The role of digital marketing tools in developing customer relationship management (CRM) in private healthcare institutions in Algeria.

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Summary:
Many institutions seek to introduce new methods and technologies in the management of their activities and operations. So, they started implementing technology to invest it, particularly in private healthcare institutions. the purpose of this study is, therefore, to identify the most important digital technologies used by private healthcare institutions in Algeria and show how they help to enhance the relationship with the customer (patients), improve their experience, and boost reliability. A questionnaire was developed based on exploratory interviews with three private institutions: Wardat Al-Rimal – Laghouat, El Wifaq – Djelfa, and El Hilal – Algiers, and distributed on the study sample (customers of private healthcare institutions). After collecting and sorting the data, we obtained a sample of 150 individuals, which was processed using the SPSS statistical analysis programme. The results proved a significant effect of using digital marketing tools (social media, mobile phone, email) in developing customer relationship management CRM.
Keywords: Digital marketing tools; social media; mobile phone; email; customer relationship management; private healthcare institutions in Algeria.
Jel Classification Codes : M31 ; M15 ; I11.

I- Introduction :

In recent years, the world has been subject to tremendous and unparalleled progress in many parts of life, particularly on technical and technological areas. Technology grows to take more importance over time (HAWAS, 2020), and it has had a crucial impact on, almost, all aspects of individual and collective life, activity, and, as a matter of course, of enterprises. It has, really, converted the world into a new form in all of its interactions, allowing all other branches of research to rapidly flourish (Hamidouche and Bouzida,2020).This is according to a recent study, which confirmed that the modern business environment and the digital world, in which we all live and work, are not only drivers of competitive advantage and success, but also necessary for business survival and a motivator for institutions to operate, (Perkin & Abraham, 2017). Institutional sustainability and the use of technology have become fundamental and that is observable through the growing demand to implement it for institutions, society, and politicians worldwide. As a result, competitive, social, and institutional forces have driven institutions to enhance their effect on society, institutions, and individuals (Forcadell et al., 2020).

Technology has emerged with a deep significant influence affecting many industries, including the healthcare system. The incorporation of sophisticated technologies and digital tools has an obvious decisive impact on the strategies of healthcare organizations. As a result, the healthcare industry is undergoing a fundamental revolution in how institutions develop and implement their objectives (Al-Haimi et al., 2023), with the goal of providing effective, high-quality, and safe care. This shows considerable promise for the creation and spread of new care models (Ebbert et al., 2023)

Furthermore, technology has enabled access to health services by overcoming many barriers such as distance, cost, and limited resources, resulting in significant changes in how healthcare is provided, accessed, and managed (Judijanto et al., 2024), playing an irreplaceable role in

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improving healthcare services, diagnosis, and treatment in an era of constant technological innovation (A et al., 2024).

As a result, our study will focus on an aspect related to institutions in general and health institutions in particular, in an attempt to take advantage of technology and integrate it into their daily activities, where CRM has emerged advanced concepts when combined with digital marketing tools, namely, S-CRM, MOBILE CRM, and EMAIL CRM. The study tries to reveal the effectiveness of digital tools used by private health institutions and to show the extent to which these tools are reliable and deserving all that importance. As a result, the central steer question of our research is: **What can the role of digital marketing technologies (social media, mobile phones, and email) be in the growth of CRM in private health organisations?**

Our study starts up from the hypothesis that the adoption of digital marketing tools in private health institutions would aim at Providing better ways to customers and patients in order to interact and communicate. This could increase the efficiency and ability of CRM to improve performance within private health institutions, based on the findings of the exploratory study.

Objectives of the study:

- Try to identify the most important digital marketing tools used by private health organisations in Algeria.
- Highlight how digital marketing tools contribute to strengthening the relationship with customers in private health organisations in Algeria
- Evaluate the role of digital marketing tools in improving patient experience and increasing loyalty.

The importance of the study:

The study derives its value from the importance of the topic, which is related to the technological and digital aspect and a vital urgent life condition, which is human health, by:

- Revealing the extent to which community members are shifting towards the use of digital tools to serve their public health, and motivating them to do so.
- Helping the studied organisations to improve patient service through digital marketing tools.

Methodology of the study:

In order to answer the question posed, we will rely on the descriptive and analytical method. We shall use the desk survey for the theoretical aspect of the study topic by reviewing previous studies and research on the subject of the study, to formulate research hypotheses. We will study the role of digital marketing tools in developing CRM, and analyse the various data collected through the study tools. Then, we must draw some conclusions and recommendations that serve the purposes of the research.

II. LITERATURE REVIEW

Rapid technological progress has resulted in the birth of new CRM ideas such as S-CRM, MOBILE CRM, and EMAIL CRM in order to provide new methods to engage with clients and form long-term relationships with them.

II.1. Social CRM (S-CRM)

Greenberg (2010) defines it as creating a business philosophy and strategy, supported by a technology platform, business rules, processes, and social features, to engage customers in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment (Harrigan & Miles, 2014, p. 102), and using technology, specifically social media, to establish trust and brand loyalty (Ibrahim et al., 2021, p. 207).

(Anshari & Almunawar, 2012, p. 14), it provides operational and strategic benefits to hospitals and private health organizations by providing a platform to distribute information online, and providing better communication channels for doctors, patients and their families without being bound by time or place, as social media has proven to be an important tool in achieving the goal towards a more comprehensive and collaborative health care system (Rahma et al., 2023, p. 598), as it is the most cost-effective CRM technology, giving health organizations with limited advertising, marketing, and customer service budgets a greater advantage, while few would argue the potential value of social CRM technologies, access to these technologies is necessary but not sufficient for successful social CRM (Navendra, 2023, p. 19).

As for the importance of Social CRM, it provides value-added services to patients, improves patient loyalty, creates better communication with healthcare providers, improves the image of the health organization and is easy to recognize, self-managed data, which will improve health literacy and reduce the economic burden on society as a whole (Choi et al., 2012, p. 06), provides useful information, such as work guidelines, research findings and practical insights resulting from complex service delivery and process management in healthcare in many new ways, by interacting with social media (Lee et al., 2020, p. 834), making patient expectations compatible with the ICT approach in actual healthcare services, and providing a new view from either the patient or the provider, and how they organize the interconnection between three distinct domains; patient expectations, ICT advancement, and healthcare services. Each domain has unique features and characteristics and failure to respond appropriately may affect service performance and patient satisfaction (Anshari & Almunawar, 2012, p. 14).

II. 2. MOBILE CRM:

According to Sinisalo (2007), it is defined as "one-way or interactive communication related to sales, marketing, and customer service activities conducted through mobile media for the purpose of building and maintaining relationships between organizations and customers" ((Khare & Rakesh, 2012, p. 68). It is also defined as a CRM activity based on forming two-way relationships with customers through real-time customer experience information derived from knowledge of customer preferences, locations, purchase information, and needs based on the use of mobile channels ((Kim et al., 2015, p. 743).

M-CRM in the health field can be defined as a type of interactive communication between health organizations or hospitals and patients using mobile devices to provide services to patients by healthcare providers, since patients increasingly expect to be in a position to interact with health organizations that use different communication channels to meet their needs or perhaps request additional services or bring in new patients (Resch & Tena, 2013, p. 37), the use of mobile devices by healthcare professionals (HCPs) has changed many aspects of clinical practice, and mobile devices have become commonplace in healthcare settings, leading to rapid growth in the development of medical software applications (apps) for these platforms, health record maintenance and access, communication and consultation, reference and information gathering, patient management and monitoring, clinical decision-making, and medical education and training ((Ventola, 2014, p. 356).

Healthcare organizations should include the mobile channel into their entire customer relationship management strategy, using the unique advantages it provides. At the same time, the final success of any M-CRM endeavor is dependent on patients' desire to use the mobile service for communication and engagement with the other party (Resch & Tena, 2013, p. 38)

II. 3 EMAIL CRM:

EMAIL is regarded as the best marketing communication method for retaining customers and increasing sales, even though it is less effective in attracting new customers, because it allows for the delivery of marketing messages that target each customer individually and address them directly via email on topics of common interest (ahmed, 2014, p. 143). It provides customers with another way to communicate with the organization through instant emails, especially as more and more people use email in their homes and offices (Chaaban & Aissa, 2016, p. 183), allowing for the easy creation of personalized and appealing emails to potential and existing customers with the goal of building a strong relationship with them and remaining at the forefront of their interests (Goel, 2021).

The critical importance of email is that it is the customer's voice and the link to the outside world when attempting to provide customers with what they require. The power of email is that it eliminates time constraints; if you have an important question, you can solve it by sending it in real time and not having to wait at all ((Sterne, 2000, p. 81).

Among the uses of email of healthcare professionals are sending information to patients on how to stay healthy and avoid diseases (Sawmynaden et al., 2012, p. 02), in addition to setting appointments by the management of health institutions and sending confirmation via email to the patient concerned, and they can cancel or reschedule those appointments if necessary (Malshani & Wanniarachchi, 2021, p. 56). No-show appointments are a concern for private health organizations and have been shown to affect the cost of healthcare and lead to poor access to healthcare services for those who need it most, resulting in lower productivity, longer waiting lists, and wasted staff

and patient time. When appointment coordination email systems are in place, they allow the patient to choose and confirm the time and date of the appointment or rebook it, reducing no-show rates (Sawmynaden et al., 2012, p. 02).

Email is especially useful for information that the patient must follow if given verbally; examples include addresses and phone numbers of other facilities to which the patient is referred, test results with interpretation and counselling, instructions on how to take medications or apply bandages, pre- and post-operative instructions, and other forms of patient education ((Kane & Sands, 1998, p. 105).

It is important to understand the importance of email as a CRM tool, as sales can also be increased via email by nurturing customer relationships, according to Jenkins (2009), if a customer expects to receive a commercial email, they have a much higher chance of inciting a purchase ((Heintie, 2010, p. 21), centralising all information about customers and email correspondence within the CRM and linking customer email conversations to CRM data with the obligation to properly prioritise emails according to their intended purpose ((Thooyamani, 2013, p. 4759).

III– Methods and Materials:

Following the theoretical research that defined the study's key themes, this section will offer a field study that demonstrates the significance of digital marketing tools in CRM development.

Methodology of the study:

In order to reach the desired objectives of the study, an interview was conducted with employees of private health institutions to know the most important digital marketing tools used in private health institutions and presented as an exploratory study to help build a questionnaire directed to the beneficiaries of the services of this type of institutions, to know the opinions and behaviours of this group, and to understand the real orientation of the institutions when using digital marketing tools in the development of CRM.

Individual interviews with employees of three private health institutions were conducted (Warda Al Rimal in LAGHOUAT, Al Wifaq in DJELFA, and Al Hilal in ALGIERS) between May and June 2024, with the goal of learning about the most important digital marketing tools used in these institutions, with the following question: What are the most commonly used digital tools in your own organization? How are they used? In addition to other inquiries with wide and specific concepts, have you observed that employing digital marketing tools has an influence on marketing performance? How is CRM used at your level? After analyzing and focusing on the most significant technologies, we discovered the recurrence of 1) social media, 2) mobile phones, and 3) email, resulting in the following three Hypotheses:

-There is a statistically significant effect of using social media in developing CRM at the level of significance ($0.05 \geq \alpha$) .

-There is a statistically significant effect of mobile phone usage on CRM development at the level of significance ($0.05 \geq \alpha$) .

- There is a statistically significant effect of using email in the development of CRM at the level of significance ($0.05 \geq \alpha$).

Study sample:

The sample was chosen at random to represent the community. Because it is impossible to know and neutralize the study population accurately due to the lack of clear statistics and figures indicating the number of patients attending private health institutions, a convenience sample of 150 people was used after distribution and collection in April 2025. This was done through an electronic distribution on Facebook, the most popular social networking site in Algeria.

Measuring the stability of the study tool:

Through Cronbach's alpha coefficient, stability means that if it is redistributed again in the same conditions, it will give the same results and there will be no significant changes, where Cronbach's alpha coefficient is limited between 0 and 1, and the closer it is to one, the more stable the study tool is. The following table displays the Cronbach's alpha coefficients used to assess the study tool's stability. It was discovered that the Cronbach's alpha coefficients for a survey sample of 30 items were 0.792, 0.873, 0.947 for digital marketing tools and 0.929 for the CRM

development dimension, and the total Cronbach's alpha for the 22 items was 0.958, with all coefficients greater than 0.6, indicating that the study tool is highly stable.

Table (1): Cronbach's alpha test results

Variables	Number of items	Cronbach 'alpha coefficient
Social media	4	0.792
Email	5	0.873
Mobile phone	5	0.947
CRM development	8	0.929
Total Cronbach's alpha coefficient	22	0.958

Source: Prepared by the researchers according to the outputs of spss v.26

Descriptive statistical analysis of personality variables for the study sample:

We were able to discover several features that differ among the sample members using the data obtained about them, which are displayed in the table below:

Table (2): Distribution of respondents by gender, age, education level, income

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	73	48.7
	Female	77	51.3
	Total	150	100.0
Age	Under 18 years	/	/
	18–35 years	93	62.0
	36–55 years	53	35.3
	56 years and above	4	2.7
	Total	150	100.0
Educational Level	Primary	1	0.7
	Intermediate	/	/
	Secondary	1	0.7
	University	148	98.7
	Total	150	100.0
Income	Less than 20,000 DZD	62	41.3
	20,000–50,000 DZD	31	20.7
	51,000–70,000 DZD	32	21.3
	More than 70,000 DZD	25	16.7
Characteristic	**Total**	150	100.0

Source: Prepared by the researchers according to the outputs of spss v.26

The table shows that the sample is made up of 48.7% of men (73 individuals) and 51. 3% for women, i.e. 77 individuals, where the convergence of the ratio of the two sexes to the interest in health issues is explained by their interest in health care for themselves or their family. As for the gender variable, the table shows that the age group (18-35 years) had the highest percentage of 62%, since they are more aware of health services, especially in view of the presence of the Internet and the spread of social networks, followed by the age group (36-55 years) with 35%. 3 percent, and finally the age group (56 years and older) with 2.7 percent, three out of four categories for the study sample, as the age group (less than 18 years old) did not have any responses in this sample, as for the level of education, it is noted that 98. 7% of the sample members have a university level, followed by the rest of the three other levels in close proportions within 1%, with a noticeable absence of those with an intermediate level among the answers of the sample members, so it can be said that the university is the dominant category for the sample members, The reason is that the university sample members are aware of the importance of private health services and why they control the technology that allows them to use their profits to communicate and benefit from the services of private health institutions, and finally, for the income variable, we notice from the table that the category (less than 20000 DZD) is the most present with 41%. This is due to the fact

that the most frequent group is the academics and this group has little or no income, followed by the other remaining categories between 16% and 21%.

Descriptive statistical analysis of the study's independent and dependent variables

In this section, the statistical analysis results will be presented as the arithmetic mean, standard deviation, and ranking of each item in relation to other items in the same dimension, as well as the overall trend of each item for the independent variable (social media, mobile phone, email) and the dependent variable (CRM).

Table (3): Descriptive statistical analysis of social media items

Item	Statement	Mean	Standard Deviation	Item Ranking	General Trend
01	Private healthcare institutions use social media platforms to promote their services.	3.76	1.097	3	High
02	The social media page of the private healthcare institution provides information about the institution and its services.	3.85	0.9790	1	High
03	I benefit from the comments about the private healthcare institution made by social media subscribers.	3.80	1.062	2	High
04	The use of social media by the healthcare institution has helped me become more familiar with it.	3.71	1.150	4	High
Total		3.78	0.9150	/	High

Source: Prepared by the researchers according to the outputs of spss v.26

It is clear from the above table that the general trend of the study sample's responses was high towards the social media items, and the item 'The health institution's social media page provides you with information about the institution and its services' tended to be highly rated with an arithmetic mean of 3.85 and a standard deviation of .9790, which means that this item is the most influential compared to the other items, while the lowest rated item was 'The health institution's use of social media helped me get to know it better' with an arithmetic mean of 3.04 and a standard deviation of 1.150, which is less than 1. This means that there is a convergence of responses about social media.

From the table, the overall arithmetic mean for social media was 3.78 with a standard deviation of 0.9150, which is less than 1, which means that the responses of the study sample were positive and to a high degree; that is, there is a convergence in the responses about the social media axis, indicating the importance that private healthcare institutions give to social media as an effective tool to promote their services and communicate and interact with patients.

Table (4): Descriptive statistical analysis of mobile phone items

No.	Items	Arithmetic Mean	Standard Deviation	Item Ranking	General Trend
01	Text messages received from the healthcare institution are useful and relevant to my needs.	3.05	1.098	4	Moderate
02	Text messages are a reliable source of information.	3.29	1.065	3	Moderate
03	The healthcare institution provides applications for patient interaction.	2.88	1.111	5	Moderate
04	I find communication with the healthcare institution via mobile phone easy.	3.70	1.104	1	High
05	I contact the institution to file a complaint or request a consultation.	3.41	1.176	2	High
Total		**3.27**	**0.7820**	/	**Moderate**

Source: Prepared by the researchers according to the outputs of spss v.26

It is clear from the above table that the general trend of the responses of the study sample was moderate towards the mobile phone items, and the item "I find it easy to communicate with the health institution by mobile phone" tended to increase with an arithmetic mean of 3.70 and a standard deviation of 1.104, meaning that this item is the most influential compared to the other items.104, which means that this item is the most influential compared to the other items, while the item with the lowest rating was "the health institution provides applications to interact with patients" with an arithmetic mean of 2.88 and a standard deviation of 1.111, so private health institutions should pay attention to this aspect by creating mobile phone applications for institutions that do not have applications, or the continuous development and updating of the existing ones, to facilitate the process of communication with patients. 88 and a standard deviation of 1.111, so private health institutions should pay attention to this aspect by creating mobile phone applications for organizations that do not have them, or the continuous development and updating of organizations that currently have applications, to facilitate the process of communication with patients.

From the table, the overall arithmetic mean for mobile phones was 3.27 with a standard deviation of 0.782, which means that the responses of the study sample tend to a moderate evaluation, indicating that more attention should be paid to the use of mobile phones by private health institutions.

Table (5): Descriptive statistical analysis of email items

No.	Item	Arithmetic Mean	Standard Deviation	Item Ranking	General Trend
01	I communicate with the private healthcare institution via email.	2.81	1.217	2	Moderate
02	I obtain important and useful information through emails from the private healthcare institution.	2.80	1.204	3	Moderate
03	I receive promotional and informational messages via email from the private healthcare institution.	2.59	1.088	5	Low
04	I receive prompt responses to complaints and inquiries sent via the email of the private healthcare institution.	2.71	1.131	4	Moderate
05	I receive email reminders for appointments.	2.96	1.274	1	Moderate
Total		**2.77**	**1.022**	/	**Moderate**

Source: Prepared by the researchers according to the outputs of spss v.26

It is clear from the above table that the general trend of the responses of the study sample was moderate towards all the e-mail items, and the item "I receive e-mail messages to remind me of appointments" was rated moderately with an arithmetic mean of 2.96 and a standard deviation of 1.274, which means that this item is the most influential compared to the other items, while the least rated item with a low score was "I receive promotional and informational e-mail messages from the private health institution" with a mean of 2.59 and a standard deviation of 1.088, so private health institutions should try to consider this aspect and give it more importance.

From the table, the overall arithmetic mean for email was 2.77 with a standard deviation of 1.022, which means that the responses of the study sample tended to a moderate evaluation, indicating the moderate attention paid by private healthcare institutions when using email.

Table (6): Descriptive statistical analysis of CRM dimension items

No.	Item	Mean	Standard Deviation	Item Rank	General Trend
01	The institution maintains a comprehensive database of all its patients.	3.71	1.051	1	High
02	The healthcare institution has a strong online presence.	3.25	0.9840	7	Moderate
03	I prefer using digital tools to communicate with the healthcare institution instead of in-person visits to save time and reduce costs.	3.69	1.275	2	High
04	The healthcare procedures to be conducted at the institution were explained clearly and in detail.	3.43	1.025	5	High
05	Communication with the staff at the healthcare institution is clear and straightforward.	3.47	1.151	4	High
06	I would recommend this healthcare institution based on my experience with its staff.	3.55	0.9660	3	High
07	The healthcare institution focuses on patient satisfaction, loyalty, and retention.	3.37	1.126	6	Moderate
08	I feel that the healthcare institution strives to maintain its relationship with me even after my treatment has concluded.	3.02	1.161	8	Moderate
Total		**3.44**	**0.7790**	**/**	**High**

Source: Prepared by the researchers according to the outputs of spss v.26

It is clear from the table above that the general trend of responses from the study sample was high towards the CRM items and the item 'The organisation maintains a comprehensive database of all its patients' tended to be high with an arithmetic mean of 3.71 and a standard deviation of 1.051, meaning that most organisations have a database of their patients. The lowest and moderately rated item was 'I feel that the healthcare institution tries to maintain its relationship with me even after the end of my treatment' with a mean of 3.02 and a standard deviation of 1.161, so private healthcare institutions should try to improve and develop the relationship with their clients even after the end of the treatment period.

From the table, the total arithmetic mean of the CRM items was 3.44 with a standard deviation of 0.7790, which is less than 1. This means that the responses of the study sample were positive and with a high degree, i.e. there is a convergence in the responses about CRM, which indicates that there is an interest that private healthcare organisations pay when using CRM, and therefore private healthcare organisations should strive to improve and develop the relationship with their customers even after the end of treatment.

Calculate the Variance Inflation Factor (VIF) and Tolerance

We will compute the Variance Inflation Factory (VIF) and Tolerance to assess the lack of a substantial correlation between the independent research variables. If VIF < 10 and Tolerance < 0.05, the data is eligible for regression analysis.

Table (7): Results of calculating the variance inflation factor (VIF) and Tolerance for the independent variable Digital Marketing Tools

	Digital Marketing Tools		
	Email	Mobile Phone	Social media
Variance Inflation Factor (VIF)	1.467	1.789	1.379
Tolerance	0.6820	0.5590	0.7250

Source: Prepared by the researchers according to the outputs of spss v.26

The table clearly shows that there is no issue of multicollinearity between the independent variables (social media sites, mobile phone, email), as the values of the variance inflation factor (VIF) were 1.379, 1.789, and 1.467 respectively, which are less than 10, and the lack of high correlation between the independent variables was confirmed by the Tolerance coefficient, where the values were respectively 0.725, 0.559, and 0.682, which are greater than 0.05, so the data is suitable for regression analysis.

IV- Results and discussion :

IV.2 Testing the study's hypotheses:

We will use regression variance analysis to validate the model and simple linear regression to determine if using each digital marketing tool (social media, mobile phone, email) has a statistically significant effect on CRM development ($0.05 \geq \alpha$).

1- **Testing the first hypothesis:** There is a statistically significant effect of social media use on CRM development at the level of significance ($0.05 \geq \alpha$).

Table (8): Regression variance analysis to find out the impact of social media usage on CRM development

Anova a					
Model	**Sum of Squares**	**Degrees of Freedom**	**Mean Square**	**F Value**	**Significance**
Regression	29.293	1	29.293	71.060	0.0000
Residual	61.010	148	0.412		
Total	90.304	149	/		

Source: Prepared by the researchers according to the outputs of spss v.26

From the table, we note that the value of F=71.060 is statistically significant at a value of 0.000, which is less than 0.05, which reflects the quality of the model and confirms its validity for testing the hypothesis.

Table (9): Simple regression analysis of the impact of social media usage on CRM development

Correlation Coefficient				**R^2**	**Adjusted R^2**	**Standard Error**
0.5700				0.3240	0.3200	0.642
Model	**Regression Coefficient**	**Standard Error**	**Standardized Regression Coefficient**	**t-value**	**Significance Level (Sig.)**	**Statistical Significance**
Constant	1.603	0.224	-	7.172	0.0000	Significant
Social media	0.4850	0.570	0.5700	8.430	0.0000	Significant

Source: Prepared by the researchers according to the outputs of spss v.26

According to the above table, the correlation coefficient R has a value of 0.570, indicating a positive correlation between the dependent variable of CRM and the independent variable of social networking sites, and the square of the correlation coefficient R2 is 0.324, indicating that social

networking sites explain 32.4% of the variance in the dependent variable of CRM. The remaining 67.6% is attributable to variables outside the scope of the study.

- **Social media** (Sig=0.000, t=8.430): This variable is statistically significant because the significance level is less than 0.05, indicating that there is a significant relationship between the independent variable social media and the dependent variable CRM, and the regression coefficient was.0.485, indicating that the two variables are positively correlated.

The results indicate a statistically significant influence of social media in CRM development (0.05 ≥α)

2- **Testing the second hypothesis:** There is a statistically significant effect of Mobile Phone use on CRM development at the level of significance (0.05 ≥α).

Table (10): Regression variance analysis to find out the impact of Mobile Phone usage on CRM development

Anova a					
Model	**Sum of Squares**	**Degrees of Freedom**	**Mean Square**	**F Value**	**Significance**
Regression	36.833	1	36.833	101.950	0.0000
Residual	53.471	148	0.3610		
Total	90.304	149	/		

Source: Prepared by the researchers according to the outputs of spss v.26

From the table, we note that the value of F=101.950 is statistically significant at a value of 0.000, which is less than 0.05, which reflects the quality of the model and confirms its validity for testing the hypothesis.

Table (11): Simple regression analysis of the impact of Mobile Phone usage on CRM development

Correlation Coefficient				**Adjusted R^2**	**R^2**	**Standard Error**
0.6390				0.4080	0.4040	0.6010
Model	Regression Coefficient	Standard Error	Standardized Regression Coefficient	t-value	Significance Level (Sig.)	Statistical Significance
Constant	1.359	0.211	-	6.427	0.0000	Significant
Social media	0.636	0.063	0.639	10.097	0.0000	Significant

Source: Prepared by the researchers according to the outputs of spss v.26

According to the above table, the correlation coefficient R has a value of 0.639, indicating a positive correlation between the dependent variable CRM and the independent variable mobile phone, and the square of the correlation coefficient R2 is 0.408, indicating that the mobile phone explains 40.8% of the variance in the dependent variable CRM. The remaining 59.2% is attributable to variables outside the scope of the study.

- **Mobile phone** (sig=0.000, t=10.097): This variable is statistically significant because the significance level is less than 0.05, indicating that there is a significant relationship between the independent variable mobile phone and the dependent variable CRM, and the regression coefficient was 0.636, indicating that the two variables are positively correlated.

The results indicate a statistically significant influence of Mobile Phone in CRM development (0.05 ≥α).

3- **Testing the third hypothesis**: There is a statistically significant effect of email use on CRM development at the level of significance (0.05 ≥α).

Table (12): Regression variance analysis to find out the impact of email usage on CRM development

Anova a					
Model	**Sum of Squares**	**Degrees of Freedom**	**Mean Square**	**F Value**	**Significance**
Regression	33.221	1	33.221	86.135	0.0000
Residual	57.082	148	0.3860		
Total	90.304	149	/		

Source: Prepared by the researchers according to the outputs of spss v.26

From the table, we note that the value of F=86.135 is statistically significant at a value of 0.000, which is less than 0.05, which reflects the quality of the model and confirms its validity for testing the hypothesis.

Table (13): Simple regression analysis of the impact of email usage on CRM development

Correlation Coefficient				**R^2**	**Adjusted R^2**	**Standard Error**
Model	**Regression Coefficient**	**Standard Error**	**Standardized Regression Coefficient**	**t-value**	**Significance Level (Sig.)**	**Statistical Significance**
Constant	2.153	.1470	-	14.632	0.0000	Significant
Email	0.4620	0.050	0.607	9.281	0.0000	Significant

Source: Prepared by the researchers according to the outputs of spss v.26

According to the above table, the correlation coefficient R has a value of 0.607, indicating a positive correlation between the dependent variable CRM and the independent variable email, and the square of the correlation coefficient R2 is 0.368, indicating that email explains 36.8% of the variance in the dependent variable CRM. The remaining 63.2% is attributable to variables outside the scope of the study.

- **Email** (sig=0.000), (t=9.281): this variable is statistically significant because the significance level is less than 0.05, indicating that there is a significant relationship between the independent variable email and the dependent variable CRM, and the regression coefficient was 0.462, indicating that the two variables are positively correlated.

The results indicate a statistically significant influence of Email in CRM development ($0.05 \geq \alpha$).

V- Conclusion:

At the end of this study, which sought examine the role of digital marketing tools in developing customer relationship management (CRM) within private healthcare institutions in Algeria. We can say that results proved that digital marketing tools, like social media, mobile phones, and email, have a pivotal role in enhancing and developing these relationships. The study demonstrated that these tools help effectively improve the patient experience, increase patient satisfaction and loyalty. This emphasizes the desperate need for healthcare institutions to adopt integrated digital strategies. This study is supposed to make a significant contribution to the academic review by offering a comprehensive analysis of the reality of this interaction and communication in the Algerian context.

Results and discussion

The study yielded the following results*:*

- Digital marketing depends on a variety of tools, among the most commonly used in private healthcare institutions are social media, mobile phones, and email. Based on the outcomes of interviews with employees from three private healthcare institutions in Algeria, it was proved that these three tools are the most widely relied upon, as they are the most commonly used and the fastest in disseminating information.
- Clients rely on digital tools to find health information and services; this pushed private health institutions to embraced technology advancements and exploit those tools to communicate with customers and tackle their needs. This had been proved by previous studies such as (Afif & Bentameur, 2024; Alharbi, 2021; Anshari et al., 2012; Rosenlund et al., 2023), especially during and after the emergence of the COVID-19 pandemic, which highlighted the extreme importance of those tools in providing solutions to combat the pandemic.
- Integrating digital marketing technologies with CRM has resulted in the birth of new concepts such as S-CRM (Social CRM), MOBILE CRM (Mobile CRM), and EMAIL CRM. This outcome allows the following interpretation: the harmonious integration between digital marketing tools and customer relationship management has transformed the relationship management from a simple informational system for managing customer data into a dynamic interactive environment that helps enhance interaction with customers, especially for private healthcare institutions. This helps well a real-time patient follow-up and service personalisation, which boosts reliability and improves the quality of healthcare.
- Calculating the Variance Inflation Factor (VIF) and Allowed Tolerance revealed that there is no problem in the multicollinearity among the independent variables (social media, mobile phone, email), since the values of the variance inflation factor (VIF) were 1.379, 1.789, and 1.467, respectively, which are less than 10. The absence of a high correlation between the independent variables was confirmed through the Allowed Tolerance Coefficient, with the values of 0.725, 0.559 and 0.682, respectively, which are more than 0.05. The data proves, therefore, suitable for regression analysis.
- The dependent variable of CRM has a positive link with the independent variable of digital marketing tools (social media, mobile phone, email), the results were as follows: the correlation coefficient R between social media and CRM was 0.570, the correlation coefficient R between mobile phones and CRM was 0.639, and the correlation coefficient R between email and CRM was 0.607. It should be noted that the value of R between mobile phones and CRM was the highest at 0.639.
- According to the results of the study's hypothesis analysis, we can confirm that digital marketing technologies (social media, mobile phones, and email) have deep effect in CRM development. This has been highlighted in previous studies, even if they were conduced in different contexts (Chaaban & Aissa, 2016; Harrigan et al., 2009; LATRECHE, 2023).

Recommendations:

In this study, we attempted to examine the role of digital marketing technologies in the growth of CRM in private health companies in Algeria. Based on the findings, we may make the following recommendations:

- Pay more attention to customers (patients) and responding to enquiries and complaints through various digital marketing tools.
- Private healthcare organisations need to keep abreast of technological developments and train staff to use and work with technology that contributes to the provision of healthcare services that meet the needs of patients.

- Pay attention and try to develop and improve the digital tools currently used by the organisation, and add other digital tools that contribute to retaining existing customers and attracting new ones.
- The creation of a dedicated application for healthcare institutions that includes all information (contact details, medical specialities, etc.) can make it easier for patients to communicate and follow up on their health conditions.

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