Analytical Approach to neuro marketing as A Business Strategy

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Abstract-*The aim of thispaper is to analyzethetheoretical and methodologicalapproachesto the study ofneuro-marketingfor designingbusiness strategies. Theinitialquestionis based onincorporatingadvances inneuro-marketing tothefield of strategic direction. Theresearch method usedis to reviewthe literatureto studythis phenomenon. The main conclusion is that neuro-marketing allows us to know the customer's reactions in terms of brain activation without the need to appeal to the report of his conscious experience. In consequence the firms will be able to develop capacities and valuable resources to create focal strategies.*

Keywords: *Business strategy, capacities and resources, neuro-marketing,*

Resumen

El objetivo de este trabajo es analizar los acercamientos teórico-metodológicos al estudio del neuro-mercadotecnia para el diseño de las estrategias de negocios. El cuestionamiento inicial se fundamenta en Incorporate los avances de la neuro-mercadotecnia al campo de la dirección estratégica. El método de investigación empleado es la revisión de la literatura existente para el estudio de este fenómeno. La principal conclusión es que el neuro-mercadotecnia permite entender en términos de activación cerebral las reacciones del consumidor sin la necesidad de apelar al reporte de su experiencia consciente y por ende que la empresas desarrollen capacidades y recursos valiosos para generar estrategias focales.

Palabras clave: Estrategia de negocios,neuro-mercadotecnia, recursos y capacidades

1. Introduction

If neuroscience is seen in its childhood, neuro-marketing is clearly in an embryonic state. Marketing academics just wake up to the possibility offered to reveal the brain circuits involved in the search, selection and purchase of a product (Morin, 2011).

While the economy has begun using neuro-imaging techniques in its research that has resulted in neuro-economics marketing has shown leery at the idea of expanding their research using new techniques, even though both fields share common interests, such as decision making and exchange(Lee, Broderick and Chamberlain, 2007). Neuro-marketing is an emerging interdisciplinary field that combines psychology, neuroscience and economics (Lee et. al., 2007) whose term has been coined by Smidts in 2002 (Lewis and Bridger, 2005)

While neuroscience has grown dramatically in the last decade, it has not penetrated easily into the academy of marketing mainly because very few researchers have formal training in cognitive neuroscience, and the fear produced by public criticism about of the ethical issues involved in the use of neuro-imaging (Morin, 2011). This ethical debate, despite being in a lot of articles has not been explicit in Mexican universities, including a large number of scholars and students know basics of neuroscience despite working directly with the search, satisfaction and needs assessment of consumer.

The brain is responsible for all consumer behaviors. Despite being only 2% of the body mass, it is using a large amount of energy, approximately 20% of our total energy. Most of the functions you need are handled by the brain at an unconscious level. This accountto explain why for almost 80% of the cerebral energy is required to maintain the baseline status. Clearly, it is used only 20% of the brain consciously (Morin, 2011). So it is disturbing that despite this information, companies continue applying methodologies based on the reports articulated of their clients, jeopardizing their investments and waste the vast amount spent each year on brain studies.

Braidot (2005) states that the needs describe what people need to live. These needs become wants when the customer thinks about a product or service to satisfy demand and when you have the purchasing power to buy at the point of sale. The study of customer needs is at the heart of the concerns of the organizations as the key to staying competitive lies in the ability to identify and develop products and services that can satisfy them better than competitors. Both needs and wished involve the biological and social human beings, although ultimately is preferable to separate for study.

Whilethe way languageis used can vary fromculture to culture, the language of thebrain maintainsstabilityinthe results. The goal ofneuro-marketingis to studythe physiological responseof the brainto advertisingandmarketing strategies.In order toevaluate the effectiveness ofthese strategies, the resulting brain activity fromthis phenomenonis monitoredand measured usingneuro-imaging techniques. Neuroscientistsarenowable to directly studythe frequency, location and timingofneuronal activityin an unprecedented way. However,marketing

hasignoredthese developments andtheir potential(Lee, et al., 2007).

So the aim of this study is to show an overview of the advances in neuroscience and how they have helped broaden the knowledge of those who from their niche continue asking questions about human behavior. The research has benefited from the ongoing global multidisciplinary input, but does not seem to attract enough attention at home, leaving out the possibility of providing local information to supplement neuro.scientific studies with the cultural characteristics of each social group

2. Difficulties of the traditional methods of marketing.

Marketing scholars have considered a few years ago that market research was accurate and credible sample that allowed organizations to make informed business decisions. However as reported by Pradeep (2005, 5) 80% of the failures of new products in the market, the economic cost implied provides strong evidence of the difficulties faced.

Althougheach yearare investedover 40billion dollars inadvertising campaigns, conventional methods to tryand predictthe effectivenessof this investmentshowsflawsbecauseit depends onthe willingnessand capability of theclientto describehow he/she feelswhenisexposedto advertising (Morin, 2011). Thefailure is dueprimarily to the factthat peopleassumethey are able to describetheirown cognitive processes, which, it is well known now, the cognitive processes havemany subconscious components.

The methodsof"articulated answers" asmarket research, surveys andfocusgroupsto namesome of them, are not ideal to know theway aperson feelsabouta product or servicebecause it isdifficult to describeinprecise wordsthe emotionsexperienced by a personto a stimulussuch as aproduct.Braidot(2005)considers thatresearchers would betrying toask theconscious mindwhattheir unconscious mindrecorded to translateinto language thataccurately reflectthe phenomenon.Neuroscience hasreportedin turnthat the brain alterstheoriginalresponserecordedas theaccessingprocessto translatethe information storedina physical responsethat carriessaid alteration.

In the case of focusgroups participants' responses may be influenced by the dominant group subjects, in addition to factors such as incentives, time and pressure that may have some interference in its report. Surveys in turn require substantial samples and design tools developed to be able to counter variables such as language, education and culture between subjects tested (Pradeep, 2010, 10).

3. Contemporary neuro-scientific methodologies.

As it has been observed, traditional methodology is unable to replicate or

model what the brain does, how it operates and what it perceives around itself(Pradeep, 2010, 9). In contrast, Neurological tests reach a rigorous degree of scientific and actionable results for various reasons. First, it requires smaller samples and that despite the differences that we find between the brain of a man and a woman, and, between a children compared to an adult, our brains are much more alike than different (Pradeep, 2010, 11).

Second, neuro-scientific methodologies provide insightthroughneuro-imaging, brain areas involvedandsubconscious processeswithoutconscious effortof the participants. Third, itoffersthe possibilityto study inreal time,allowing the viewer tounderstand thephenomena related tospecific timesofthe test.Fourth, mostofthesemethods measurethephysiologicalresponsenoninvasively. However,eachhas certain limitationswhich will be discussedbelow.

TheEEGis an acronymof theElectroencephalography.HansBergerdesigned thefirst practical application ofEEGin 1920(Pradeep, 2010, 3).This passive technologyusessensors topick up electrical signalsdue to activationofbrain waves(Pradeep, 2010, 11). To do this,itusesa cap withelectrodes that areplaced on theheadofeach participant of the studyto measurelow voltage signals.

When a stimulus is presented to a subject, such as a television commercial, neurons produce a small electrical current that can be amplified. This electric power has multiple frequency patterns, called brain waves, which are associated with different states of consciousness. Brain waves can be recorded in small time intervals, some EEG can record up to 10,000 times per second, which is very valuable because of the speed with which information is acquired through the senses and speed of our thoughts.It is estimatedthat about 80% ofour brain activityisused tomaintain astate of rest orbaselinesoitcannotbe assumedthat the brain wavesgenerated areentirelyproducedby a stimulus (Morin, 2011).

The EEG has become the best instrument to evaluate the wave brain handles cognitive information along providing subjacent information about neural mechanisms (Pereyra, 2011, 26) .TheEEGis also a verysensitive device to measurelow voltage signalssobefore theassessment is carriedout a search ofthesubject'sbrain activityto createa baselineand reduce noise. Some limitationsof EEGare thatnoshows agoodenoughspatialresolutiontolocalizepreciselythe place wherea neuronproduces electricity, especiallyinthe deeper and older structuresof the brain(Morin,2011).

Morin (2011) refers to previous studies such as those carried out by Reeves Lang, Forson and Rothschild (1989) to record activation in the left frontal lobe related to positive messages of television scenes using only four electrodes, while today, this system may be use 256 electrodes to monitor brain activity. This does not mean that early research was inaccurate but emphasizes

the speed with which this field has evolved in a few years.

Functional magnetic resonance imaging (FMRI) is a tool that uses an MRI scanner to observe in an image changes in brain blood flow. The study participant lies on a narrow tube while registering firing neurons to stimuli presented. Neurons need to use energy, which is carried by the bloodstream and rapidly metabolized. The key element to marketing research is to understand the contrast of the signals in the dependent level of oxygenated blood (BOLD). To a stimulus some brain areas of the subject receive more oxygenated blood than they had received in a previous time (Morin, 2011).

This change creates a distortion in the magnetic field emitted by the hydrogen protons in water molecules in the blood. The basis of FMRI studies is to consider that achange in the BOLD signal is an accurate measure of neural activity, with a spatial resolution ten times better than the EEG. The limitations of this instrument has to do with a delay of about five seconds which is the time between which it is produced the brain activation and BOLD signal changes, and the high cost of equipment (Pradeep, 2010, 13).

Magneto encephalography (MEG) emerged in the mid-60's records the magnetic fields of the brain and that brain activity is a function of electrochemical signals between neurons. This neuronal activity creates magnetic fields that can be amplified and mapped using MEG which has an excellent temporal resolution as well as a better spatial resolution than the EEG. Morin (2011) believes that one of its limitations is that not a good method to observe sub cortical areas as best recorded brain activity of the cortex. This suggests that the best way is to use MEG to measure activity in known areas or which are expected to be produced in a specific task, rather than used for exploratory experiments.

The eye tracking device displays the products or advertisements on a sensitive screen to the sight and look, which allows determining what people see every millisecond in real time. The results show the areas that the participating persons observed for longer period of time and the path of the eye movements. This technique can be used together with the EEG for further evaluation. Currently the company Tobii has designed lenses that function as eye trackers recording what attracts the attention of the individual to be analyzed in their software, which allows researchers to make an accurate study in real-time and contexts.

4. First steps towardsan interdisciplinary work.

Despite thegreat potential, theapplicationsof neuro-imagingin relation tomarketinginitiallyfocusedprimarilyon brandsandconsumer behavior, particularlyusingEEGto explorepeople's reactions. Also it was used toassessindividual preferencesbetweenthebrand familiarityand preference forthe product,

comparingfamiliar vs. no familiar brands. Whenconsumers seea brandfor the first timefeels anegativeuncertaintycomparedwith onefamiliar already to him, whichthrough repetitionof advertising messagesat low levelsincreases effectivenessandreduces uncertainty. Advertisersshould be awarethat repeated exposureto excessdamages theiradvertisingbecause it causesboredom inthe consumer, mustbe balancedto be recognizedby the customer andavoid overexposureof a product (Madan,2010).

Withcurrent advances,it might be ableeventoknow byeye trackingaspectsthat attractthe customer's attentionandwhatappears to bea distractionin the formof offering a product, obtaining a more detailed reportthat achievesto fillany gapsinthephenomena studiedpreviously.

5. Interdisciplinary work: The phenomenain termsof brain activation

The collaboration betweenneuroscience andmarketing canexpandthe knowledge inimportant areas, fromthe expected questionssuch as the relationshipbetween the consumerand the product, the influenceofadvertisingstimuli, the formation ofa brand, unmet needsandbusiness opportunities,tothe interactionof organizations inspecific marketcontextsand identificationof emotions intermsof brain activation, undoubtedlyenrichingthemesfor contemporary society.

Important aspects such as trust have been explored by neuro-marketing. To research this aspect at organizational level is very important because it can be designed better strategic alliances, joint ventures, mergers and / or acquisitions. To Motterlini (2008) trust is a determining factor for both parties. Without genuine trust, any party runs the risk of opportunistic behavior. Marketing research has conceptualized trust as something more than a behavior of rational economic calculation. Apparently neuros-cientific methods can provide information on trust development. Early studies have linked activation of the caudate nucleus with this phenomenon (Lee et al., 2007). But this is only the beginning of a fine and detailed research that will correspond to future research.

The psychology of pricingon its parthasbeen investigatedin order toknowthe effectson the consumerprice. Despitethe amountof literature available, companies seem to usevery littleofthis informationwhen setting theirpricesat a disadvantagegetting(Lee, et al., 2007).Recent studieshave exploredthe mistakes madeby consumerswhen they processterminatedprices0.99comparedwith integers, suggestingthat the individualpays lessattention tothe lastsequencenumbers. Others have investigatedthe social role ofthe sameintermsof brain activation(Lee, et al., 2007).It appears thatcommodity pricesare influenced byemotionalbasedrewards.Knowing the price ofa productassaltprice compared to the price ofa sports carshowsbrain

activationin areas other thansuggestinga differentprocessingof the same.

Studies made in real time have allowed the parties to linking the parts to the most important processes related to marketing. Madan (2010)has reported that the medial prefrontal cortex (mPFC) is a repository of links between factual knowledge and bio-regulatory states. This translates to product information linked to positive affect pathway (mPFC); an increase in activation (mPFC) and superior frontal gyrus marks when there are observed family marks, which can improve its projection rapidly if gain consumer confidence through the use of celebrities. Regarding sub cortical areas most frequently involved in neuro-marketing research Madan (2010) cited the amygdale, responsible among other things for emotional processing of information and the intensity of the reward. The ventral striatum, including the nucleus acumens, and the brain's reward center, are another indicator of predictive reward and hippocampus relative to the memory involved in the recognition of brands, products and services.

6. The neuro-marketing as business strategy

The strategy concept may have different views. In this paper it is definedthe strategy as the alignment or direction of the resources available to an organization in terms of changes in their environment (Vargas, 2012) and it also focus on the strategy as the theory of a firm about how compete successfully (Peng, 2010, 10). Also the core of the concept is related to the formulation of the strategy and the implementation thereof.That is why the neurosciences in conjunction with cognitive science, psychology and marketing have gone into the business arena by providing new ways to observe and analyze consumer behavior and how it makes decisions.

Knowing these techniques provides businesses a useful tool for obtaining more accurate information to create strategies and competitive advantages that lead to a better positioning in the market; this is where the neuro-marketing becomes relevant.For example, it is well known that companies focus on well-defined market segments and use their resources to outline strategies that can meet the needs and expectations of its clients and their potential clients in highly competitive environments. However, marketing executives and advertising so far have based their predictions on intuition, experience and articulated consumer reports to try to predict whether advertising is effective.

As far as basing predictions of what neuroscientists already know about how humans process information and respond to various stimuli can lead to make decisions with greater confidence (Lee, Butler and Senior, 2010). By understanding more scientific and specific the various types of customers, inquiring about their cognitive and perceptual characteristics to apply this knowledge to satisfy their needs and wants is one of the major interests of

neuro-marketing (Braidot, 2005, 210). Therefore, neuro-marketing can help companies to strategize more focused and less uncertainty. The resource-based view suggests that the specific capabilities of a firm lead to the difference in performance. The winning firms have valuable skills, unique and difficult to imitate (Peng, 2010:16). So as more objective information which offers neuro-marketing provides insight into customer needs to enable organizations to better ability to innovate, develop and refine their marketing strategies.While most research analyzes how the brain perceives reality and focus on sensory processing of information, currently is being analyzed numerous experiments that reveal how it affects the image of the brand in those preferences (Braidot, 2005, 216). Unlike conventional advertisers that work with preconceived ideas about the success of an announcement, it should be fun and the design must be conspicuous (Gladwell, 2000, 105).

Most of the time, human beings are making decisions, whether consciously or unconsciously, they are choosing between numerous alternatives presented at a given time and based on available information. Knowing these aspects where reason and emotion are together in deciding possible by combining conventional marketing techniques in collaboration with the opportunities provided by neuro-scientific methodologies. When entering intothe literature on this topic, it is realized that the human being is less rational than it has been seen before and maybe there is nothing wrong with this. From ancient Greece the Descartes's ideas have been very effective, considering a separation between reason and emotion. Plato even longed for the chance to get rid of what he called "Horses of emotion" to make better decisions, although neuro-scientific studies have questioned these ideas.

The case of a successful lawyer Elliot who after undergoing surgery to remove a tumor of the frontal lobe began displaying behaviors which seemed not to be aware of their emotions despite maintaining their cognitive abilities intact. Because along with his brain tumor removed from their prefrontal lobes, cutting the connections between the lower centers of the emotional brain, this made him able to take all the steps prior to decision making, but unable to assign values to different options (Damasio, 1994, 55-72.)

This case would have been fascinated precisely to Plato,although it has been precisely contradicted, the emotions seem to have a relevant role in decision making. The interaction between cortical and sub cortical areas in this process realizes the continuous negotiation between automatic and controlled processes. Dragolea and Cotîrlea (2011) mention that the neurologist Donald Caine believed that the essential difference between emotion and reason is the fact that emotions make us act while reasoning only allows us to assess. Making a decision requires comprehensive knowledge and rational strategies to operate on this knowledge. The reasoning processes occur around options for action, predicting future

results and plans for implementing various goals in varying scales of time.The images with which a person reasons when thinking must be active in working memory and the customer should keep in mind all possible options and strategies to buy (Braidot, 2005, 103).

One of the most famous studies that account for some of the topics that were discussed previously is performed by McClure, Li, Tomlin, Cypert, Montague and Montague (2004b) about the preference between two soft drink brands which reported a higher preference for Coca-Cola versus Pepsi and related activation emotions and affections (ventromedial prefrontal cortex) when participants were informed that they were taking the Coca-cola. However, the blind test showed no contrary evidence. The interesting thing about this study is not the choice between the two lines, but the evaluation of the two decisions before the decision itself. Gladwell (2005, 185-186) argues that the difficulties of interpretation of the study between Pepsi and Coca-Cola are based on the fact that they are based on what professionals call sip tasting, in which the tasters do not drink the whole can but take a sip, which is something very different from drinking altogether. In a tasting sip, consumers prefer the taste sweeter while the entire can take that same sweetness becomes cloying. The Pepsi is sweeter than Coke, which gives it a huge advantage in a tasting sip. This is a wonderful example of the difficulty of finding out what people really think so to take advantage of the assessments made by consumers of cola, before they have to decide which of these two reactions they want more.

So it is a case where it can beinferred that the neurosciences in conjunction with existing methodologies mentioned above can provide companies a solid foundation to create or recreate their positioning strategies.This study reinforces the complexity of decision making and the importance of emotions, situational aspects and information resources available to the consumer. This research does not provide the neural code of decisions but shows the potential power of such studies. These data have been confirmed by studying with people who had suffered damage to the prefrontal cortex (Madan, 2010). Despite having provided information that was consuming the brand, it has showed no difference in their preferences as in the case study (McClure et al., 2004a) in participants without brain damage.

Despite their usefulness neuro-marketing is not limited to use of neuro-imaging techniques, complemented by neuroscience and cognitive science to be able to quantify the behavioral processes. Madan (2010) takes the form in which decisions can be divided into five steps: (a) identify the problem before which a decision is made, (b) assess the possible choices, (c) make the decision based on the evaluation of the available options, (d) consider the resulting consequences, and (e) learn from this process to make better decisions in the future. Viewed this way it is easier to analyze why free will is an unconstructive way of conceptualizing how humans choose.

7.Cultural aspectsinconsumer behavior

Studiesofpreferences fora product showthatculture values some aspects whichmay act asa secondary gainrelated to aprimary need. People learn tomeet theirneedsin different waysaccording to theirsocioeconomic and culturalprofile.They developdifferentsubjective habits,conditioned bytheir ownneuralwiring, personality, age and the influencesthey receive fromtheir environment(Braidot, 2005).Erk, Spitzer, Wunderlich, Galley, & Walter(2002) foundthat objectswith highsocialvalue representation(sports cars) had resulted inincreased activation inreward centers(orbit frontalcortex, anterior cingulatedregionandoccipitalcortex) compared withlowersocial valueobjects(small cars).

Inthissame linemany companies undertakecommunication campaigns toachievedesirable socialgoals, astopersuade young peoplenot to drink, not to smoke, not to pollutethe environment, among others. These campaignsbesides showinga behaviorconsistent with the valuesof society, they alsounderpina corporate imagewithlong-term benefits (Braidot, 2005). The associationof the brandwiththese behaviorscarries acode thatgives consumersa stronggroup membershipbased on the ideologyofthe sameand thereforestrengthenstheir affective bond.

Local studiesallowmore objectivecomparisonson thesepremises, Iyengar(2010 p. 56-57) reportedbehavioral studiesof choice thatshow marked differencesbetweenEast and West.

8. The ethical aspects: Looking for restrictions or regulations?

Ethical issues have been the central debate about neuro-marketing studies. It is relatively easy to find literature that argues against these studies as NatureNeuroscience editorial published in 2004 that the only interest of neuro-marketing is to find what they call the "Buy button" to create advertising campaigns that we will not be able to resist. The main fear of consumer protection groups focuses on the vulnerability of people to the application of this information in its mysterious review that can lead to specific neurological effects intentionally.

However, ethical issues have not been addressed only to marketing but also to communications, sociology, politics and psychology. The effects of advertising, according to Morin (2011) can contribute to society beyond simply finding the "Buy bottom". The application of neuroscience can provide a basis of understanding of how humans create, store, recall and relate information as it does with a mark in their daily lives. It would also be possible to discover whether some aspects of marketing activities trigger negative effects such as consumerism. In fact, the field of neuro-

marketing should be considered a legitimate and important area that allowsunderstanding human behavior in extremely important business relationships. Ethics should not be a stranger field to any professional as it relates to society in general. Adina Roskies defines neuro-ethics research as the research on how to deal with social issues of disease, normality, mortality, lifestyle and philosophy of life in the light of understanding of the brain mechanisms that underlie all these issues (Bonete 2010, 70).

Neuro-imaging studies have even suggested that neural activity precedes conscious intention questioning free will, especially if this can be monitored by an external observer (Madan, 2010). However the potential restriction of free will and the possible invasion of privacy require the evaluation of academic and government regulation, consumers should know who is collecting this data and the potential uses of the information (Wilson, Gaines and Hill, 2008).

9. Conclusions

Undoubtedlyobtaininginformation from theneuro-marketingis more accuratebecause it takes intoaccount not only thesociological and psychologicalprofilesof customers, but alsothecognitive.Thus, neurosciencegives us theability toexplore more ofeach groupandsegment the marketon more solidbases (Braidot, 2005, 217). Studies usingneuro- imagingmethodologies provide insightintoreal-timeconsumer responsetoa specific stimulus.The image ofa brandcan arouseemotions thatcanbe more powerful thanthe effectof the productitself.In otherwordsa strongbrand imagealtersperceptiontowards the product (Dragolea etal., 2011). Hence, the importance of knowingthe underlying processesof customers inwaysthatenterprisesdevelopvaluableskills and resourcesto generatetargeted strategies. The neuro-marketing provides a real competitive advantage in an increasingly saturated market (Pradeep, 2010, 5). Unfortunately the outdated and insufficient input from alumni and students in the country has implications that disadvantage the business growth and undermine the opportunity to compete in international markets. This lack of local research results in a small body of information to be compared with studies done in other countries and cultural aspects that could differentiate consumer behavior.

So the heart of the interaction between neuroscience and business is not using one method but in the way how to address business problems. So it is very likely to have a neuro-scientific approach in marketing research, in significant organizational problems and decisions will give a better understanding of why human beings behave generally or react the way they do and they will be in a better position to more accurately predict this (Lee, et al., 2010).

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