

The Impact of Digital Customer Interaction Dimensions on Brand Image: A Field Study on Mobile Phone Customers in Algeria

Mohamed Benhouhou, University of Mohamed Boudiaf, M'sila, Algeria, mohamed.benhouhou@univ-msila.dz

Hamza Fichouche,* University of Mohamed Boudiaf, M'sila, Algeria, hamza.fichouche@univ-msila.dz

Hadil Maouche, University of Mohamed Boudiaf, M'sila, Algeria, hadilmaouche49@gmail.com

Received: 29/04/2026

Accepted: 26/05/2026

Published: 10/06/2026

Abstract: This study investigates the influence of the various dimensions of customer digital interaction on brand image assessment through a field study among a random sample of mobile phone users in Algeria. The five dimensions of digital interaction which were studied were: attraction, participation, retention, learning and communication, along the assessment of brand image through its own three dimensions; cognitive, emotional and behavioral. The study used a descriptive-analytical approach that relied on a questionnaire as instruments for data collection from 147 participants. Data was later analyzed through SPSS on correlation coefficients, regression analysis and analysis of variance (ANOVA). Results indicated a statistically significant relationship between most of the dimensions of digital interaction and the dimensions of brand image, supremacy of the attraction dimension related to the behavioral dimension. The study established that using digital interaction effectively enhances positive perceptions of brand, especially use of the dimensions of learning, retention and communication is utilized.

Keywords: Digital interaction, Digital marketing, Brand image, Brand, Mobile phone.

JEL Codes: M310; M31; M37.

Citation: Benhouhou Mohamed, Fichouche Hamza, Maouche Hadil (2026). The Impact of Digital Customer Interaction Dimensions on Brand Image: A Field Study on Mobile Phone Customers in Algeria, *Journal of economics studies and researches in renewable energies*, 13(01), 371-388.

Introduction

The digital environment has witnessed a radical transformation in consumer behavior and the ways they interact with brands (Loureiro et al., 2020). Institutions are now compelled to adopt integrated digital strategies to communicate with their audiences, reflecting a deep understanding of their expectations and strengthening their mental positioning in the market. In this context of change, digital interaction is no longer merely a promotional tool but has become a strategic instrument for shaping the brand image and fostering customer loyalty (Lamberton & Stephen, 2016).

Brand image is understood as one of the fundamental concepts in the area of marketing; it denotes a cognitive, emotional, and behavioral impression existing in the minds of the consumer concerning an organization, its product, or its service (Keller, 1993; Riyani, 2025). Additionally, this impression is a function of the degree to which the organization has interacted with the consumer so that digital interaction becomes significant in forming consumer impressions.

*. Correspondant author

Within this framework, the importance arises of studying the relationship between the dimensions of digital interaction (attraction, participation, retention, learning, communication) and the dimensions of brand image (cognitive, emotional, behavioral) to understand how brands can effectively employ their digital tools to strengthen their mental presence in the market, particularly in the highly competitive mobile phone services sector in Algeria (Hollebeek et al., 2019).

Based on the above, the main problem of this article is defined in the following question: To what extent do the dimensions of digital interaction with customers affect the brand image among mobile phone users in Algeria?

To answer these questions, a field study was conducted on a sample of mobile phone service users in Algeria, relying on statistical analysis of correlation and impact coefficients, with the aim of deriving scientific results that contribute to enhancing the digital marketing performance of service institutions.

1. Theoretical Framework of the Study

1.1 Digital Customer Interaction

Digital interaction with customers is one of the principle concepts of current digital marketing, in that it indicates the dynamic situation of the relationship between an organization and its users in an electronic form of media. This approach is considered another strategic method for building customer satisfaction and building a positive brand image (Maecker et al., 2016) Multiple researches suggest that digital interactions contain overlapping dimensions, but the most noted ones are:

- Attraction: the capability to develop consumers' interest and gain their attention toward the brand through digital tools such as advertisements, search engines, and promotional pricing (López García et al., 2019).
- Engagement: the extent to which the user interacts with the brand's content through social networks. It is a measure of deep interaction and consumer behavioral commitment to the brand (Trunfio & Rossi, 2021).
- Retention: the extent of ability of the organization to develop an ongoing relationship with customers through current content and personalized user experience (Pereira et al., 2025).
- Learning: gathering and analysis of the digital data of customer behavior to develop more personalized marketing content (Wedel & Kannan, 2016).
- Communication: the extent of effectiveness of the digital messages transmitted between the organization and the consumer and is indicative of the quality of the communication relationship (Brodie et al., 2011)

As you can observe from the dimension above, these dimensions together can form a holistic model that aids brands develop long-term relationship with their digital audiences and deepen their emotional attachment to the brand.

1.2 Brand Image

Brand image is an important concept in contemporary marketing. It is defined as the mental representation formed by the consumer about the brand's attributes and the extent to which it

corresponds to their wishes and desires (Keller, 2001). This representation consists of three basic dimensions:

The cognitive dimension: refers to all the information and representations that the consumer has about the brand, resulting from direct or indirect experiences (Keller, 1993).

The affective component: encapsulates all of the emotional and affective evaluation of the brand for the consumer, such as admiration, and trust, for example (Madhavaram et al., 2005)

The behavioral component entails the behavioral intentions caused by the consumer's perception of the brand, which include recommendations of the brand, or commitment to the brand or company, to name a few (Madhavaram et al., 2005).

These three components naturally synergize and create a cognitive-emotional construct that can inform consumer decision making and influence their behavioral intentions in the medium to longer term (Fishbein & Ajzen, 1977) .

2. Materials and methods

2.1 Type of Study and Approach

This research is located in the realm of applied research and uses the descriptive-analytical method, as it aims to describe the phenomenon being studied (digital interaction and brand image), as well as describe the relationships between them. A field study method was utilized in what we used a questionnaire as our main instrument for collecting the data.

2.2 Study Variables

- **Independent Variable:** Digital interaction, measured through five dimensions:
 - Attraction
 - Engagement
 - Retention
 - Learning
 - Communication
- **Dependent Variable:** Brand image, measured through three dimensions:
 - Cognitive
 - Affective
 - Behavioral

2.3 Study Population and Sample

The study population consists of mobile phone service users in Algeria. A simple random sample of 147 respondents from M'sila Province was selected, and both paper-based and electronic questionnaires were distributed to ensure comprehensive coverage of the target group.

2.4 Study Instrument and Validity

A questionnaire was designed consisting of three main sections:

- **Section One:** Demographic data of respondents (gender, age, education, occupation, operator).
- **Section Two:** Statements measuring the dimensions of digital interaction.
- **Section Three:** Statements measuring the dimensions of brand image.

The internal consistency validity of the study instrument was tested using Cronbach's Alpha coefficient, which yielded the following results:

- $\alpha = 0.870$ for the dimensions of digital interaction
- $\alpha = 0.871$ for the dimensions of brand image

These values are highly acceptable and reflect good reliability of the instrument.

2.5 Statistical Analysis Tools

The data were processed using SPSS software, and the following tools were employed:

- Descriptive analysis (percentages, frequencies, means, and standard deviation)
- One-way ANOVA analysis
- Pearson correlation coefficient to measure the relationship between variables
- Simple linear regression analysis to measure the effect between the independent and dependent variables

2.6 Study Limitations

- **Spatial scope:** M'sila Province (Algeria)
- **Time scope:** The period between January and May 2025
- **Subject scope:** Digital interaction with customers and its impact on the brand image in the mobile phone sector

2.7 Field Study Methodology and Description of Sample Characteristics

Following the theoretical studies in the previous chapter and previous research on the subject, this section will clarify the stages undertaken in this field study, explain its concepts, and illustrate how they are measured in accordance with prior studies. It will also highlight the extent to which mobile phone operators rely on providing their services digitally to enhance their brand image. This, in turn, enables us to measure these variables and clarify the relationships between them.

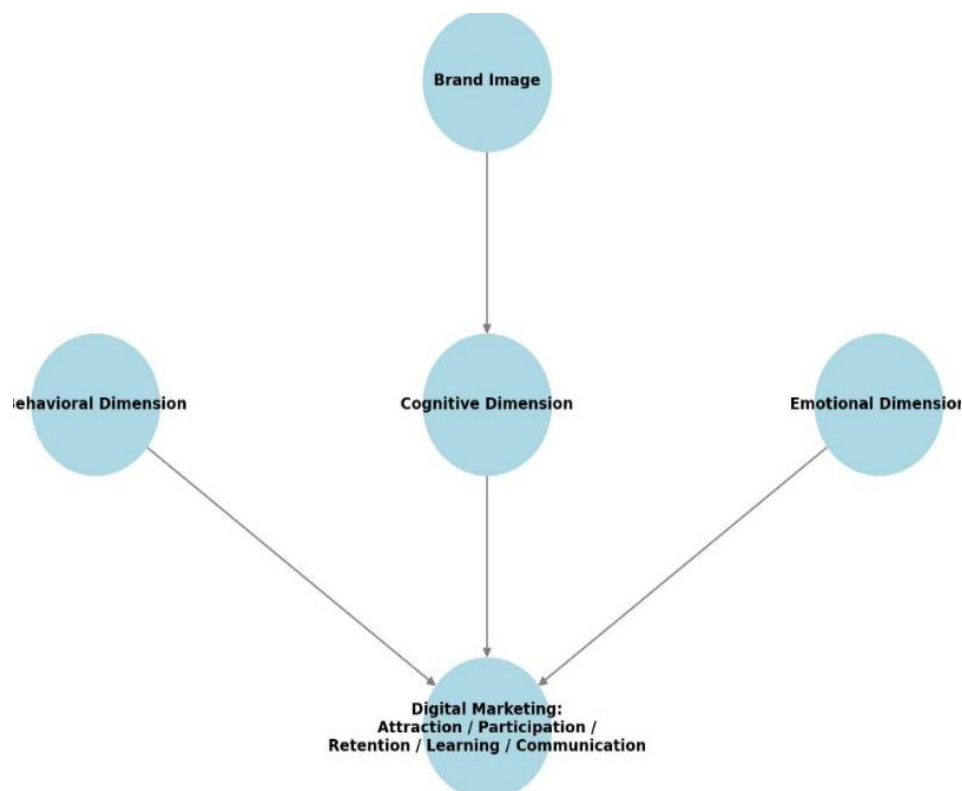


Figure 1. The Hypothetical Model of the Field Study

The hypothetical model of the study includes two variables:

Independent Variable: This aims to obtain users' opinions regarding the extent of digital marketing application in the institutions under study, expressed through the following dimensions of digital marketing:

- Attraction
- Engagement
- Retention
- Learning
- Communication

Dependent Variable: This refers to the brand image, aiming to identify the extent to which the digital marketing of the institutions under study influences the enhancement of their brand image among users, through its three dimensions:

- Cognitive dimension
- Affective dimension
- Behavioral dimension

To achieve the objectives we seek, the descriptive method was adopted as the most suitable approach for studying the relationship between the research variables, following a relational style, in addition to the descriptive approach that relies on the questionnaire as a tool for data collection.

To build the theoretical framework of the research and gather information and data from the study field, the following sources were used:

A- Secondary Sources: To address the theoretical framework of the research, secondary data sources were used, including articles, reports, research papers, previous studies on the subject, and information obtained from various internet sites.

B- Primary Sources: To address the analytical aspects of the research, primary data were collected through a questionnaire specifically designed for this purpose, as follows:

2.7.1 Questionnaire Design

The questionnaire was prepared according to the following stages:

- Preparing a preliminary version of the questionnaire;
- Submitting it to the supervisor for feedback regarding its suitability for data collection;
- Modifying the questionnaire according to the supervisor's recommendations;
- Presenting it to a group of professors for evaluation;
- Revising the questionnaire again with the supervisor, taking into account the professors' feedback;
- After ensuring the clarity of the questions and the accuracy of the sections, a set of paper questionnaires was printed for distribution;
- Converting the paper questionnaire into an electronic version to facilitate data collection from respondents.

The questionnaire was divided into three main axes:

- The first axis: related to the personal characteristics of the study sample.
- The second axis: dimensions of digital marketing.
- The third axis: dimensions of the brand image.

This questionnaire was designed according to the five-point Likert scale, where each statement of the axes corresponds to the following options: "Strongly agree," "Agree," "Neutral," "Disagree," and "Strongly disagree."

Table 1. Likert Scale of Ratings

Option	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Score	1	2	3	4	5

Source: Prepared by the researchers based on the outputs of the SPSS program.

2.7.2 Validity of the Experts

The questionnaire, in its preliminary form, was presented to a group of expert professors at the University of M'sila, consisting of four professors specialized in the subject.

They provided us with a set of remarks, which included:

- Verifying the accuracy and clarity of certain statements.
- Removing what they deemed inappropriate.
- Reformulating some terms.

In accordance with the experts' suggestions and opinions, we made the necessary adjustments based on their recommendations, and thus the questionnaire was finalized as presented in Appendix (01).

2.7.3 Reliability and Validity of the Questionnaire

The reliability of the questionnaire tool refers to its stability and consistency, meaning its ability to yield the same results if redistributed to the same sample under the same conditions. To ensure that the questionnaire measures the variables intended for study and to verify both its validity and reliability, the internal consistency indicator was used, focusing on the correlation and coherence of the questionnaire's items.

Accordingly, we calculated Cronbach's Alpha coefficient using the Statistical Package for the Social Sciences (SPSS) program to measure the internal consistency reliability of the entire model, and the result obtained is presented in the following table:

Table 2. Results of Cronbach's Alpha Test for the Dimensions of Digital Marketing

Number of Items	Cronbach's Alpha
05	0.870

Source: Prepared by the researchers based on the outputs of the SPSS program.

From Table 2, it is observed that the reliability coefficient of the digital marketing dimensions, using Cronbach's Alpha, reached a value of 0.870. This indicates that the scale has a good and acceptable level of reliability.

Table 3. Results of Cronbach's Alpha Test for the Dimensions of Brand Image

Number of Items	Cronbach's Alpha
03	0.871

Source: Prepared by the researchers based on the outputs of the SPSS program.

From Table 3, it is observed that the reliability coefficient of the brand image dimensions, using Cronbach's Alpha, reached a value of 0.871. This also indicates a good and acceptable level of reliability.

Furthermore, the validity of internal consistency was confirmed by calculating the correlation coefficient between the score of each item and the total score of the axis or dimension to which it belongs. The results of internal consistency validity are presented as follows:

Table 4. Pearson Correlation Coefficients for Digital Marketing Dimensions

	Digital Marketing	Attraction	Engagement	Retention	Learning	Communication
Digital Marketing	Pearson Correlation	1	.799	.743	.828	.915
	Sig. (2-tailed)		.000	.000	.000	.000
	N	30	30	30	30	30
Attraction	Pearson Correlation	.799	1	.553	.495	.754
	Sig. (2-tailed)	.000		.002	.005	.000
	N	30	30	30	30	30
Engagement	Pearson Correlation	.743	.553	1	.506	.565
	Sig. (2-tailed)	.000	.002		.004	.001
	N	30	30	30	30	30
Retention	Pearson Correlation	.828	.495	.506	1	.692
	Sig. (2-tailed)	.000	.005	.004		.000
	N	30	30	30	30	30
Learning	Pearson Correlation	.915	.754	.565	.692	1
	Sig. (2-tailed)	.000	.000	.001	.000	
	N	30	30	30	30	30
Communication	Pearson Correlation	.789	.424	.372	.714	.725
	Sig. (2-tailed)	.000	.020	.043	.000	.000
	N	30	30	30	30	30

Source: Prepared by the researchers based on SPSS outputs.

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

*Correlation is statistically significant at the 0.05 level (2-tailed).

Table 5. Pearson Correlation Coefficients for Brand Image Dimensions

	Brand Image	Cognitive	Affective	Behavioral
Brand Image	Pearson Correlation	1	.874	.925
	Sig. (2-tailed)		.000	.000
	N	30	30	30
Cognitive Dimension	Pearson Correlation	.874	1	.736
	Sig. (2-tailed)	.000		.000
	N	30	30	30
Affective Dimension	Pearson Correlation	.925	.736	1
	Sig. (2-tailed)	.000	.000	
	N	30	30	30
Behavioral Dimension	Pearson Correlation	.900	.689	.726
	Sig. (2-tailed)	.000	.000	.000
	N	30	30	30

Source: Prepared by the researchers based on SPSS outputs.

Significant at the 0.01 level (2-tailed) or less.

It is clear from the two previous tables that the correlation coefficient values are positive and statistically significant at the 0.01 level, with medium to high values. This indicates that the dimensions and axes of the study enjoy a high degree of validity. Accordingly, this result demonstrates the validity of the questionnaire items and their suitability for field application.

2.7.4 Statistical Analysis Tools

After collecting the distributed questionnaires, the researcher entered the responses into the Statistical Package for the Social Sciences (SPSS), and then processed them using the appropriate statistical methods depending on the type of data to be analyzed. Among the methods used are:

- Cronbach's Alpha Coefficient to measure the reliability of responses to the questionnaire dimensions;
- Frequency distributions and percentages;
- Arithmetic means and standard deviations to identify the tendencies of the sample individuals toward the study;
- Pearson correlation coefficient to examine the study variables;
- Simple regression analysis and analysis of variance (ANOVA).

2.7.5 Defining the Study Population and Sample

Through this section, we will address the study population and sample, as well as the characteristics of the sample.

A- Study Population and Sample

The study population and the selected sample for the research will be identified:

A/1- Study Population: To conduct the field study, it was necessary to clearly define the study population, as this helps in determining the most appropriate scientific method for studying this population. The study population consists of mobile phone subscribers of the three operators (Mobilis, Djezzy, Ooredoo) in M'sila Province.

A/2- Study Sample: The sample consists of mobile phone subscribers of the three operators (Mobilis, Djezzy, Ooredoo), totaling 147 individuals. It represents a simple random sample, and it is expected that this sample will best represent the research population.

Table 6: Number of Distributed, Retrieved, Excluded, and Accepted Questionnaires (Paper and Electronic)

Number of Questionnaires	Paper Distributed	Electronic Distributed	Retrieved	Excluded	Accepted for Study
Total	51	96	147	00	147
Percentage	38.77%	56.30%	100%	00%	100%

Source: Prepared by the researchers

3. Results and discussion

The mobile communications market in Algeria is dominated by three main players. Mobilis is the first national operator, founded in 1999 as a subsidiary of Algérie Télécom, which strives for transparency, innovation and development to maintain an important presence in the national market. Djezzy was established in 2001 and was one of the first players in this space and offers prepaid and postpaid services and provides total coverage to more than 95% of the population of Algeria. Ooredoo was founded in 2004 and operated under the name Nedjma in partnership with the Qatari Ooredoo Group and seeks to target young consumers with new digital communication models and services and compliments this with a strong countrywide coverage network.

3.1 Study of Sample Characteristics Through Personal Data

To identify the personal characteristics of the sample individuals, they were categorized according to: (gender, age, educational level, occupation, and segment). Below is a detailed presentation of these variables:

First: Gender

Table 7. Distribution of Sample Individuals According to Gender

Gender	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Male	61	41.5	41.5	41.5
Female	86	58.5	58.5	100.0
Total	147	100.0	100.0	

Source: Prepared by the researchers based on SPSS outputs.

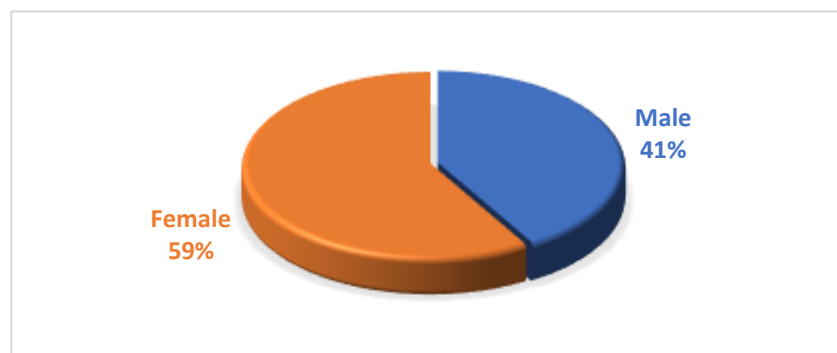


Figure 5. Distribution of the study sample individuals according to gender

Source: Prepared by the rese²archers based on Excel software.

From the previous table and figure, it is clear that the majority of the sample participants were female, representing 58.5% of the total sample, equivalent to 86 individuals. Meanwhile, males represented 41.5% of the sample, equivalent to 61 individuals.

Second: Age

The participants of the study sample are distributed according to the age variable as follows:

Table 8. Distribution of Study Sample Individuals According to Age

Age Group	Frequency	Percentage	Valid Percentage	Cumulative Percentage
18–30 years	114	77.6	77.6	77.6
30–40 years	23	15.6	15.6	93.2
40–50 years	9	6.1	6.1	99.3
50 and above	1	0.7	0.7	100.0
Total	147	100.0	100.0	

Source: Prepared by the researchers based on SPSS outputs.

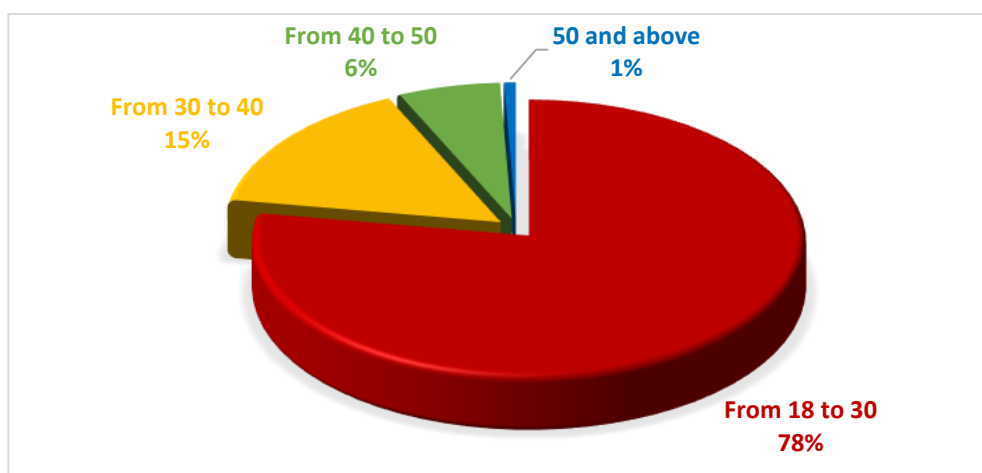


Figure 5. Distribution of Study Sample Individuals According to Age

Source: Prepared by the researchers using Excel software.

From the aforementioned table and figure, it can be seen that the highest percentage lies within the age group of 18-30 years, at 77.6% of the study sample or 114 individuals. Meanwhile, the percentage for the 30-40 age group was 15.6%, which is 23 individuals in total. The age group of 40-50 years accounted for 6.1% or 9 individuals from the sample, while the individuals older than 50 only accounted for one individual or 0.7%.

Third: Educational Level

The study sample includes individuals with different educational levels, as shown in Table 9 and Figure 6.

Table 9. Distribution of the study sample according to educational level

Educational Level	Frequency	Percentage	Valid Percentage	Cumulative Percentage
University	95	64.6	64.6	64.6
Secondary	41	27.9	27.9	92.5
Intermediate	8	5.4	5.4	98.0
Other	3	2.0	2.0	100.0
Total	147	100.0	100.0	

Source: Prepared by the researchers based on SPSS outputs.

It is observed from the above table and figure that the majority of the sample members have a university level of education, representing 64.6% with a total of 95 individuals. Meanwhile, 27.9% of the participants, amounting to 41 individuals, have a secondary level of education. As for those with an intermediate educational level, they represent 5.4% of the sample, corresponding to 8 individuals. Finally, individuals with other educational levels account for 2%, with a total of 3 individuals.

Fourth: Occupation

The study sample is distributed according to occupation as follows:

Table 10. Distribution of the study sample according to occupation

Occupation	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Employee	32	21.8	21.8	21.8
Self-employed	13	8.8	8.8	30.6
Unemployed	27	18.4	18.4	49.0
Student	73	49.7	49.7	98.6
Retired	2	1.4	1.4	100.0
Total	147	100.0	100.0	

Source: Prepared by the researchers based on SPSS outputs.

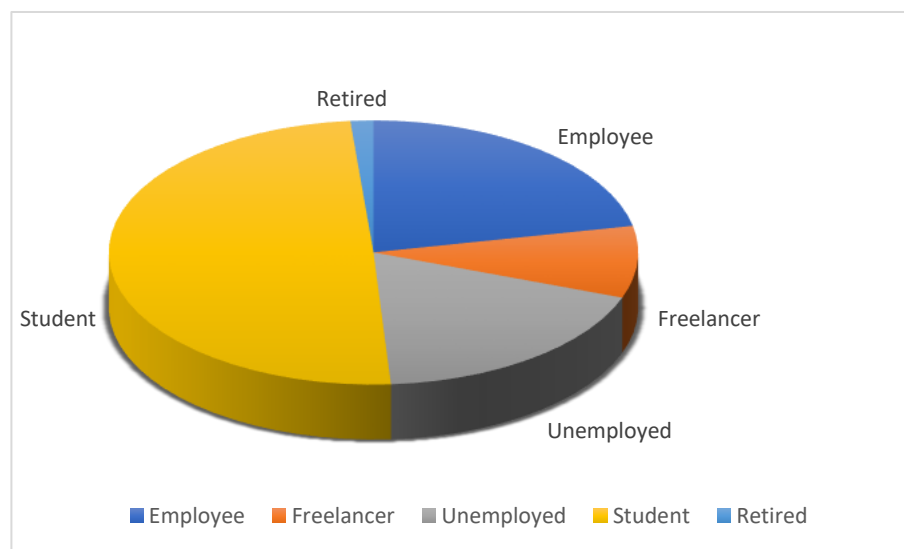


Figure 6. Distribution of the study sample according to occupation

Source: Prepared by the researchers using Excel software

From the above table and figure, it is observed that the largest proportion of the sample consists of students, representing 49.7%, which corresponds to 73 individuals. This is followed by employees, who account for 21.8% of the sample with a total of 32 individuals. The number of unemployed individuals amounts to 27, representing 18.4%. Next are those who are self-employed, representing 8.8%, equivalent to 13 individuals. Finally, the retired individuals constitute the smallest proportion of the sample, with 2 individuals, representing 1.4%.

Fifth: Mobile Phone Operator

Table 11. Distribution of Sample Individuals According to Mobile Phone Operator

Mobile Operator	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Mobilis	106	72.1	72.1	72.1
Djezzy	28	19.0	19.0	91.2
Ooredoo	13	8.8	8.8	100.0
Total	147	100.0	100.0	

Source: Prepared by the researchers based on SPSS outputs.

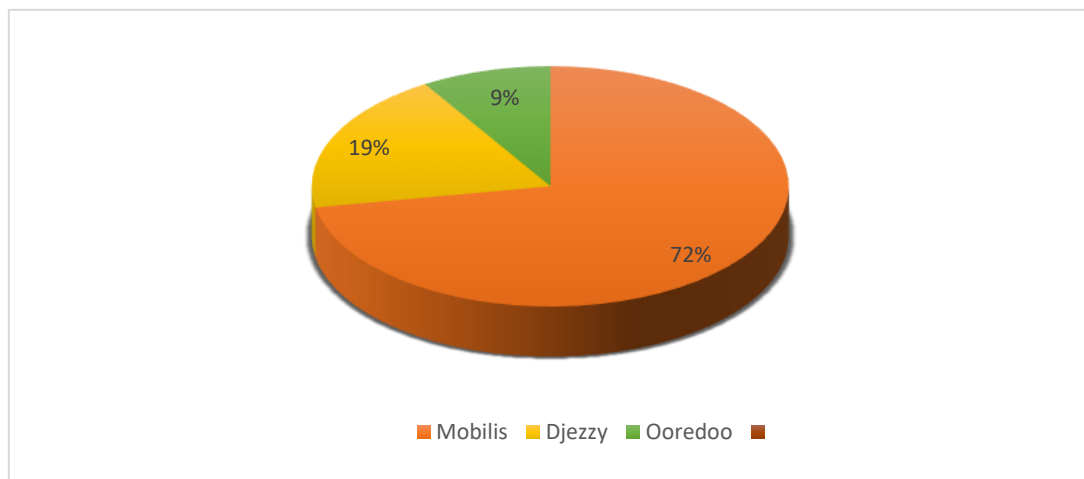


Figure 7. Distribution of Sample Individuals According to Mobile Phone Operator

Source: Prepared by the researchers using Excel software.

From the previous table and figure, it is clear that the largest group of the sample uses the Mobilis operator, representing 72.1% or 106 individuals. The Djezzy operator is used by 28 individuals, representing 19%, while the smallest percentage corresponds to the Ooredoo operator, representing 8.8% or 13 individuals from the sample.

3.2 Testing the Study Hypotheses and Analyzing the Results

We will address in this section the testing of the study hypotheses in order to examine the impact of digital marketing on enhancing the brand image.

First Requirement: Testing the First Hypothesis

The first hypothesis states that: There is an effect of digital marketing dimensions (attraction, engagement, retention, learning, communication) on the *cognitive dimension* of the brand image at a significance level of 5%.

Table 12. Results of Variance Analysis (ANOVA) of the Sample Responses on the Effect of Digital Marketing Dimensions on the Cognitive Dimension of the Brand Image

Source	Sum of Squares	Df	Mean Square	F-Value	Sig.
Regression	681.996	5	136.399	25.158	.000
Residual	764.453	141	5.422		
Total	1446.449	146			

Table 13 above shows that the calculated F-value was 25.158 with degrees of freedom (5, 146) and a significance level of Sig = 0.000, which is less than the adopted significance level of 0.05 for this study. This indicates the acceptance of the hypothesis stating that there is an effect of the dimensions of digital marketing on the cognitive dimension of the brand image at a 5% significance level.

Table 13. Results of the Linear Regression Model of the Relationship Between Digital Marketing Dimensions and the Cognitive Dimension of Brand Image

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
Constant	3.594	1.532		2.346
Attraction	.107	.084	.096	1.275
Engagement	.157	.074	.174	2.114
Retention	.179	.100	.179	1.797
Learning	.240	.091	.251	2.631
Communication	.123	.093	.133	1.327

F-value = 25.158

Significant at 0.05 / Significant at 0.01

Multiple Correlation Coefficient = 0.687 / Coefficient of Determination (R^2) = 0.471

Source: Prepared by the researchers based on SPSS outputs.

The data in the previous table show that all dimensions of digital marketing are correlated with the cognitive dimension of the brand image, with a multiple correlation coefficient of 0.687. The value of (F) for testing the significance of the multiple correlation coefficient is 25.158, which is statistically significant at the 0.01 probability level. This indicates the existence of a statistically significant relationship between the dimensions of digital marketing and the cognitive dimension of the brand image. The coefficient of determination indicates that all dimensions of digital marketing affect the cognitive dimension of the brand image by 47.1%. Moreover, the previous table shows that the values of the partial regression coefficients for all dimensions of digital marketing are statistically significant at the 0.01 probability level.

Section Two: Testing the Second Hypothesis : The second hypothesis states that There is an effect of the dimensions of digital marketing (**attraction / engagement / retention / learning / communication**) on the **emotional dimension** of the brand image at a 5% significance level.

Table 14. Results of the Analysis of Variance (ANOVA) for the responses of the study sample regarding the effect of digital marketing dimensions on the emotional dimension of the brand image-Analysis of Variance (ANOVA)

Source	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1184.804	5	236.961	25.094	.000
Residual	1331.454	141	9.443		
Total	2516.259	146			

Source: Prepared by the researchers based on SPSS outputs.

From Table 15, it appears that the calculated (F) value was estimated at (25.094) with degrees of freedom (5 and 146) and a significance level (Sig = 0.00), which is less than 0.05, the level adopted in this study. This indicates acceptance of the hypothesis stating that digital marketing dimensions have an effect on the emotional dimension of the brand image at the 5% significance level.

Table 15. Linear regression model of the relationship between digital marketing dimensions and the (emotional dimension) of the brand image

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
Constant	-2.081	2.022		-1.029	0.305
Attraction	0.159	0.111	0.108	1.435	0.154
Participation	0.174	0.098	0.146	1.771	0.079
Retention	0.155	0.132	0.117	1.181	0.240
Learning	0.351	0.120	0.279	2.922	0.004
Communication	0.221	0.123	0.180	1.799	0.074

F value = 25.094 /* Significant at 0.05 /* Significant at 0.01 / Multiple correlation coefficient = 0.686 /

Coefficient of determination = 0.471

Source: Prepared by the researchers based on SPSS outputs.

From the information presented in Table (16), we can see that each dimension of digital marketing is related to the emotional dimension of brand image with a multiple correlation coefficient of 0.686. The value of F for the test of the significance of multiple correlations was 25.094, which is statistically significant at the 0.01 probability level. This indicates there is a statistically significant relationship between the digital marketing dimensions and the emotional dimension of brand image that has a degree of strength of 68.6%. The table further indicates that the values of the partial regression coefficients for the digital marketing dimensions are all significant at the 0.01 probability level.

Section Three: Testing the Third Hypothesis

The third hypothesis states that: *There is an effect of digital marketing dimensions (attraction, participation, retention, learning, and communication) on the behavioral dimension of the brand image at the 5% significance level.*

Table 16. Results of ANOVA for respondents' answers regarding the effect of digital marketing dimensions on the behavioral dimension of the brand image

Source of Variation	Sum of Squares	df	Mean Square	F	Sig
Regression	1022.764	5	204.533	15.261	0.000
Residual	1889.902	141	13.404		
Total	2912.667	146			

Source: Prepared by the researchers based on SPSS outputs

From Table 17, it is clear that the calculated (F) value was estimated at (15.261) with degrees of freedom (5 and 146) and a significance level (Sig = 0.00), which is less than 0.05, the level adopted in this study. This indicates acceptance of the hypothesis, confirming that digital marketing dimensions have an effect on the behavioral dimension of the brand image at the 5% significance level.

Table 17. Linear Regression Model of the Relationship Between Digital Marketing Dimensions and the Behavioral Dimension of the Brand Image

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig
	B	Std. Error	Beta	
Constant	-0.058	2.409	—	-0.024
Attraction	-0.040	0.132	-0.025	-0.306
Participation	0.195	0.117	0.152	1.666
Retention	0.295	0.157	0.207	1.881
Learning	0.339	0.143	0.251	2.370
Communication	0.129	0.146	0.098	0.882

Source: Prepared by the researchers based on SPSS outputs

The data presented in the prior paragraph indicates that every dimension of digital marketing is related to the behavioral aspect of brand image, with a multiple correlation coefficient of 0.593. What is more, the F-value derived from the test of significance of this multiple correlation, was computed as 15.26, yielding a statistically significant correlation at the 0.01 level. These results are indicative of a statistically significant relationship between all dimensions of digital marketing and the behavioral dimension of brand image collectively, and the dimensions of digital marketing account for 59.3% of the variance in the behavioral dimension.

Furthermore, with respect to significance of each of the digital marketing dimension's regression coefficients, the table indicates that all aspects, except the attraction dimension at coefficient value of -0.040, were statistically significant at the 0.01 level.

Section Four: Testing the Main Hypothesis

The main hypothesis states that: *There is an effect of digital marketing on the brand image of mobile telecommunication companies in M'sila Province at a 5% level of statistical significance.*

Table 18. ANOVA Analysis of Respondents' Answers Regarding the Effect of Digital Marketing on the Brand Image

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	8347.263	1	8347.263	154.367	0.000
Residual	7840.737	145	54.074		
Total	16188.000	146			

Source: Prepared by the researchers based on SPSS outputs

From Table (18), it is evident that the calculated F-value reached 154.367 at degrees of freedom (1 and 145) and a significance level of sig = 0.000, which is less than the 0.05 threshold adopted in this study. This result indicates the acceptance of the main hypothesis, confirming that digital marketing has a statistically significant effect on the brand image at the 5% significance level.

Table 19. Linear Regression Model of the Relationship Between Digital Marketing and Brand Image

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig
	B	Std. Error	Beta	
Constant	-0.902	4.483		-0.201
Digital Marketing	0.578	0.047	0.718	12.424

Source: Prepared by the researchers based on SPSS outputs

From Table (19), it is clear that the correlation coefficient between the independent variable (digital marketing) and the dependent variable (brand image) reached 0.718, while the coefficient of determination was 0.516. These indicators confirm the presence of a statistically significant relationship, further supported by the calculated F-value (154.367), which is statistically significant at the 0.01 level.

4. Discussion

The present research emphasizes the strategic role that digital interaction plays in the development of brand image, particularly within intensely competitive service categories such as mobile telephony in Algeria. The findings validate that all dimensions of digital interaction do not hold the same relevance to the consumer's cognitive, affective and behavioral perspectives. While the "learning" dimension proved to be the most significant contributor to brand image and a significant contributor to the sub-dimensions, the "participation" dimension also proved to be an important consideration, especially for the cognitive dimension of brand image. This suggests a need to not only consider visibility or the superficial aspect of engagement for consumers, but also the depth of interaction and consideration of more meaningful engagement.

The results did reveal a more interesting finding, and that is while attraction is often considered one of the key elements of an organization's promotional strategy, it did not exert significant influence on brand image and even resulted in a small negative effect on the behavioral dimension. Similarly, the results for communication and retention also appeared to exhibit weak influence on brand image or were statistically insignificant, suggesting the potential influence of communication and retention may be influenced by how they are implemented as part of a larger digital strategy that is perceived as more personalized. So, the

findings of this study indicate that brand image does not develop in isolation, and is something that is co-constructed through the lens of interactions that has a reciprocal quality based on perceived digital interaction quality, perceived brand values, and consumer trust.

To be effective, mobile phone service providers in Algeria should transition from carrying out promotions and advocating for customers in the media, to developing enduring consumer relationships via personalized digital engagement and data analytics. This is important to recommend for Digital Analytics is important albeit only if your only aim is to improve the learning process and trace consumer behaviors, preferences, and expectations. The "activation" and "communication" aspects should allow for dialogical, interactive and responsive content to help build consumer loyalty and bolster the brand image. In other words, if the only goal is to achieve attraction, while neglecting a comprehensive user experience, attraction will result in eroded trust with consumers and will further dilute a brand's overall value.

This research identifies several meaningful prospective research directions. For example, investigating the mediating variables of digital attitudinal loyalty and platform trust would clarify how digital interactions can enhance brand image dynamics in different ways. Comparing difference across an industry may explore the contextual differences in one industry's success of digital interactions (e.g. education, tourism, banking). Similarly, investigating the relationship between brand identity and digital interaction may help us understand how strategizing the brand's digital interactions with the brand's identity and legitimacy can reflect upon the impact of digital interactions on brand image.

Conclusion

The current research underscores the role of digital interaction as a strategic variable affecting brand image formation. The statistical analysis confirmed that a significant relationship exists between the dimensions of digital interaction - especially learning and participation - and the cognitive, affective and behavior form of brand image.

Results of the current research indicated how not all dimensions of digital interaction are assessed by "visibility" or "attractiveness." Instead, they focus on the institution's capacity to engage with the customer, understand their behavior, respond to their needs, and personalize their digital experience. Brand image in this study is also not built in vacuum against the dynamic digital environment; it is part of a process that is co-constructed based on the quality of digital interaction, brand values and credibility.

In the Algerian local context, and in a competitive sector such as mobile phone services, the effectiveness of each of the aforementioned interaction's dimensions will vary based on user's orientations. If an influence in behavioral dimensions is the expected outcome, there will need to be greater investment in dimensions that pertain to deeper forms of interaction such as learning and personalization, as opposed to just engagement with advertisements and attraction to the service.

REFERENCE LIST

- Brodie, R. J., Hollebeek, L. D., Jurić, B., & Ilić, A. (2011). Customer engagement: Conceptual domain, fundamental propositions, and implications for research. *Journal of service research*, 14(3), 252-271.
- Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research.
- Hollebeek, L. D., Srivastava, R. K., & Chen, T. (2019). SD logic-informed customer engagement: integrative framework, revised fundamental propositions, and application to CRM. *Journal of the academy of marketing science*, 47(1), 161-185.
- Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of marketing*, 57(1), 1-22.
- Keller, K. L. (2001). Building customer-based brand equity: A blueprint for creating strong brands.
- Lamberton, C., & Stephen, A. T. (2016). A thematic exploration of digital, social media, and mobile marketing: Research evolution from 2000 to 2015 and an agenda for future inquiry. *Journal of marketing*, 80(6), 146-172.
- López García, J. J., Lizcano, D., Ramos, C. M., & Matos, N. (2019). Digital marketing actions that achieve a better attraction and loyalty of users: An analytical study. *Future Internet*, 11(6), 130. <https://doi.org/10.3390/fi11060130>
- Loureiro, S. M. C., Guerreiro, J., & Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. *Tourism management*, 77, 104028. <https://doi.org/10.1016/j.tourman.2019.104028>
- Madhavaram, S., Badrinarayanan, V., & McDonald, R. E. (2005). Integrated marketing communication (IMC) and brand identity as critical components of brand equity strategy: A conceptual framework and research propositions. *Journal of advertising*, 34(4), 69-80. <https://doi.org/10.1080/00913367.2005.10639213>
- Maecker, O., Barrot, C., & Becker, J. U. (2016). The effect of social media interactions on customer relationship management. *Business Research*, 9(1), 133-155.
- Pereira, M. d. S., de Castro, B. S., Cordeiro, B. A., de Castro, B. S., Peixoto, M. G. M., da Silva, E. C. M., & Gonçalves, M. C. (2025). Factors of Customer Loyalty and Retention in the Digital Environment. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), 71.
- Riyani, F. (2025). The Influence of Brand Image on Consumer Buying Behavior: An AI-Powered Sentiment Analysis in the Digital Age. *Dinamika: Jurnal Manajemen Sosial Ekonomi*, 5(1), 259-266. <https://doi.org/10.51903/czf54w17>
- Trunfio, M., & Rossi, S. (2021). Conceptualising and measuring social media engagement: A systematic literature review. *Italian Journal of Marketing*, 2021(3), 267-292. <https://doi.org/10.1007/s43039-021-00035-8>
- Wedel, M., & Kannan, P. (2016). Marketing analytics for data-rich environments. *Journal of marketing*, 80(6), 97-121.