.687 with a significance level of 0.000—lower than the established threshold of 0.05.

Additionally, the correlation coefficient of 0.177 suggests a direct relationship between security and privacy and customer value creation, while the coefficient of determination (R<sup>2</sup>) of 0.031 indicates that 3.1% of the variation in customer value can be attributed to changes in security and privacy measures.

The simple linear regression equation for this relationship is as follows:

$$Y=0.132X+2.763$$

According to this equation, a one-unit improvement in security and privacy leads to a proportional increase of 0.132 units in **Y**, representing customer value creation.

Based on this, the null hypothesis—which states that "security and privacy have no statistically significant effect on customer value creation at a significance level of ( $\alpha \leq 0.05$ )"—is rejected. Instead, the alternative hypothesis is confirmed, indicating that "security and privacy have a statistically significant effect on customer value creation at ( $\alpha \leq 0.05$ )."

#### Fifth Sub-Hypothesis

There is a statistically significant positive impact of Payment Methods on enhancing customer value at an important level of  $\alpha \leq 0.05$ .

**Table n°10: Results of Regression Analysis on the Effect of Payment Methods on Customer Value Creation**

Independent Variable	B	t-Value	(sig)	F-Value	(R)	(R <sup>2</sup> )	(sig)
Payment Methods	0.242	6.642	0.000	44.115	0.309	0.095	0.000

The table results reveal a statistically significant relationship between payment methods and customer value creation at a significance level of ( $\alpha \leq 0.05$ ) within the studied sample, indicating a positive association between the two variables.

This finding is reinforced by the calculated F-value of 44.115, which surpasses the critical (tabulated) value, along with a t-value of 6.642 and a significance level of 0.000—well below the 0.05 threshold.

Moreover, the correlation coefficient of 0.309 confirms a direct relationship between payment methods and customer value creation, while the coefficient of determination ( $R^2$ ) of 0.095 suggests that 9.5% of the variation in customer value is explained by changes in payment methods.

The corresponding simple linear regression equation for this relationship is as follows:

$$Y = 0.242X + 2.357$$

According to this equation, a one-unit improvement in payment methods results in a proportional increase of 0.242 units in  $Y$ , representing customer value creation.

Based on this, the null hypothesis—which states that "payment methods have no statistically significant effect on customer value creation at a significance level of ( $\alpha \leq 0.05$ )"—is rejected. Instead, the alternative hypothesis is confirmed, indicating that "payment methods have a statistically significant effect on customer value creation at ( $\alpha \leq 0.05$ )."

#### Sixth Sub-Hypothesis

There is a statistically significant positive impact of Main Customer Support on enhancing customer value at an important level of  $\alpha \leq 0.05$ .

**Table n°11: Results of Regression Analysis for the Effect of Main Customer Support Services on enhancing Customer Value**

Independent Variable	B	t-Value	(sig)	F-Value	(R)	(R <sup>2</sup> )	(sig)
Main Customer Support Services	0.310	9.284	0.000	86.199	0.413	0.171	0.000

The results presented in the table indicate a statistically significant relationship between **main customer support services** and **customer value creation** at a significance level of ( $\alpha \leq 0.05$ ) in the studied sample. This suggests a positive association between the two variables.

This conclusion is supported by the **calculated F-value of 86.199**, which exceeds the critical (tabulated) value, and a **t-value of 9.284** with a significance level of **0.000**, which is below the threshold of 0.05.

Additionally, the correlation coefficient (R) of 0.413 signifies a moderate positive relationship between core customer support services and customer value creation. Meanwhile, the coefficient of determination ( $R^2$ ) of 0.171 indicates that 17.1% of the variation in customer value can be attributed to changes in customer support services.

The simple linear regression equation for this relationship is:

$$Y=0.310X+2.237$$

According to this equation, a one-unit improvement in main customer support services results in a 0.310-unit increase in  $Y$ , representing customer value creation.

Based on these findings, the **null hypothesis**, which states that "*there is no statistically significant effect of main customer support services on customer value creation at  $(\alpha \leq 0.05)$* ", is **rejected**. Instead, the **alternative hypothesis** is confirmed, indicating that "*main customer support services have a statistically significant impact on customer value creation at  $(\alpha \leq 0.05)$* ."

Based on the overall findings, we can summarize the influence of **electronic customer relationship management (E-CRM)** dimensions on **customer value creation**, ranking them according to the strength of their correlation with the dependent variable. The ranking is as follows:

- **Customer Support Services:** This dimension ranks first in its impact on creating value for Algerian Telecom Mila customers, with a correlation degree of 41.3%. This indicates a relatively strong positive relationship, highlighting the significant importance of improving services directed towards key customers (the 20% of customers who generate 80% of the company's revenue, according to Pareto's Law) to enhance their value.
- **Website Search Functionality:** This dimension ranks second in its impact on creating value for Algerian Telecom Mila customers, with a correlation degree of 33.7%. This shows a positive relationship and underscores the importance of providing a search function on the company's website to enhance customer value.
- **Payment Methods:** This dimension ranks third in its impact on creating customer value, with a correlation degree of 30.9%. This positive relationship highlights the significant importance of providing new payment methods to enhance customer value.
- **Loyalty Programs:** This dimension ranks fourth in its impact on creating value for Algerian Telecom Mila customers, with a correlation degree of 26.1%. This positive relationship demonstrates the importance of improving loyalty programs to create more value for customers.
- **Website Design:** This dimension ranks fifth in its impact on creating value for Algerian Telecom Mila customers, with a correlation degree of 22.6%. This positive relationship emphasizes the importance of developing the company's website design to enhance customer value.
- **Security and Privacy:** This dimension ranks sixth in its impact on creating value for Algerian Telecom Mila customers, with a correlation degree of 17.7%. Despite being a relatively weak positive relationship, it still highlights the importance of providing security and privacy for customers to enhance their value.

### **Conclusion:**

From the theoretical aspect of this research paper, we concluded that E-CRM is a strategy encompassing a set of operational steps and tools provided over the internet. It is based on using internet technology, managing electronic processes, and electronic communication channels, which help the company better understand customer needs, meet those needs, and maintain good relations with clients.

Research findings based on empirical analysis show that E-CRM dimensions have a considerable statistical impact on customer value generation, with a 40% moderate positive correlation between both variables. This indicates the valuable role of E-CRM in customer value. These results are in line entirely with Kilani Sonia (2022), where the correlation was 51.4%, and partially with Al-Shabeel (2012) and Ghrieb (2022), where the correlation coefficients were 60% and 63.7%, respectively.

The dimension of customer support services ranked first in its impact on creating value for Algerian Telecom Mila customers, with a correlation coefficient of 41.3%. The sixth and last rank was occupied by the dimension of security and privacy, with a correlation coefficient of 17.7%. These

results can be explained by the fact that E-CRM focuses primarily on important customers—the 20% who generate 80% of the profits. Thus, the company concentrates its marketing efforts on this segment to create optimal value for them and retain them.

### **Recommendations**

Based on the findings of this study, we recommend service companies in general and Algerian Telecom in particular to:

- Clearly demonstrate the company's policy on website security and customer privacy protection to build trust in the company's website;
- Focus on managing customer relationships electronically, as it has a positive impact on enhancing customer value in its three dimensions (monetary, social, and emotional);
- Diversify electronic payment methods, such as credit cards, and develop the use of electronic money, which is the future of electronic payments;
- Provide practical tools to study post-purchase behavior and evaluate the services provided to customers To evaluate the social and emotional value as perceived by customers.
- Pay closer attention to the Algerian Telecom website as it is the visible interface for electronic services, directly affecting the perceived value of the customer, especially in terms of updating and ease of use;
- Focus on E-CRM management due to its effective role in creating value for customers, ensuring customer satisfaction, and achieving their loyalty.

### **Limitations and Future Perspectives:**

This study's reliance on convenience sampling poses a limitation, as it constrains the generalizability of the findings to a larger Algerian context. the cross-sectional research design does not capture potential changes over time, limiting insights into long-term trends and dynamics. Including qualitative insights could also enhance our understanding of user perceptions and experiences.

Future research could overcome these limitations by using probability sampling methods for better representation, conducting longitudinal studies to observe changes over time, and incorporating qualitative data collection techniques such as interviews or focus groups. Further avenues for research include exploring variables not included in this model, making cross-cultural comparisons across different countries, and testing the model in other emerging economy contexts.

Despite recognizing the study's limitations and the need for additional research, this study makes a significant contribution by expanding knowledge on a relatively unexplored phenomenon. It offers empirical validation for key technology adoption theories in a new context and provides practical insights for encouraging the adoption of E-CRM in emerging economies in the Arab region. These findings lay the groundwork for future research to build on this foundation through further theoretical and empirical exploration.

**Appendices:**

**The questionnaire**

**Axis 1: E-CRM**

Items
<b>Website Design</b>
- The Algeria Telecom website has an attractive design.
- The company's website is easy to use.
- Website pages load quickly.
- The website design is modern and distinctive.
<b>Website Search Capability</b>
- I can effortlessly find information on the website.
- The website offers adequate tools for searching for products and services.
- All the information I require is accessible on the website.
- The search tool on the website is both easy to navigate and speedy.
<b>Loyalty Enhancement Programs</b>
- The website offers attractive cash discounts on any purchase.
- The website provides a points accumulation system for purchases.
- The website offers incentives and bonus rewards.
- The website offers attractive gifts with purchases.
<b>Security and Privacy</b>
- I feel safe completing transactions on this website.
- The website protects users' personal data with strict confidentiality.
- The exact agreed price is applied without any additional costs on the website.
- The website takes the issue of information confidentiality very seriously.
<b>Payment Methods</b>
- The website offers several different payment methods (credit card, cash on delivery).
- The website accepts payments in various currencies (Dinar, Dollar, etc.).
- The website provides easy and convenient payment procedures.
<b>Major Customer Support Services</b>
- Algeria Telecom provides supportive services that make it easy for customers to obtain services in a timely manner.
- I feel that the company cares about me at all stages of obtaining the service.
- I feel a sense of fulfillment when receiving supportive and helpful services from Algeria Telecom's website.

**Axis 02: CV**

Items
<b>Monetary Value</b>
- The price of internet services at Algeria Telecom is acceptable
- The service prices on the website are reasonable considering the quality offered.
- The electronic and temporary payment service saves travel expenses
- The price of the company's 4G service is better compared to competing companies
<b>Emotional Value</b>
- The Algeria Telecom website provides clear information about the services offered
- I feel proud to benefit from the company's electronic services
- I feel special for using the company's electronic services
- I feel comfortable with my experience with Algeria Telecom
<b>Social Value</b>
- Using Algeria Telecom's electronic services makes me appear better
- Using Algeria Telecom's electronic services contributes to leaving a good impression on others
- Using Algeria Telecom's electronic services gives me social acceptance among those around me
- Using Algeria Telecom's electronic services gives me a good social status

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