

NEUROMARKETING: CAN YOU MAKE A BRAND PERSONAL?

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Abstract: *This article is an overview of some of the most commonly used consumer neuroscience technique in marketing research, but aims to illustrate the consumer’s mental processes that can be applied to the Brands. Throughout the consumer neuroscience and marketing research literature, there is a lack of steps that can be applied in one-to-one marketing. The basic ambition of using a brand is to distinguish a product or service positively from other competing products, but the main problem is not how to make what people need, but how to make what people want? This paper provides a comprehensive review of all relevant neuromarketing findings with a explanation on how that can be applied in brand personalization. This study highlights how personalization affects consumers’ conscious and unconscious choices, and how it can be applied in mass customization.*

Key Words: *brand, personalization, neuromarketing, one-to-one marketing*

1. INTRODUCTION

Through history, it was easy for businesses to keep track of what is bought, but harder to figure out why [1]. Now, advertising is becoming more scientifically advanced, so researchers can predict what consumers prefer and how they are going to react on products, services, commercials, logos, colors, and etc.

Using neurological, also known as *brain-imaging*, technologies such as fMRI (functional magnetic resonance imaging), EEG (electroencephalography), QEEG (quantitative electroencephalography), and MEG (magnetoencephalography), neuromarketing researchers can actually know what part of brain they should affect and how consumers are going to react. [2]

Since, branding is a discipline that has emerged in the domain of *fast moving consumer good* (FMCG) [3], marketing literature shows that *Brand is a person’s gut feeling about a product, service or organization* [4] and neuromarketing findings shows that consumers are largely motivated by what makes them feel good [1], it is possible to make a brand personal.

The following sections present an overview of the neuromarketing literature and how is that correlated with MCP.

2. LITERATURE REVIEW

Neuromarketing is a marketing research technique that uses knowledge from economics and psychology, medical technologies and neuroscience, and in that manner creates content that is intertwined with various manipulative techniques that evokes customer’s emotions, programs the human brain and achieves maximum advertising effects - *attention, memorized advertising and influenced behavior* [5].

One of the main reasons for the rise of neuromarketing and consumer neuroscience is the realization that human decision making deviates from ‘rational choice’ [6].

Conscious contents enables access to cognitive functions, including sense modalities, working memory, long term memories, executive decisions and action control, as shown on figure 1 [7].

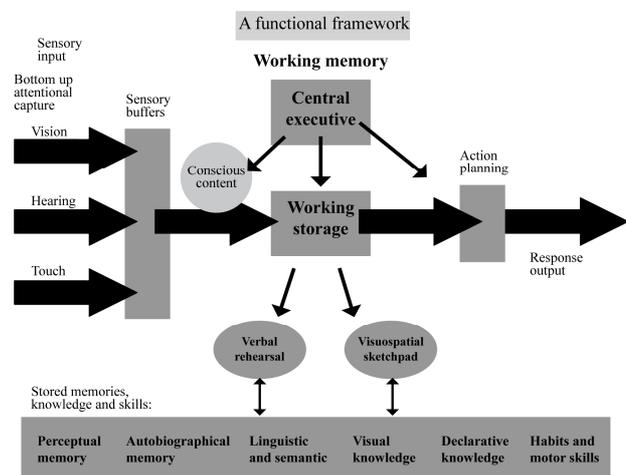


Fig 1. A functional framework of a brain [7]

This is possible because human beings have three parts of brain that affect decisions. Those are *the rational brain, the emotional and the reptilian brain* [8]. The reptilian brain has the biggest impact then other two and it is the oldest brain – Also known as our unconscious. The emotional brain is subconscious, and the rational brain is conscious.

To show the differences between the rational and reptilian brain, the easy experiment on Figure 2 is showed.



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Fig. 2 *The difference between rational and reptilian brain*

When someone looks at the image of Nikola Tesla, in millisecond knows to say a lot about him – Because of unconscious and subconscious. But, when person has mathematical problem, which the rational brain should answer, every person need time. This example shows that our unconscious is faster than conscious and humans first give advantage to unconscious.

The best example of this is *Pepsi vs. Coca-Cola test*. Even though, Pepsi and Coke are essentially identical, people often favor one over the other.

The experiment was simple: *there were two taste tests— one blind and one in which subjects knew which beverage was which— and the researchers observed the corresponding brain activity*. When volunteers drank Pepsi, but they were unaware of which brand they were drinking, the fMRI showed activation in the ventromedial prefrontal cortex, a basic “reward center”. However, when the subjects knew which soda was which, the scans showed brain activity in the hippocampus, midbrain, and dorsolateral prefrontal cortex (which are centers for memory and emotions). So experiment showed that people actually liked the taste of Pepsi, but they believed that they preferred Coke. From these results, the researchers determined that “a preference for Coke is more influenced by the brand image than by the taste itself” [9].

2.1. Attention, awareness and consciousness

Since a brand depends on the ability to manage its value delivery system [3], marketers need to find a way to raise consumer awareness of that brand. And that is possible by drawing attention.

The problem with attention is that it is only possible to keep it if oscillations in change occur often. A change in any property of the stimulus increases the probability that it will attract attention [10]. To do this, it is important to stimulate as many senses as possible in customers and provoke the desired response and positive sensations with the help of applied elements, as well as to maintain brand awareness.

Sensory marketing can contribute to that. Sensory marketing uses the well-perceived actions aimed at evoking certain associations and reactions. Brands should aim for sensory perfection. It is possible only if the brand is provided with a specific potential, formed by [11]: (1) application of the sensory elements; (2) the synergy effect between the sensory elements; (3) innovative sensory thinking allows to exceed the competition; (4) sensory consequence as a reflection of all the brand values typical only for the brand itself; (5)

sensory authenticity; (6) definite and positive sensory associations with the brand; (7) permanent development of all the sensory elements; and (8) brand breakdown. Sensual branding currently enables the creation of the strongest relationships between the brand and the buyer.

Some important aspects of the sensory marketing strategy include creating the right atmosphere, composing sensory stimuli in the right and unique adjustment, evoking emotions and shaping the experience space of the buyer [11].

All these elements evoke customer’s attention. The two determinants are [12]: (1) Bottom-up and (2) top-down attention. Bottom-up attention is a rapid, automatic form of selective attention that depends on the intrinsic properties of the input, such as logo, color, smell, touch or sound. Top-down attention is volitional, focal, task-dependent mechanism, often compared to a spotlight that enhances processing of the selected item.

Drawing attention, actually bring brand awareness on the top, and make conscious to choose that brand. Other words, unconscious processes exhibit a limited and rigid information processing capacity, make use of specialized processors and exert little effect on overall thinking and action. By contrast, conscious processes are associated with large and flexible information processing capacity, make use of dynamic processors, and exert a much larger effect on thinking and behaviour [13].

2.2. Emotions and feelings

Drawing attention always bring emotions with it, but that doesn’t mean that feelings are also there. However, drawing attention that brings the feelings also brings emotions with it. Emotions are responses to inner or outer events. On the other hand, feelings are reserved to processes of having a conscious experience of being in a particular emotional state [6].

According to H. Plassmann et al. scientists can predict impact of price on the customers [14]. To investigate the impact of price on the neural computations associated with experienced pleasantness (EP), authors scanned human subjects (n=20) using fMRI while they sampled different wines. Subjects were told they were sampling five different *Cabernet Sauvignons*, that the purpose of the experiment was to study the effect of degustation time on perceived flavors, and that the different wines would be identified by their retail prices. Unknown to the subjects was that there were only three different wines, and two of them (wines 1 and 2) were administered twice, one identified at a high price and one at a low price. For example, wine 2 was presented half of the time at \$90, its retail price, and half of the time at \$10. Results showed that, even though fMRI showed that pleasantness was the same, subjects said that expensive vine taste better [14]. Authors said that some subjects might deem it inappropriate to report to the experimenter that a cheaper wine tastes better.

2.3. Memory and learning

Memory is a term covering a different functions and processes, such as reflexes, instinctual behaviors, habits and reading. Learning is a conscious process that helps us to have memories.

This brings a question: should advertisements be concentrated in time, spread out evenly, or distributed as a mixture of short-term and long-term memories [15]?

Chessa and Murre believe that answer is not simple, but that it can be explained with The Memory Chain Model (see figure 3) [16].

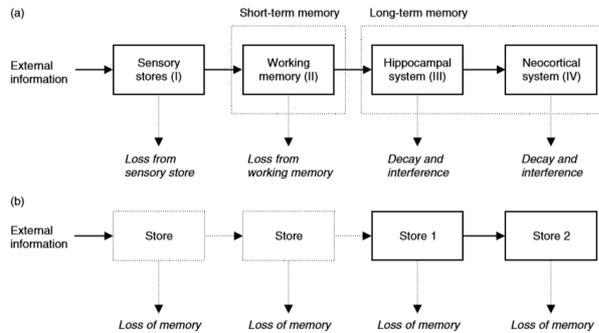


Fig. 3: The Memory Chain Model [16]

Figure 3 shows (a) Storage system for a memory at different time scales and (b) Abstract representation used in Memory Chain Model [16].

This means that Memory Chain Model formalizes memory and retention as a process that consist four stages [16]: *Encoding, Storage, Retrieval* and *Recall*.

The conclusion is that our brain is involved in a wide range of learning and forgetting advertised material, but the main problem is how to recall brand emotion.

It is well know that Pavlovian conditioning environmental cues associated with rewarding outcomes can effect action selection in animals [17] but can that be applied on humans?

S. Bray et al. found that neural correlates of outcome-specific transfer in a very circumscribed region of extended ventral striatum in the ventral caudolateral putamen (related to basic reward-learning center) [18]. Twenty-three, right handed subjects participate in this study, in which visual stimuli were presented via a projector positioned at the back of the room, and the food rewards were delivered by means of four separate electronic syringe pumps. For each rewarded trial, these pumps pushed 0.6 ml of liquid to the subjects mouth. After stimuli and behaviour procedures, authors showed to test subjects two options, and for every correct answer reward a subjects. After 125 trials, they measured *Behavioral reactions* and observed brain activity with fMRI [18].

Another study shows that subliminal and supraliminal exposures produced a mere exposure effect, but the mere effect was stronger in the subliminal condition [19].

One of the explanations of this is that subliminal exposure reflects the stronger effect on nonconscious process [20] which means that priming is effective when subjects are not aware that they are primed.

2.4. Wanting and liking

Literature shows that humans have at least two different motivation systems. *The wanting system* operates unconsciously and *the liking system* is related to our over, conscious experience [6]. When researchers ask consumers what customers want, they only have access

to the liking system. But in most cases, as showed, humans chose things based on unconscious.

For example, when a consumer chooses a product from a supermarket shelf, s/he did not collect first all the available items and then choose. On the contrary, there is a previous intention summarized in a concept named consideration set. The process is not a simple choice among several options, but instead an assessment of the fit between one option and the inner expectations that were previously constructed [21].

Another study shows a close match of brain regions predicting consumer choices for both high and low attention processing of products. Importantly, the amount of predictive information was found to remain persistently high when task-irrelevant products were presented outside the focus of attention [22]. Also, another result suggest that other brain processes may be able to influence decision making and willingness to pay, by modulating activity in the medial orbitofrontal cortex (OFC) [23].

Does this mean that marketers have to make people to want things, but not to make what people want?

2.5. Decision making

According to Davidson's influential approach-withdrawal motivational model of emotion, the left- and the right-anterior brain regions are part of two separated neural systems [24].

Increased resting left-lateralized activity has also been associated with a stronger bias to respond to (monetary) reward related cues. Likewise, resting-state hypoactivity in the right lateral prefrontal cortex has been found to predict higher monetary risk taking and a lower willingness to punish [24].

B. De Martino et al. show that decision making is based on *framing effect* – Operation of analytic processes and evaluation in guiding choice behavior [25]. But EEG scan showed increased activation in the amygdale, which support the authors' hypothesis that the framing effect is driven by an emotional system, not rational [25].

2.6. Social behavior

Almost every marketing literature mention that social factors are important and that social behaviour affect our choices and behaviors as consumers. But, what are the exact brain mechanisms of *social thinking*?

One way to understand nature of social decision making is to take a neuroscientific approach. For example, decision making brain regions are involved in social decision making. The medial prefrontal cortex – responsible for creating value signals for food and monetary gamble – is also active when creating value signals in a social context, see table 1, [26].

Thanks to neuroscience, decision making, in the most basic form, can be broken down into three key processes [26]: (1) making predictions that guide decision making; (2) examing the outcome of the decision; and (3) using the outcome to update predictions – often described as learning (chapter 2.3.).

Table 1 shows that brain regions associated with an effect of human agent (compared to non-social control) include social cognition brain regions [26].

Table 1. Summary of studies comparing human and non-social agents [26]

Phase	Author	Method	Task	Brain regions
Decision	McCabe et al., 2001	fMRI	Trust game	medial prefrontal cortex
Decision	Gallagher et al., 2002	PET	Rock-Paper-Scissors	posterior anterior cingulate cortex
Decision	Singer et al., 2004	fMRI	prisoner's dilemma game	fusiform gyrus, superior temporal sulcus, insula
Decision	De Quervain et al., 2004	fMRI	Punishing defector in trust game	Caudate nucleus
Decision	Rilling et al., 2004a	fMRI	ultimatum game and prisoner's dilemma game	dorsolateral prefrontal cortex
Decision	Delgado et al., 2005	fMRI	Trust game	inferior parietal lobule
Decision	Knoch et al., 2006	fMRI	ultimatum game	dorsolateral prefrontal cortex
Decision	Krach et al., 2008	fMRI	prisoner's dilemma game	medial prefrontal cortex, temporal parietal junction
Decision	Coricelli and Nagel, 2009	fMRI	Beauty contest	medial prefrontal cortex, superior temporal sulcus, posterior cingulate cortex, temporal parietal junction
Decision	Burke et al., 2010	fMRI	Purchasing stocks	ventral striatum
Decision	Carter et al., 2012	fMRI	Pokergame	temporal parietal junction

Therefore, behavioral theorists recognize that people's beliefs about others matter when modeling social decisions, based on social factors. Those factors are related with "well-being" of ourselves but also with the others.

3. ANCHORING AS MODEL OF BRAND PERSONALIZATION

Considering that the role of the brand is seen in the triangle between: consumer - company - aspect of society [3], consumers are driven by physiological, safety, love and belonging, esteem and self actualization

needs (Maslow's hierarchy of needs) [27], and companies are defined by political, economical, social and technical-technological changes [28], we believe that brand personalization can be done by making a brand as a person.

E. B. Cil and M. S. Pangburn showed that a key driver of brand equity for consumer products is brand personality. Brand personality corresponds to the "human characteristics associated with a brand", which can be "distinguished from the more utilitarian function implied by the tangible, product-related attributes" [36]. Consumers associate personality characteristics with product brands because they perceive products as extensions of themselves — a view that is often promoted in advertising by marketers. A brand's personality yields what consumers consider as the "brand-user image" [36].

Literature indicates that Mass customization (MC) is business philosophy and contemporary market approach which can be applied no matter of company size, nature of business or type of product or services [29], and also that there are two types of MC [30]: MC by attribute and MC by alternative. MC by attribute interface employs a sequential configuration process whereby consumers choose each product attribute individually. By contrast, MC by alternative interface employs a top-down process. Rather than making a series of sequential within attribute trade-offs, consumers customize by selecting their preferred product from a set of fully assembled alternative [30].

We will explain idea through MC by alternative. The anchoring effect refers to the adjustment of one's assessment, higher or lower, based upon previously presented external information or an "anchor." The anchoring heuristic appears to be prevalent throughout human decision processes and has been shown to reliably influence judgments in a variety of domains including probability estimates (see figure 4) [31].

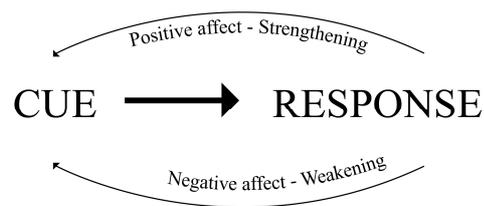


Fig. 4 The anchoring effect [32]

Figure 4 shows that response can be either positive or negative, and the Cue can be anything [32].

In one Piano experiment [33], volunteers were asked to play a simple sequence of piano notes each day for five consecutive days, and their brain was scanned each day. Another set of volunteers were asked to imagine playing the notes instead, also having their brains scanned each day. Experiment showed that the changes in the brain in those who imaged playing piano are the same as in those who actually played piano. It's called *Action imaginary* [33]. This means that our brain does not know difference between reality and vivid imagination, and this is exactly why anchoring is possible.

Neuromarketing states that human decisions are made by emotions driven by stimulus, and that is possible thanks to memory and learning. On the other side, brands have *visible* and *invisible elements* [3] which can be used to make anchor, and to create a vivid reality.

So, using visible elements as a stimulus, and connecting them with invisible elements, by learning customers what is positive response, we actually create a vivid reality in which customers believe that the product or service they use is customized to them.

There are five simple steps to do that [32]: (1) Decide on a stimulus and a state; (2) Vividly imagine the state; (3) Step inside this daydream; (4) Apply stimulus; and (5) Test, use and enjoy anchor.

Generally almost every good brand does this – Consciously or unconsciously.

For example, it's not Christmass time until Coca-Cola plays commercial *Holidays are comming*. Also, in Serbia they start campaign *Unforgettable tastes of Serbia*, where they tried to save traditional meals and to connect them with taste of Coca-Cola [34]. IKEA created, so called, *IKEA effect* [34] – A phenomenon that proves that people are more attached to things they create themselves. The Belgrade Philharmonic Orchestra (BPO) had campaign *It`s not for all* where they provoke Serbian high class and showed them that BPO is actually for all [35].

All of these campaigns have some kind of stimulus – Visible element that provokes our emotions, and every time we become aware of that element we have feelings that call our memory. So Coca-Cola cannot create a different taste in every bottle, but still, the original taste customers love and believe that is created just for them, because they use anchoring such as Christmas. IKEA does not create a personalized item, but they left customers to create furniture, so they believe that it is unique, regardless of the fact that half of the world still has such the same furniture – Again anchoring.

4. DISCUSSION

So, can you make a brand personal? Theoretically yes and combining literatures can help understand the answer. For example, economists originally believed that social decision-making was not different from non-social decision-making, but after the influential paper by Tversky and Kahneman [37] in which they demonstrating heuristics and biases affecting on decision-making, it became clear that it is not rational.

Psychologists have long believed that social cognition is important for predicting the actions of others, but brain imaging studies showed differences of brain regions responding to social stimuli and social cognitive processes that presumably affect social decision-making.

Behavioral game theorists recognize that people's beliefs about others matter when modeling social decisions, no matter if decision is made in order to increase the well-being of other or for self. Different senses impact behavior of buyers, to make impulsive purchases and to build relationships with brands. And neuroscience shows that we see different reactions on stimulus, but engage the same brain regions.

Everything mentioned shows that every stimulus brings desired response, and that every response can be learned. Since the MC is marketing and manufacturing technique that allows a customer to design certain features of a product, does not that make a stimulus that brings desired respond – Buying a product?

Thus, if the role of the brand is to secure the future of the organization, create loyalty, create an image, achieve the highest goals and so forth. [3], isn't it possible to do that by applying mass customization on the brand itself, and not just to the product?

Let's explain this idea with industrial system. An industrial system consists of inputs, processes and outputs [38]. The inputs are the raw materials, labor and costs of land, transport, power and other infrastructure. The processes include a wide range of activities that convert the raw material into finished products – outputs.

This can be applied on marketing and brand management. So inputs are customers, desires, needs, market and etc. Processes are mixing inputs, making invisible brand elements and outputs are visible brand elements.

Since MC is a technique in which customers design certain features and products [36], they can actually design a brand and make it more approachable, not just to them, but to all consumers.

5. CONCLUSION

As showed, this paper opens a lot of questions that could be provided in future research. The main questions are what inputs to use to make brand customized to all, and what emotions to anchor with visible brand elements to make brand accessible, not to the customers, but to their brains? However, in the light of the above considerations, it must be remembered that the offer related factors, such as product/service quality, value for money, service, brand integrity and level of innovation, remain significant apart from the application of the brand personalization.

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