Journal of Social Sciences and Humanities
Vol. 5, No. 2, 2019, pp. 65-69
http://www.aiscience.org/journal/jssh
ISSN: 2381-7763 (Print); ISSN: 2381-7771 (Online)

Sensory Branding in Tourism Promotion

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Abstract

Indeed, the real question is to what extent modern promotional techniques can exert an influence on consumers during the decision-making process on a particular purchase? This impact will be explored through the influence of sensory branding at the point of sale of the tourist product. For the purposes of this research, a virtual travel agency was established. Participants were presented with promotional materials of five popular tourist destinations. The real influence of sensory branding as an addition to classical tourism promotion explored with the help of EEG device. The scan was done on two occasions. During the first scan, reactions to the presented content were recorded, after which respondents filled in the questionnaire. After a pause and refreshment, the scan was repeated with the broadcast of the same promotional material but now enriched with the appropriate music, and the occasional broadcast of scented accessories. Statistically processed and compared data indicate the positive impact of sensory branding on all subjects. This actually means that the sensory branding has positively influenced the added attention and interest not only for the best-placed tourist destination from the questionnaire, but during the second scan consideration, and interest for the weakest placed destination has increased considerably too.

Keywords

Neuromarketing, Sensory Branding, EEG Device, Neuron, Brain, Tourism, Destination

Received: January 19, 2019 / Accepted: March 6, 2019 / Published online: April 10, 2019

1. Introduction

Man's brain is a functional neuron organization, capable of ensuring the harmonization of the organism with the external environment, coordination of constant and rapid reactions to environmental stimuli. The electrocerebral activity that can be registered from the patient's head is based on the potential difference or the synchronized electrical activity of a large number of nerve cells that form the electric field. The neurophysiological basis of bioelectric potentials of the cortex is in the very structure of the brain, that is the natural trait of neurons to generate bioelectric potential-electric current. [1] During cerebral processes the brain activates certain regions that require higher blood flow due to the increased demandfor increasedoxygenationoftheengaged areas, orincreased bioelectric activity that can be detectedand measured by neuromarketing methods. Neurophysiological studies show that in the basics of each condition or process in the nervous system there are neurobiochemical events or changes. They can be caused by very different stimuli from solving a complex mathematical task, to watching TV programs. Neuromarketing origin in the field of neuroscience and is applied in order to better understand the functioning of the human brain. It is a relatively new field of consumer and marketing research using the latest technology for the study of neurophysiological processes that take place when making individual decisions. Neuromarketing is a kind of marketing technique which uses medical technologies to monitoring and measuring the brain regions activities as a response to a promotion or other marketing stimuli.

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Neuromarketing combine neuroscience (brain research) and marketing technique to reveal real consumer subconscious decision-making processes. Researchers study brain and biometric responses, to understand how consumers think, feel and act. This is a new way to approach the study of marketing. It is based on the use of modern research techniques and instruments intended for measuring the level of brain activity, to understand and measure the impact of marketing and advertising to consumers. [2] The ability of neuromarketing technic to have a direct insight into the events in the consumer's mind removes any nonspecific and confusion about the observed response of the respondents. The combination of electroencephalography and related medical research techniques with marketing is called neuromarketing. Brain scans identify the activity of specific brain regions, measure the level of impact of the stimulus from the environment, which has led to the understanding that the brain during the automated process makes a number of decisions subconsciously. [3, 4] Fugate, neuromarketing defines as: "A sub-domain of neuroeconomics that treats marketing relevant problems by methods and insights into brain research"[5] Ale Smidts, coined the term neuromarketing giving his definition: "Neuromarketing means the use of identification a cerebral mechanism for understanding consumer behavior in order to improve the marketing strategy."[6] So talking about neuromarketing and the application of research techniques in his essay Pushing the buy button Witchalls transmits Dr. Calvertexplanation, that the functional magnetic resonance can`t change the behavior of the brain, can`t force people to get out and buy something, simple it's a descriptive technique - it describes what the brain does. [7]

An interesting example of sensory branding application was implemented with the help of the Oculus Rift technology. Marriot`s hotel guests were able to virtually visit destinations in Hawaii, with the feeling of being physically teleported to a beautiful beach. A Teleporter user can feel the atmosphere of the environment, with built-in heaters on specially designed glasses experience a simulation of a heat of the sun on the face while at the same time fine water sprays disperse water droplets on the skin. [8] Coca-Cola can be said as an example of tactical branding. The shape of the bottle is designed to be recognized by everyone from larger distances and it can be recognizable even in the dark. The French car producer Citroen offers customers a choice between different scents for the car's interior in an attempt to create a pleasant atmosphere. [9] Automakers have paid close attention to the senses for years: Designers work hard to optimize the feel of knobs, the solid noise of a door shutting, and the distinctive new-car smell. Company Dunkin's Donuts launched campaign in South Korea city buses: When a company jingle played on municipal buses, an atomizer released a coffee aroma. The campaign increased visits to Dunkin' Donuts outlets near bus stops by 16% and sales at those outlets by 29%. [10] An experiment Krishna conducted with Singapore's Nanyang Technological University is just one example. The study found that infusing pencils with the unusual scent of tea tree oil dramatically increased research subjects' ability to remember the pencils' brand and other details. Whereas those given unscented pencils experienced a 73% decline in the information they could recall two weeks later, subjects given tea-tree-scented pencils experienced a decline of only 8%.

2. Materials and Experiments

With the aim to reveal the impact of sensory branding on the future tourists, organized neuromarketing research using electroencephalographic scanning of the participants. In total, 105 examinees were subjected to EEG surveillance. [11] All the respondents of the EEG part of the research were carefully presented and explained the conditions and details for carrying out the research. Respondents were asked to state that they were free from neurological diseases (ie. epilepsy), that they were not under the influence of alcohol, narcotics or medicines that could impair attention, cause drowsiness or similar side effects. Then they expressed their opinion on the dominant hand, only the right-handed took part in the study, because of the possibility of counter-lateralization of left-handed ones, like a mirror picture, in compare with right-handed. [12, 13] After that, each respondent read and signed the Consent for Participation in Research. The EEG MITSAR 201 equipped with dry electrodes, (Dry EEG Electrode - Florida Research Instruments), was used. Active electrodes, impedances below 5 KOhm, are arranged in a sequence of 10/20 series, as follows: Fp1, Fp2, F7, F3, Fz, F4, F8, T3, C3, Cz, C4, T4, T5, P3, Pz, P4, T6, O1, O2. [14] A reference assembly was used, with a common reference on the ear mussels (A1, A2). Processing and visualization of EEG signals made by computer software WinEEG. Before data analyzing is required a correction. It is necessary to remove the technical and biological artifacts from the raw EEG image. The signal is usually contaminated with various sources, interference of 50 Hz of network voltage, then strong biological signals, eyes blinking, movement of the eyeballs. The Mitsar software WinEEG provides digital EEG filtering methods, and during the scanning of the subjects we used the following parameters: speed 30 mm per sec, absolute threshold 3 mV, low cut 0.1 sec (1.6 Hz), high-frequency suppression, (high cut) 30 Hz, and a filter (notch filter), 45-55 Hz, was used to suppress the artifact of the mains voltage. Separation of the eye blink artifact from the EEG record was performed using

the Independent Component Analysis (ICA) method. This prepared EEG record, using Fast Fourier Transform (FFT), enables the creation of a brain map, (Brain mappings of the frequency spectrum).

2.1. EEG Scanning of Respondents

The results of the Travelsat agency survey show that the promotional activity of tourist companies influences the selection and sale of tourist products only 8-11%. [15] This is the starting point to explore the possibility of increasing the impact of promotion on potential tourists when choosing a tourist destination, through the use of sensory branding. With the aim to demonstrate the impact of sensory branding on future tourists, and try to find the answer the question of the extent to which sensory branding can improve the impact of promotion on potential tourists, organized neuromarketing research using electroencephalographic scanning of the participants. The EEG technique is based on the ability of nerve cells to form an electric field in the process of transduction of the nerve signal, or intercellular communication. The electrical voltage is extremely weak, so the involvement of a large number of neurons is required. Synchronized neurons thus form a wave that can be detected by electrodes placed on the head of the respondent. Thus, brain reactions expressed through Delta, Theta, Alpha and Beta waves can be detected and recorded. These frequency domains, located in certain areas of the brain, show the subconscious, uncontrolled reactions of the respondents in real time.

EEG surveillance was done on two occasions. During the first scan, visual tourist promotional material was shown to the respondents, and changes in the cortex of the subjects were observed using the electroencephalograph. After a pause and refreshment, the EEG recording was repeated, but with the use of sensory branding. Participants were repeated video promotional material, but enriched with appropriate music and adequate scents. For example, a video with the beauty of the Greek beach was followed by the music of Greek bouzouki and the smell of coconut oil for sunbathing. The computer used for broadcasting visual and audio stimulus was synchronized with an electroencephalograph`s computer, so every change in the brain response to the stimulus was automatically recorded. During the EEG analysis, the researcher has an insight into which type of stimulus is responsible for changes in the brain response. Comparison of statistically processed results gives evidence of the positive influence of sensory branding on consumers during the decision-making process. It is especially important to point out that the worst-placed destination (ranked during the first promotion of destinations) had a significantly increased interest of the respondents during the second shooting with sensory branding.

2.2. Results Analysis

Before the first EEG analysis the comparison of the electroencephalographic finding of the best-valued destination (A) with the destination in the fifth place (B), Kolmogorov-Smirnoff tests of normality done. After that, the Cronbach reliability test (average inter-correlation among the item – internal consistency), was done, resulting in an alpha score of 0.734. The next step is to analyze the spectral power of theta, alpha, and beta rhythms the first placed and the worst placed destination. The analysis of the brain maps of the average values of the respondents provides an image of the differences in the frequency bands and the spectral power of the signal distributed in certain portions of the cortex.

Destination A:

Thetarhythm 4-5 Hz in the prefrontal cortex, as well as significant activity in the left temporal and occipital cortex, left lateralized. Low activity of the 5-6Hz, of the medial and right frontal cortex was observed, as well as strong activation of the left cortex 6-7Hz, then the prefrontal medial and right region 7-8 Hz.

Alpha range 8-9Hz, in the left prefrontal cortex, then 9-10Hz in the medial and left cortex, 10-11Hz, medial and bilateral. Range 11-12Hz present in the occipital part, right lateralized, low activity.

Beta range has no significant activity.

Destination B:

Theta rhythm, very low activity in temporal 4-5Hz, and occipital part 5-6Hz.

Alpha rhythm, low activity in the occipital part of the cortex 8-10Hz, anda very strong activity of the occipital cortexbilaterallyin the range of 10-13Hz.

Beta range, low activity 13-14H in the occipital region.

The next step is the analysis of the alpha waves of the prefrontal cortex asymmetry. In accordance with Davidson's asymmetry model, the *t* test for comparison of the average results of the left hemisphere electrodes (Fp1, F3, F4) of thedestination A and the same side of the destinationB was made. Then this procedure is repeated on the right cortex with electrode Fp2, F4, F8. All participants who highly rated destination A showed significantly higher alpha range values in both hemispheres, especially left-frontal cortex. The results ofhemispheric asymmetry analysis, in all the rhythms (theta, alpha, beta), show a significantly stronger activity of the participants who have more valued destination A.

This brief overview of the results of the first EEG scan ends with the Theta/Beta ratio analysis, which high *t* values indicate the increased attention and emotional involvement of

the respondents during the promotion of destination A. The presented content is in the focus of attention, accepted and permanently memorized. [16]

In the second phase of the EEG experiment, it was repeated but with sensory branding. As with the analysis of the first scan, the analysis of the spectral power of theta, alpha, and beta rhythms A and B destination is first considered. The experiment focuses on detecting the magnitude of the impact of sensory branding on respondents who have opted for destination A, but it is very important to determine the extent to which sensory branding can contribute to the additional conviction effect of the promotional content of the lowest-placed destination B. As during the first scan, the spectral power of the signal distributed in certain portions of the cortex is analyzing.

Destination A:

Theta rhythm 4-5Hz, strong activity in the prefrontal cortex, and 5-6 Hz, left-oriented. In the adjacent part, a significant activity of the range 7-8Hz extends to the parietal part.

*Alpha rhythm*is a remarkable activity of prefrontal cortex, medial and left cortex in the range of 8-12Hz.

Beta range 12-13Hz, significant activity in the occipital cortex, right-oriented, and prefrontal cortex.

Destination B:

Theta rhythm, significant 4-5Hz, activity in the left prefrontal cortex, 5-6Hz, in the left temporal cortex, activity in the range 7-8Hz, prefrontal cortex, bilaterally.

Alpha rhythm, in the range 8-9Hz, the activity of the prefrontal cortex, the left temporal and the occipital, observed on the right side. Rhythm 10-11Hz, in the left prefrontal cortex.

Beta rhythm, strong activity 13-24H, in the occipital cortex.

Significantly stronger Alpha band activity, especially left brain sphere, have been shown by respondents who have highly rated destination A, and it is expected that they will better memorize the promotional material presented. [17]

Table 1. t-test alpha asymmetry of the left hemisphere of the prefrontal cortex (I Scan / II Scan - Sensory Branding).

Left hemisphere Alpha	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
A left hemisphere B left hemisphere	1.1033	1.45054	.19739	.70741	1.49925	6.590	104	.000
A left hemisphere B left hemisphere	1.73852	1.70024	.23137	1.27444	2.20259	7.314	104	.000

Table 2. t-test alpha asymmetry of the right hemisphere of the prefrontal cortex (I Scan / II Scan - Sensory Branding).

Right hemisphere Alpha	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
A right hemisphere B right hemisphere	.93630	1.46178	.19892	.53731	1.33529	4.707	104	.000
A right hemisphere B right hemisphere	.88500	1.50337	.20458	.47466	1.29534	4.026	104	.000

The asymmetry of the prefrontal cortex is now analyzed by comparing the average values on the lateral electrodes (left: Fp1, F3, F7, right: Fp2, F4, F8) in three frequency ranges (Theta, Alpha, Beta). Significantly stronger activity of the left hemisphere of the participants who voted for the destination A in the survey confirms the credibility of the selected destination. The Alpha rhythm shows a markedly stronger activity of the left cortex, which according to Davidson's model indicates acceptance, liking. [18]

The final step of analyzing the impact of sensory branding on respondents is a comparison of the results of the first EEG scan and the second EEG monitoring with the addition of sensor branding, red shaded values, or gray in black-white edition (Tables 1 & 2). Hemispheric asymmetry expressed through increased left hemisphere activity (t = 6.590, and II scan t = 7.314), shows satisfaction, acceptance of the presented content with a significant improvement ofpromotion memory during the process of its assessment. [19] (On the other hand, the hemispheric asymmetry of the right cortex is less pronounced (t = 4.707, II scan t = 4.026), which is interpreted as a consequence of the effect of sensory branding *on all* respondents. The right hemisphere is more active at all participants, as a result of increased attention, increased interest in promotional content. [20]

3. Conclusions

Prior to neuromarketing, the credibility of traditional research techniques was based on the degree of accuracy and honesty of respondents' answers. By developing neuromarketing, the observer is able to unambiguously detect changes by recording brain activity from the scalp of the respondents and

identify the engaged brain region as a result of a particular stimulus from the environment. The results unambiguously show the positive impact of sensory branding on respondents, so we can say that neuromarketing is a tool for measuring the effect of promotion on potential tourists, while sensory branding is a helpful technique to increase the impact of promotion on potential tourists at the point of selling tourism products.

References

[1] Tatum William, Aatif M. Husain, Benbadis R. Selim&Kaplan W. Peter, (2008), *Handbook of EEG interpretation*, New York, Demos, pgs. 11-16.

[2] Tanasic R. Branislav, (2018), *What is actuallythe warning labelon the package of cigarettes? International Journal of Contemporary Research and Review,* olume 9, Issue 2, pgs. 20383-20392.

[3] Camerer Colin & Thaler Richard, (1995), *Anomalies, Ultimatumus, dictators and manners*, *Journal of Economic Perspectives*, 1995. (Volume 9, Number 2), pg. 209.

[4] Camerer Colin, Loewenstain George & Prelec Dražen, (2005), *Neuroeconomics: How Neuroscience Can Inform Economics, Journal of Economics Literature, (*43) pgs. 9-64.

[5] Fugate Douglas, (2007), *Neuromarketing: a layman's lookat neuroscienceand its potentialapplication to marketing practice*, Journal of *Consumer Marketing*, (24/7) pg. 385.

[6] Smitds Ale, (2012), *The future of neuromarketing*,[online] http://neurorelay.com/2012/06/03/prof-dr-ale-smidts-the-future-oneuromarketing/, Retreived [Jan. 12, 2018].

[7] Witchalls Clint, (2004), *Pushing the buy button*, *Newsweek*, March 22, 2004.

[8] Kool V. K. & Agrawal Rita, (2016), *Psychology of Technology,* Cham-Switzerland, Springer, pg. 248

[9] Upadhyaya, M. (2017), *Emotional Connect between Brandand Consumer through Sensory Branding, American Journal of Industrial and Business Management*, 7, pgs. 352-359.

[10] HultenBertil, (2011), *Sensory marketing: the multy-sensory brand-experience concept*, *European Business Review*, Volume 23, Issue 3, pgs. 256-273.

[11] Tanasic R. Branislav, (2018), *Neuromarketing view on impact of sensory branding on the tourism promotion, In Sights,* Volume 22, pgs. 4-5.

[12] Annet Marien, (1970), *A classification of hand preference by association analysis*, *British Journal of Psychology*, Volume 61, Issue 3, pp. 303-321.

[13] Bryder M. P. (1982), Laterality; *Functional Asymetry in the Brain*, New York, Academia Press Inc. pg. 3.

[14] Harmon Jones E. & Peterson C. K. (2009), *Electroencephalographic Methods in Social and Personality Psychology*, *Methods in Social Neuroscience*, New York, Guilford Publications, Inc. pp: 170-197.

[15] Travelsat, (2011), *Top factors influencing destination choice*, [online] https://aboutourism.wordpress.com/2011/10/03/top-factors-influencing-destination-chice/, Retreived [Apr. 10, 2018].

[16] Morillas-Romero A, Tortella-Feliu M, Bornas X. &Putman P. (2015), *Spontaneous EEG theta/beta ratio anddelta-beta coupling in relation to attentional network functioning and self-reported attentional control*, *Cognitive, Affective &Behavioral Neuroscience*, 15 (3), pgs. 598-606.

[17] Astolfi Laura, Fallani V. D. & al. (2008), *Brain activityrelatedto the memorization of TV commercials*, *International Journal of Bioelectromagnetism*, 10 (3), pgs. 1-10.

[18] Davidson J. Richard, Ekman P. & al. (1990), *Approach-withdrawal and cerebral asymmetry: Emotional expresion and brain physiology I*, *Journal of Personality and Social Psychology*, Volume 58, Issue 2, pgs. 330-341.

[19] Vechiato Giovani, Cherubino Patrizia, TrettelArianna & Babiloni Fabio, (2013), *Neuroelectrical Brain Imaging Tools for the study of the Efficiacy of TV Advertising Stimuly and Thei Application to Neuromarketing*, Berlin, Springer-Verlag, pg. 49.

[20] Ohme R. Reykowska D. & al. (2010), *Application of frontal EEG asymetry to advertising research*, *Journal of Economic Psychology*, 31, pgs. 785-793.