The Relationship Between the Application of Neuromarketing and Competitiveness

AN Applied Study on (Airtel) for Telecom Services in India"

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Abstract- Neuromarketing is one of the effective means to create competitiveness and more excellence. This study aimed to examine the relationship between the application of neuromarketing and competitiveness on Airtel Company. The study based on primary and secondary data, a total of 200 employees who are patronizing marketing and sales processes departments of Airtel Company were surveyed by applying a structured questionnaire. Statistical tools like Cronbach's alpha coefficient and correlation coefficients, frequencies and percentages, descriptive statistics analysis, correlation analysis are employed to assess the relationship between the application of neuromarketing and competitiveness. The results revealed that there is a significant relationship between the application of neuromarketing and competitiveness. This study contributes invaluable information for both academician and managers for their theoretical and practical purposes.

Index Terms- Competitiveness, Neuromarketing, Neuromarketing activities, Neuromarketing applications.

I. Introduction

Marketplace is a very competitive and lively in nature. The customers are more aware, their needs are complex, and have an access to diverse channels and choices to get their utilities; therefore, companies are in a severe need to differentiate their marketing strategies as they resist. Managers today are under remarkable pressure to uncover factors driving customers' attitudes and behaviour. Unfortunately, decades ago traditional methods suffer from recognized limitations and have remained largely unchanged since their introduction. Thus, there is a rising interest in brain-based approaches that may enable managers to directly investigate customers' essential thoughts, feelings, and intentions. Recently, neuroscience concept has gained increasing popularity in academic literature as well as the practical world to understand the consumer's behaviour which can positively contribute to enhance competitiveness among companies. Neuroscience has helped the researcher to deeply discuss marketing science in meaningful ways. The interaction between both of these sciences has helped in generating deeper insights into consumer's behaviour. This has guided to the appearance of a new field of study, termed as neuromarketing or consumer neuroscience. This study introduces the readers to this emerging field in marketing literature and practice. It gives an overview of the relationship of the applications of neuroscience competitiveness. In India, (Bharti Airtel) is one the largest mobile phone companies around India. Within excess of 334, 79 million subscribers. It is a global company operates in 16 countries in Asia and Africa, it is one of the top three global mobile service providers (annual 17- 18, 2019). The organization additionally gives telephone utilities and Web access over DSL. At the same time, they continued their aggressive network transformation program under 'Project Leap'. With 180,000 mobile sites rolled out in the preceding two years, this is one of the largest network rollouts globally. During the year, we also emerged as the only industry player in India, with both 3G and 4G services in all 22 circles. The total revenue in 2018 for Airtel is 836.87 Billion Rupees.

The telecommunication industry in India is expanding, and the completion among companies is arising; thus, Airtel started to direct the efforts to enrich the lives of customers, win new customers, increase the market share and revenue, and gain competitiveness. In the recent study the researcher attempts to give attention to a new strategy in marketing that will assist companies to understand the potential feelings, thoughts, and emotions of their customers. Thus, companies can assimilate the needs and desires of their customers and directly gain their satisfaction and loyalty.

II. Literature Review

2.1. Neuromarketing:

Neuromarketing is one of the modern and vital concepts in marketing that uses techniques for the measurement of customers' brain to understand and analyze the customers' behaviours in line with markets and commercial trade (Lee, Broderick& Chamberlain, 2006). The use of neuromarketing concept emerged in June 2002. Particularly when an advertising company from Atlanta (USA) declared the creation of a department for the use of functional magnetic resonance image (FMRI) to conduct marketing research (Fisher, Chin & Klitzman, 2010). Furthermore, Neuromarketing is the application of neuroscience to marketing (Perrachione & Perrachione, 2008) that includes the direct use of brain imaging, scanning, and other brain activity

measurement technology to measure the responses of customers for specific products, packaging, advertising, or other marketing factors. As a fact, the brain is the black box that conceals customers' emotions and preferences (Marci, 2008; Javor, Koller, Lee, Chamberlain & Ransmayr, 2013; Fugate, 2007 and Green & Holbert, 2012), and neuromarketing is the window that reveals and gives access to these emotions and feelings (Green &Holbert, 2012; Ohme & Matukin, 2012; Fisher, Chin &Klitzman, 2010). When gaining insights from the brain processes of customers, researchers will be able to understand, assess, and predict the customers' behaviours and preferences (Fisher et al., 2010, Hubert & Kenning, 2008; Perrachione &Perrachione, 2008). Some contemporary studies declared that approximately 80% of all new products fail within its first three years in the markets; thus, further associations should be made between newly invented products and actual user requirements (Calvert & Brammer, 2012). Companies started to adopt the concept of neuromarketing after they had assumed that there is an implicit and automatic process which determine the decision making process that will reveal secret information about customers behaviours which is not obtainable by the traditional marketing methods(Ariely & Berns, 2010; Senior, & Lee, 2008). Eye tracking, skin conductance, and brain imaging tools (e.g., FMRI, EEG) are considered as psychological tools of neuromarketing that received increasing attention from specialists because it helps to make brain observations during the execution of certain tasks, which provides marketers with additional secret information about customers (Lieberman, 2007; Dimoka, Banker, Benbasat, Davis, Dennis, Gefen, &Weber, 2012; Calvert, &Brammer, 2012; Ariely & Berns, 2010; Venkatraman et al., 2012). Other researchers assessed neuromarketing as a field resulting from the relationship between two or more sciences. According to Senior & Lee (2008), neuromarketing consists of marketing research domain based on social psychology, econometrics and social sciences, while Garcia & Saad (2008) and Hubert & Kenning (2008) associate neuromarketing with the sciences of consumer behavior and cognitive neuroscience. According to some researchers, the application of consumer neuroscience in marketing and consumer researchers has generated new insights into various facets of branding such as brand perception (Litt and Shiv 2012; Milosavljevic et al. 2012), brand evaluation (Esch et al. 2012; Estes et al. 2012; Saad and Stenstrom 2012), brand preferences (Venkatraman et al. 2012; Berns and Moore 2012; Yilmaz et al. 2014), brand relationships (Aggarwal and Larrick 2012; Reimann et al. 2012), pricing (Plassmann et al. 2007), product packaging (Reimann et al. 2010; Stoll et al. 2008), brand naming (Hillenbrand et al. 2013), green consumption (Lee et al. 2014), advertising (Treleaven-Hassard et al. 2010; Vecchiato 2011), and new product development (Ariely and Berns 2010).

2.2. Competitiveness:

Competitiveness is a multidimensional concept. It can be studied from three different levels: country, industry, and firm level. Competitiveness originated from the Latin word, "competer", which means involvement in a business competition for markets. It has become familiar to describe the economic strength of an entity with respect to its competitors in the global market economy in which goods, services, people, skills, and ideas move freely across geographical borders (Saboniene, 2009; Malakauskaite, Navickas, 2010). That is to say, it is the ability to compete. In the literature the word "competitiveness" conveys a different meaning when applied to an individual firm or an individual sector or economic activity within a country or region. A systematic search of the academic literature revealed that competitiveness is a major issue (Dunning, 1995), it has still not been a well defined concept (Martin, Westgren and Duren, 1991; Conner, 2003). Although, many researchers have tried to determine the concept of competitiveness as a multidimensional and relative concept (Spence and Hazard, 1988). The support of this is that different attributes of competitiveness change with time and context (Ambastha and Momaya, 2004). The dynamic development of competitiveness research requires the more frequent and specific analysis with up to date factors. Cook and Bredahl (1991) stated that competitiveness can be viewed from the perspective of geographic area, product, or time. The competitiveness is defined by enormous amount of factors and determinants depending on the scale, focus, and objectives of the research. Some studies presented many perspectives and frameworks at the country, industry and firm level. While some studies focused on individual firm and its strategies for global operations, some others observed the role of management in competition (Oral, 1993; Offstein et al., 2007). The US Competitiveness Policy Council (1998) defines competition as the capability of producing goods/services at an international quality that can compete at international markets, resulting continuous increase in the welfare of a nation. From Porter (1990) point of view should be a further emphasis on the productive use of resources in a nation as a good measure for competitiveness. DC (2001) stated that Competitiveness involves "a combination of assets and processes, where assets are inherited (natural resources) or created (infrastructure) and processes transform assets to achieve economic gains from sales to customers. Some authors view competitiveness with the competency approach. They emphasized on the role of internal factors of the firms to enhance competitiveness such as firm strategy, structures, competencies, capabilities to innovate, and other tangible and intangible resources for their competitive success (Bartlett and Ghoshal, 1989; Doz and Prahalad, 1987; Hamel and Prahalad, 1989, 1990). The ability to develop capabilities and talents far more effectively than competitors can help in achieving world-class competitiveness (Smith, 1995). Johnson (1992) declared that for providing greater value and satisfaction for customers than their competitors, companies must be operationally efficient, cost effective, and quality conscious.

2.3. Terminologies:

2.3.1 Neuromarketing:

Many authors have defined Neuromarketing and some definitions are presented below;

Neuromarketing is the process of researching the brain patterns of consumers to reveal their responses to particular advertisements and products before developing new advertising campaigns and branding techniques (Collins Dictionary).

Neuromarketing is the study of the cerebral mechanism to understand the consumer's behaviour in order to improve the marketing strategies (Smidts, 2002).

applying the methods of the neurology lab to the questions of the advertising world'' (Thompson 2003).

Neuromarketing aims to understand how consumers think and why the consumer chooses the products by applying "neuroscientific methods to analyze and understand human behaviour in relation to markets and marketing exchanges" (Lee et al, 2007).

Neuromarketing is the application of findings from neuroscientific consumer research within the scope of managerial practice (Kenning & Hubert, 2008).

Neuromarketing is mostly defined as a new field of marketing research studying consumers' cognitive and affective responses to different marketing stimuli (Zaltman & Zaltman, 2008; Boricean, 2009; Dooley, 2010).

Neuromarketing is a relatively new and controversial interdisciplinary research field, a component of marketing, by means of which one can properly interpret psychological and neurological knowledge necessary to understand customer behaviour (Constensen, 2011).

Neuromarketing is defined as the obtaining of information useful for marketers by subjecting individuals to functional magnetic resonance imaging (fMRI) and other similar methods of studying automatic responses in the brain to certain stimuli, generally involving products and brands that are part of consumer culture (Berger, 2011).

Neuromarketing is a subset of the study of neuroeconomics, which combines neuroscience, genetics, economics, and psychology to understand how specific neuron activation may lead to larger scale market behaviour, (Levallois et al, 2012).

Neuromarketing is widely defined as the science that uses MRI (magnetic resonance imaging), EEG(electroencephalography), TMS (transcranial magnetic stimulation), fMRI (functional magnetic resonance imaging) and other brain wave tools to view the human brain's responses to marketing stimuli to figure out what customers' thoughts are toward a product, service, advertisement, or even packaging to perfectly construct marketing campaigns that are based on the human brain's response, (Hammou et al, 2013).

Neuromarketing refer to a commercialized market research method for studying brain activity that combines the methodologies of neuroscience and behavioural psychology to generate greater understanding about how consumers respond to products, brands, and advertising stimuli. These insights are then used to inform the development of advertising strategies that are designed primarily to "nudge" particular demographic groups or population segments to take consumptive action. (Nemorin , S., & Gandy, Jr, O.H. 2017)

2.3.2 Neuromarketing Activities:

The marketing actions carried out by the institutions through consumers' brain researches to identify factors, variables and motivations, whether in demographic, psychological, behavioural, mental or emotional terms that associated with the purchase decision or preferences for certain brands. (Wyer Jr & Xu, 2010)

2.3.3. Neuromarketing Techniques:

The methods and devices used in the field of neuromarketing alongside the marketing activities related to consumer behaviour and variables associated with it. The overall goal of using neuromarketing techniques is to understand the interconnection between marketing activities and the response upon that from consumers. (Kumlehn, 2011)

2.3.4. Competitiveness:

Related to the activities and aspects that enable the telecom company to achieve excellence from competitors by providing service quality, using methods that meet the needs of customers, occupying a market share and increase continuously, distinction prices from competitors, increasing profit and productivity efficiently and effectively. (The researcher)

III. Statement of Problem

For (Airtel) to keep its maintenance and gain customer satisfaction and loyalty in the complex and competitive market of today they should pay more attention to apply neuromarketing as a new marketing strategy that help in recognizing the thoughts, needs, and feelings of their customers. Thus, it could be easier to meet their needs to achieve customer loyalty and retention, so consequently (Airtel) can save its market share. Accordingly, the statement of the problem can be stated in the following questions:

IV. Research Questions

4.1. Main Question:

Is there any relationship between the application of neuromarketing and competitiveness?

4.2. Sub Questions:

a) What are the requirements and factors associated with the marketing activity related to the application of neuromarketing?

b) What are the technical factors that contribute to the application of neuromarketing?

V. Research Objectives

The general objective of this study is to explore the relationship between the application of neuromarketing and competitiveness in telecom sector from the perspective of the marketing and sales processes department staff of (Airtel).

Particularly the study seeks:

a) To identify the relationship between requirements and factors associated with the marketing activity related to the application of neuromarketing and competitiveness in telecom sector.

b) To identify the relationship between technical factors that contributes to the application of neuromarketing and competitiveness in telecom sector.

VI. Delimitation of the Study

The sample of this study covers the employees of one company (Airtel) that share the market share of telecommunication sector in India with its competitors, so there is a need for another study that takes into consideration the whole telecommunication sector in India.

* The responses of the study have been collected from employees from Delhi and Aligarh. The responses of the employees of Airtel in Delhi and Aligarh may vary from those of the rest of India.
* The employees of only one Telecom Company were selected for the present study. As a result, the generalization of the findings of the present study should be considered carefully.
*The present study has adopted two dimensions of neuromarketing as suggested in previous studies taking in consideration the circumstances of the telecom sector employees in India. For this, a total of 26 parameters belonging to these 2 dimensions were used to measure the responses of the employees about neuromarketing. There may still a possibility of adding some new dimensions or some more parameters to the existing dimensions.
* Convenient sampling technique has been used for the collection of data from the respondents; thus, the generalization of the results should be looked carefully.
* The current study as all studies that are based on the primary data collected by the predesigned questionnaire suffers from the possibility of dissimilarity between what is recorded and what is the truth of the respondents' answers.
* It was not possible for the respondents to explain certain points related to the questions because the vital source of collecting the primary data was standardized and structured questionnaires with two open questions.

VII. Hypothesis of the Study

7.1. Main Hypothesis

There is no a significance relationship between the application of neuromarketing and competitiveness in telecom sector in India.

7.2. Sub hypotheses:

a) There is no significance relationship between the application of neuromarketing activities and competitiveness.

b) There is no significance relationship between the application of neuromarketing technology and techniques and competitiveness.

VIII. Research Methodology

8.1. Research Design

Analytical descriptive method has been used to sustain quantitative measurement and analysis. Data has been collected through different means which include:

Secondary resources: To introduce the conceptual literature of neuromarketing and competitiveness, the researcher has depended on books, periodicals, articles, published papers and referred previous studies in different countries which have been conducted on the same subject, the Internet sites and the available electronic versions.

Primary resources: a questionnaire and interviews have been used as a primary tool for gathering data from the employees of (Airtel) Company in order to analyze the qualitative and quantitative characteristics of the phenomena.

8.2. Study Population/Sample

The population of the study consists of the employees of marketing and sales processes of Airtel Company for telecommunications, which is one of a well-known companies in India.

The sample consists of a total of (200) employees who are patronizing marketing and sales processes departments of Airtel Company. They have been requested to complete questionnaires (self designed with the help of (Mohammad, E., 2012) that captured all the variables contained measures of the constructs of concern.

Sampling Method/ Sample Size:

The convenient sampling method has been used (200) Questionnaires administered to the respondents. All (200) questionnaires were dully filled and returned.

8.3. Data Collection Instrument:

The study employed a questionnaire as an instrument for data collection. The questionnaire was divided into four sections. Section (1) measures the demographic attributes of the respondents which include: academic qualifications, career level, years of experience in telecom sector, while section (2) measures three variables (neuromarketing activities which contains: items to measure the ability of implementing neuromarketing activities, items to measure the ability of applying marketing research, and items to measure the style of implementing Neuromarketing activities, neuromarketing technology and techniques, and competitiveness). The items were measured on a 5-point Likert Scale ranging from strongly agree (5) to strongly disagree (1). In terms of section 4, 5, they are open questions.

IX. Data Analysis

9.1. Methods of Data Analysis

The Statistical Package for Social Sciences (SPSS) was used to analyze the data. The following statistical procedures were used:

* Cronbach's alpha coefficient and correlation coefficients were calculated to assure the reliability and validity of study scales.
* Frequencies and percentages were calculated to describe the characteristics of the sample respondents.
* Descriptive statistics analysis was used to summarize the respondents' answers and to ranking the sub-items of each dimension.
* Correlation analysis was carried out to test the presence, strength and direction of the potential relationships among the variables of the study.

□□□□□ Reliability of the Scale

To check the reliability of the study instruments, cronbach's alpha coefficient was calculated. This coefficient generally varies between zero (for no reliability) and unity (for maximum reliability). Any values equal to or above 0.6 denote that the scale is of acceptable reliability. The closer the value is 1; the more reliable a scale.

Table(1) demonstrates that all reliability coefficient are acceptable, since they all exceed the benchmark of 0.60

Table (1): Values of cronbach's alpha coefficient

Scale	No. of item	alpha coefficient
Neuromarketing Activities	14	0,753
Neuromarketing Techniques	12	0.842
Competitiveness	13	0.881

9.3. Validity Analysis of the results

Self-Validity

Table (2) shows values of self-validity coefficient of the study scale. The coefficient is defined as the square root of the reliability coefficient; Cronbach's alpha.

Table (2): Values of self-validity coefficient

Scale	No. of item	alpha coefficient
Neuromarketing Activities	14	0,713
Neuromarketing Techniques	12	0.804
Competitiveness	13	0.829

The results indicate that the self-validity coefficient ranges between 0.713 and 0.829. These values are considered high and acceptable .

Internal consistency validity

To ensure the validity of internal consistency, the correlation coefficient between each item and the dimension to which it belongs was calculated. The results are shown in table (3)

Table (3): Correlation coefficients between each dimension and its items

	Dimensions and Items	**Correlation coefficient**	
		Value	**Sig.**
Neuromarketing Activities Items:			
1	Airtel is studying the customers' behaviors in depth.	.721**	.000
2	Airtel takes into consideration the mental aspects of its customers and imply them in the marketing activities.	.584**	.000
3	Airtel has the techniques to recognize the emotional aspects of its customers.	.689**	.000
4	Airtel is able to identify the psychological factors associated with its customers.	.711**	.000
5	Airtel is able to identify the demographic attributes for customers.	.715**	.000
6	Airtel is able to identify the patterns of customers' buying behaviors.	.731**	.000
7	Airtel is interested to know the mental motivations of customers.	.585**	.000
8	Airtel is interested in applying marketing research to identify customers' behaviors.	.699**	.000
9	Airtel implements the results of marketing research in its marketing activities.	.851**	.000
10	Airtel is interested to know the ways of customers' thinking.	.692**	.000
11	Airtel is able to determine the customer' preferences.	.622**	.000
12	I consider the Neuromarketing strategy is suitable for improving the marketing concepts and capabilities.	.801**	.000
13	Airtel is able to get help from external specialists to analyze the psychological behaviors of its customers.	.675**	.000
14	Airtel is able to get help from external specialists to analyze the mental and emotional behaviors of its customers.	.780**	.000
Technical and technological factors for neuromarketing items:			
1	Airtel provides the essential technical equipments for marketing research.	.844**	.000
2	Airtel develops the techniques used to market its services.	.827**	.000
3	Airtel can provide sensors that investigate consumers' behavior.	.713**	.000
4	Airtel may seek to establish a laboratory for customers' brain measurements.	.646**	.000
5	Airtel can attract a sample of volunteer customers to conduct marketing research in its laboratory.	.539**	.000

6	Airtel has the ability to provide neuromarketing devices and equipments to study customers' behaviors.	.778**	.000
7	Airtel needs specialists in the field of neroumarketing.	.867**	.000
8	Airtel takes into account the improvement of systems and software in line with the results of customers' behaviors research.	.678**	.000
9	Airtel has equipments to provide services consistent with the behaviors and needs of its customers.	.717**	.000
10	I believe that if Airtel uses neuromarketing techniques and technology, it will achieve a significant development in customers' services.	.756**	.000
11	I believe that the use of neuromarketing will enhance the market share.	.565**	.000
12	I believe that neuromarketing techniques and technology can be used to face competition with other telecom companies.	.695**	.000
Competitiveness Items			
1	Airtel has a specialized staff in providing and developing its services.	.877**	.000
2	Airtel develops an appropriate marketing mix to face the competition.	.638**	.000
3	Airtel is able to innovate and expand its services.	.668**	.000
4	Airtel has the ability to reduce the cost of activities without affecting on its profitability.	.526**	.000
5	Airtel has its own pioneer brand in the market	.860**	.000
6	There is an annual increase in the market share of Airtel	.715**	.000
7	Airtel seeks to target new segments of society.	.626**	.000
8	Airtel has a positive brand image.	.514**	.000
9	Airtel analyzes competition and competitors then develops its services accordingly.	.606**	.000
10	Airtel analyzes the customers' needs and implies them in the provided services.	.573**	.000
11	Airtel has distinctive techniques to serve customers compared to other telecom companies.	.673**	.000
12	Airtel provides its services by using distinctive methods and procedures.	.515**	.000
13	Airtel works efficiently and effectively in the domestic markets.	.625**	.000

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

From the above table, it is concluded that:

- The "neuromarketing activities" dimension correlates positively and strongly, with its items. The values of the correlation coefficient range between .584 and 0.851 and all are significant at the 5% level of significant.
- The "Neuromarketing technology and techniques" dimension correlates positively and strongly, with its items. The values of the correlation coefficient range between 0.539 and 0.880 and all are significant at the 5% level of significant.
- The "competitiveness" dimension correlates positively and strongly, with its items. The values of the correlation coefficient range between 0.514 and 0.877and all are significant at the 5% level of significant.

9.4. Characteristics of respondents:

The following table shows the main characteristics of the sample respondents.

Table (4): Characteristics of the sample respondents

Characteristics		N	%
Academic Qualification			
	Diploma	45	22.5
	Bachelor	102	51
	High Education	53	26.5
	Total	200	100
Career Level			
	Top management	15	7.5
	Middle management	57	28.5
	Low management & first line employees	128	64
	Total	200	100
Years of Experience in telecom sector			
	1- 5	63	31.5

	5- 10	94	47
	Above 10	43	21.5
	Total	200	100

It can be concluded from the table above that:

- The sample consisted of 200 respondents; of whom 45 have diploma (22.5%), 102 have bachelor (51%), and 53 have a high education (26.5%).
- Regarding career level; more than a half of the total sample unites (64%) are in low management and first line employees, while (57%) of the respondents are in middle management, and (15%) are working in top management.
- In terms of years of experience in telecom sector, (31.5%) of the respondents have experience between 1-5 years, (47%) were between 5-10 years, while (21.5%) of the respondents their experience above 10 years.

X. Testing Hypotheses

Testing sub hypothesis (a):

H(a): There is no significance relationship between the application of neuromarketing activities and competitiveness.

To test this hypothesis, simple regression and correlation analysis were used. The dependent variable was competitiveness, and the independent variable was the application of neuromarketing activities. The results of the analysis are shown in table (5).

Table (5): Results of simple regression and correlation analysis for testing the first hypothesis

Independent variable	B	T-Test		R	R-Square
		Value	Sig.		
Customer satisfaction	0.601	13.682	0.000	.623	.393

Source: SPSS_ Output (based on Survey data)

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

It can be concluded from the above table:

- There is a significant positive correlation between the application of neuromarketing activities and competitiveness. It is pertinent to mention that all the correlations are significant at 0.05% level of significance.
- The value of the correlation coefficient (R) between the independent variable (the application of neuromarketing activities) and the dependent variable (competitiveness) is 0.623 indicating moderate correlation.
- As evident from the Table (t= 13.682) the application of neuromarketing activities shows significant positive relationship with competitiveness ($t > 1.96$, $p < .05$).
- The value of the coefficient of determination (R-square) is 0.393, which means that the application of neuromarketing activities explains 39.3% of the variance in competitiveness.

Thus, the first sub hypothesis is accepted.

This means that the application of neuromarketing activities is positively related to competitiveness and there is a direct relationship between the tested variables above, although only 39% of the change in competitiveness can be attributed to the application of neuromarketing activities. This shows to some extent that the application of neuromarketing activities is a reliable predictor of competitiveness.

Testing sub hypothesis (b):

H(b): There is no significance relationship between the application of neuromarketing technology and techniques and competitiveness.

To test this hypothesis, simple regression and correlation analysis were used also. The dependent variable was competitiveness, and the independent variable was the application of neuromarketing technology and techniques. The results of the analysis are shown in table (6).

Table (6): Results of simple regression and correlation analysis for testing the first hypothesis

Independent variable	B	T-Test		R	R-Square
		Value	Sig.		
Customer satisfaction	0.520	16.101	0.000	.598	.413

Source: SPSS_ Output (based on Survey data)

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

It can be concluded from the above table:

- There is a significant positive correlation between the application of neuromarketing technology and techniques and competitiveness. It is important to mention that all the correlations are significant at 0.05% level of significance.
- The value of the correlation coefficient (R) between the independent variable (the application of neuromarketing technology and techniques) and the dependent variable (competitiveness) is 0.598 indicating moderate correlation.
- As evident from the Table (t= 16.101) the application of neuromarketing technology and techniques shows a

significant positive relationship with competitiveness (t > 1.96, p < .05).

- The value of the coefficient of determination (R-square) is 0.413, which means that the application of neuromarketing technology and techniques explains 41.3% of the variance in competitiveness.

Thus, the second sub hypothesis is accepted.

This means that the application of neuromarketing technology and techniques is positively related to competitiveness and there is a direct relationship between the tested variables above, although only 41% of the change in competitiveness can be attributed to the application of neuromarketing technology and techniques. This shows to some extent that the application of neuromarketing technology and techniques is a reliable predictor of competitiveness.

Testing the main hypothesis:

The main hypotheses were conducted to evaluate the existence of a positive relationship between the application of neuromarketing and competitiveness.

H: There is no significance relationship between the application of neuromarketing and competitiveness in telecom sector in India.

To test this hypothesis, simple regression and correlation analysis were used. The dependent variable was competitiveness, and the independent variable was the application of neuromarketing. The results of the analysis are shown in table (5).

Table (5): Results of simple regression and correlation analysis for testing the first hypothesis

Independent variable	B	T-Test		R	R-Square
		Value	Sig.		
Customer satisfaction	0.609	18.312	0.000	.766	.673

Source: SPSS_ Output (based on Survey data)

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

It can be concluded from the above table:

- There is a significant positive correlation between the application of neuromarketing competitiveness. It is pertinent to mention that all the correlations are significant at 0.05% level of significance.
- The value of the correlation coefficient (R) between the independent variable (the application of neuromarketing) and the dependent variable (competitiveness) is 0.766 indicating a high correlation.
- As evident from the Table (t= 18.312) the application of neuromarketing shows a significant positive relationship with competitiveness (t > 1.96, p < .05).
- The value of the coefficient of determination (R-square) is 0.673, which means that the application of neuromarketing explains 67.3% of the variance in competitiveness.

Thus, the main hypothesis is accepted.

This means that the application of neuromarketing is positively related to competitiveness and there is a direct relationship between the tested variables above and67% of the change in the competitiveness can be attributed to application of neuromarketing. This shows to some extent that the application of neuromarketingis a reliable predictor of competitiveness.

XI. Conclusion

The study examines "relationship between the application of neuromarketing and competitiveness in telecom sector in India." This study guided by objectives and three research questions, three hypotheses were proposed (one main hypothesis and two sub hypotheses). The dimensions of neuromarketing in telecom sector were identified from extent literature which includes the application of neuromarketing activities and the application of neuromarketing technology and techniques. Furthermore, the application of neuromarketing and competitiveness was investigated. A research framework was developed relating the application of neuromarketing and competitiveness. The application of neuromarketing exerted a significant and a strong relationship with competitiveness.

XII. Suggestions

- The study has found a positive relationship between the application of neuromarketing and competitiveness in telecom sector in India; thus, telecom companies should make efforts to increase their competitiveness in the market by the application of neuromarketing system as a new and critical strategy to understand the needs and thoughts of the customers then they gain customers' satisfaction and loyalty.
- Telecom sector companies should introduce new innovative services.
- Telecom sector companies should also focus on competitiveness by enhancing internal competitiveness (i.e., improve the standers of employees selection, development, rewards, and recognition). Consequently, employee satisfaction will lead to external competitiveness.
- Telecom sector companies should also focus on competitiveness by enhancing the application of neuromarketing activities and techniques to ease the access to the customers.

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