SUBCONSCIOUS RESPONSE ON MARKETING MIX FOR GREEN AND NON-GREEN GOODS: A NEUROMARKETING STUDY

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Abstract

The centre of an organisation is marketing, and the primary purpose of marketing is to get the goods to the target market. The most critical characteristics are typical product features such as product, price, promotion and place when customers consider when making a purchasing decision. One of the key reasons for any marketing campaign failure is unable to grasp the decision-making process that takes place in the subconscious minds of customers. Thus, by attracting just 10% of the brain that drives the choices of customers, advertisers waste much of their budget. As a result of the issue, important developments in neuroscience have led to the emergence of neuromarketing in the last few decades, providing a better understanding of how subconscious minds respond in everyday situations, especially in marketing activities. Electroencephalograms (EEG) was used in this research to investigate the subconscious minds of customers against the key component of the marketing mix during the decision-making process. In order to take part in the research, a laboratory experiment employed 31 volunteers. The findings showed that the main characteristics that consumers consider in decision-making when buying green goods are price and promotion components. Neuromarketing is thus able to validate, reconfigure, and reinforce traditional marketing theories. This evidence provides advertisers with a new marketing opportunity to improvise their marketing strategies and thereby improve their growth in profit.

Keywords: Neuromarketing, subconscious mind, decision-making, green and non-green products, marketing mix

Introduction

In the 21st century, looking at a multitude of marketing problems, the rise of green goods caught the attention of customers and businesses in the first place. They are more concerned with the environment and understand that the conduct of manufacturing and purchasing would have a direct effect on the environment. According to Pechyiam & Jaroenwanit (2014), green goods are non-toxic products manufactured from recycled materials

that have minimum use of packaging materials. While the green products listed in Khare et al. (2013) should illustrate how the products can have a positive environmental effect without using a harmful ingredient. For example, green goods, such as green cars, are energy-efficient cars that generate minimal air pollution. The obvious example of green goods is organic foods, too. In the design of green goods, the primary principle is products that are less harmful to the environment.

Consequently, customers endorse and buy green goods in order to ensure their commitment to the promotion and conservation of the environment, and businesses demonstrate their environmental awareness through various marketing strategies. As buyers are becoming more concerned about the environment, advertisers have started to adjust how their goods are made and adopt a new marketing strategy. As a consequence, advertisers have started to organise their marketing systems in order to draw the interest of green consumers. Therefore, it is the latest trend for advertisers to embrace the idea of green marketing in order to encourage green buying behaviour for customers. Green marketing tools are regarded as improvements to the awareness of green goods by customers.

However, it is still hard to understand the method of purchasing green goods, and since there have been few problems relevant to consumer behaviour. Consumers always express their concern for the environment in most situations, but their behaviours are not always translated into their buying actions (2012 Kaufmann, Panni, & Orphanidou; 2013 Do Paço, Alves, Shiel, & Filho). In Gan et al. (2008), it can be seen that not all buyers are willing to pay a high price for green goods. Other factors are known as the key obstacles to buying green goods, such as lack of availability, higher perceived costs and improper communication regarding green products (Barbarossa & Pastore, 2015).

The local purchasing and use of green goods scenario seemed to be comparable with other developed nations. A study conducted by The Nielsen Global Survey (2015) found that 65% of Malaysian customers said they bought green goods produced by a brand or business they trust. Another study conducted by Nik Abdul Rashid (2009) showed that eco-label recognition has a positive influence in Malaysia between knowledge of green goods and the intention of consumers to buy. In retrospect, Abdul Wahid et al. (2011) found that in Malaysia, the trend of buying green goods is still poor and the expectations of consumers about environmentally friendly products are not improved compared to traditional products. This is supported by Do Paço, Alves, Shiel, & Filho (2013), who stated that their attitudes are not always translated into their buying behaviour, even though customers show a real concern for the environment. Therefore, understanding the decision-making actions of consumers from another viewpoint, which is from the subconscious mind of consumers, is important.

Subconscious is described as "mental processes that are inaccessible to awareness but affect judgments, emotions, or behaviour" (Poldervaart, 2009). Before it enters the conscious mind, choices taken in the subconscious minds are understood, and it is known that the subconscious is more important than the conscious mind. Most companies and customers agree that purchasing decisions are often based on price, brand confidence or a friend and family's recommendations. However, consumer research indicates that the decisions of consumers start from a much deeper location; the subconscious level (Neto et al., 2011). The business learns, for the most part, only the aware minds of consumers, but rarely the subconscious minds of consumers. Companies need to consider the actions of buyers in depth because it helps the purchasing behaviour of customers on the market to be understood and predict. For decades, standard marketing tools such as self-report surveys, tests and focus groups have relied on traditional marketing tools to understand consumer behaviour and the cause behind consumer decisions on buying goods companies (McDowell & Dick, 2013), to understand the reactions of consumers and draw conclusions about the behaviour of consumers, and to use the knowledge to make marketing decisions in order to create a better brand. The business typically only discovers the conscious minds of consumers, but rarely discovers the subconscious minds of consumers.

Exploring the brain and actions of customers helps to understand the mechanism behind the decision-making process in order to understand how subconscious minds function. Electroencephalography (EEG) and eye tracker are well-established and non-invasive methods used to test and map customer brain responses to marketing mix messages for the purpose of this research. EEG is the instrument for recording the brain's electrical signals in the entire scalp (Subbulakshmi, Balaganapathy, & Gerard, 2014), and EEG's function is to quantify mental responses in decision-making processes (Morin, 2011; Khushaba et al., 2013). This is because brain sensations are the main concepts for understanding what motivates consumers to make the purchase choice (Kumar & Singh, 2016). Therefore, by using the latest advances in neuroscience, a growing number of advertisers now prefer to evaluate the response of people's brain waves (Babu & Vidyasagar, 2012, p90). Thus, it can expose the subconscious responses of consumers to marketing stimuli by analysing the brainwaves (Ariely & Berns, 2010; Kenning & Linzmajer, 2011; Morin, 2011; and Yadava, Kumar, Saini, Roy, & Dogra, 2017).

Objective

This study attempts to provide more detailed explorations on consumers' subconscious response regarding the effects of marketing mix elements for the green products

compared to non-green product in consumers' decision making from the context of neuromarketing.

Scope of research

1. Population:

Participants were recruited healthy adult consumers from both genders at USM Health Campus, Kota Bharu, Kelantan. The advertisement for recruiting volunteers was advertised in the Hospital for 2 weeks. Within two weeks, 40 potential respondents answer to the ads and showed their willingness to be part of the experiment. However, after screening, only 31 volunteers entitled to be the respondents of the experiment, due to certain criteria that not fulfilled the experiment requirements such as having visual difficulties and afraid of the dark.

2. Variables:

The independent variables are marketing mix element (product, price, place, promotion) and dependent variables are ERP components

Research Methodology

1. Research Methodology

Laboratory observation study by Event Related Potential.

2. Research process

The study starts with determining the problem statement, turn the idea into a research question, design the study, writing research proposal, issues about funding, obtain ethical approval, collect and analyse the data, interpret findings and lastly, reporting the study.

The Human Ethical Committee of Universiti Sains Malaysia (USM) approved this experimental protocol with the reference number USM/JEPeM/16080255.

3. Data collection

In a quiet and dark space, participants were seated approximately 100 cm from a computer screen. The HydroCell GSN layout of 128 channels was applied to the head of the subject. Following the planning and implementation processes, each subject was asked to take up a decision role. Non-green products are the frequent (standard) and rare (target) are green products and both products have been tested in random order. For each of the two alternative items, respondents were given the task of responding to the messages and were asked to choose one for purchase: either YES or NO by pressing the response button. Subjects were provided with a stimulus operated by E-prime software running on a computer screen linked to their head's sensor network (the 128 channel HydroCell GSN layout). For the visual experiment protocol, figure 3 shows the configuration of each session. Now the participant

was shown a black screen (3 seconds). Second, a white cross was provided in the centre of the screen to remind the subject that visual stimuli will be demonstrated (4 seconds). Thirdly, the images (4 images x 10 seconds/clip=40 seconds) were shown to the subject. The image between the green and non-green product is shown randomly for each stimulus. Fourth, the individual was again faced with a black screen (3 seconds). In summary, it normally takes 40 to 60 minutes to complete each session.

Black screen 3s	“+” cross 4s	Picture 1 10s	Picture 2 10s	Picture 3 10s	Picture 4 10s	Black screen 3s

Figure 1 The procedure of visual stimuli experiment

4. Data analysis

The data of the statistical extraction of the amplitude and latency of all electrodes from the ERP waveform study was transferred to the Statistical Package for Social Sciences (SPSS) version 23. For the determination of the degree of amplitude and latency between green and non-green goods, means and standard deviations were used.

Research Finding

Table 1, Table 2 and Figure 3 summarize the ranking and area of brain in decision making.

Table 1 Level of amplitude of P300 in decision making

Ranking	Non-green product	Green product
1	Promotion (4.6 μV)	Promotion (4.0 μV)
2	Product (3.8 μV)	Price (3.7 μV)
3	Price (3.9 μV)	Product (3.6 μV)
4	Place (3.1 μV)	Place (3.5 μV)

Table 2 Level of latency of P300 in decision making

Ranking	Non-green product	Green product
1	Price (399.48ms)	Product (401.93ms)
2	Promotion (404.03ms)	Promotion (403.74ms)
3	Product (404.61ms)	Price (408.32ms)
4	Place (409.25ms)	Place (416.25ms)

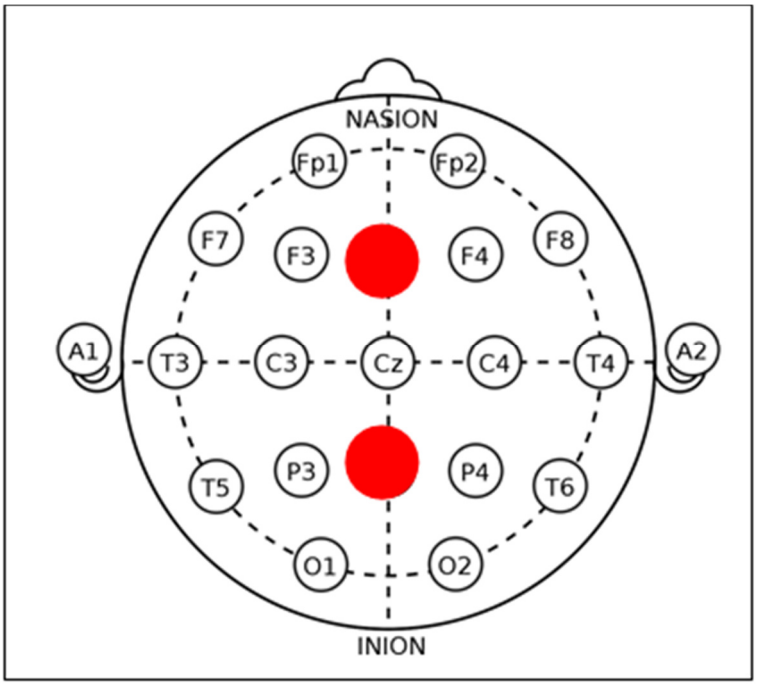

Figure 2 Brain area illustration on decision – making

Fz and Pz which is known as Frontal and Pariental of the brain is the main area that involves in decision making. The frontal lobe is primarily involved in decision making. Based from the results, higher value of amplitude and latency occurs at these brain sites.

Result and Discussion

In Promotion, the current study has found higher amplitude, which shows that in making their decision, respondents from this study pay more attention to the promotion aspect. Similarly, for all examined electrodes, Teixeira, Pompeu, Sandoval-carrillo, & Salas-pacheco (2015); Fabre, Causse, Pesciarelli, & Cacciari (2015); Wang, Zheng, Huang, & Sun (2015); Ma, Wang, Shu, & Dai (2008) and Pileliene & Grigaliunaite (2017) observed a significant increase in P300 amplitude for the target condition. In relation to the results, confidence in the decision is positively associated with the P300 amplitude, which implies that increased confidence in the decision-making phase contributes to a higher amplitude of P300 (Pirtošek et al., 2009). In reality, Luck (2005) claimed that this is true because the amplitude of P300 is higher when respondents put more effort into a mission. This is because higher P300 component amplitudes represent higher awareness.

In the marketing mix, price is an essential factor because it gives the marketers benefit and supports the cost of production, distribution, and also the promotion of the goods. The

results indicate that the higher amplitude was obtained by non-green products. This is because when making the decision to purchase the goods, price is an essential factor. According to the Boztepe (2012) results study, environmental consciousness, green product characteristics, green marketing practises, and green price have a positive effect on customer green buying behaviours. A good promotion is a key component of an effective marketing campaign (Kolar, 2014). The primary explanation for greater exposure to promotional elements is that respondents were motivated by marketing promotional components such as competitive prices or deals. This is helped by rebuys that can be influenced and positively affected by promotions by the inelastic price shifts. The results of this research are confirmed by Pickett-Baker & Ozaki (2008), while customers are willing to buy green products, there is minimal knowledge of green products. Khare et al. (2013), who reported that there is a lack of knowledge of green goods, supports this finding. In reality, the majority of respondents who said they were aware of green products did not know what green products represented (Kumar, Garg, & Makkar, 2012).

Latency refers to the time taken to respond to the stimuli by respondents. Answer time can be interpreted as a measure of the complexity or deliberation of decision, in other words, in more difficult choices longer latency responses are observed (Lepping et al., 2015). In the latency findings, however the higher score is obtained by place (non-green product) and price (green product). Longer P300 latency displays less focus, according to Brookhuis, Mulder, et al. (1983). This can be seen from the evidence by Reimann & Bechara (2010) that, compared to well-known brands, a longer latency option response is associated with the new brands. This shows that the response of the respondent takes longer relative to other components in the marketing mix of green products to price in green products. The explanation behind this is that, relative to non-green goods, the price of green products is usually higher. Kabadayi, Aygun, & Cipli (2007) noted that the key factor in the decision-making process is price. The research shows that pricing is still a big barrier to the green movement in Malaysia due to the differences between purpose and actual action, according to Ogilvy Earth's recently published study,' Mainstream Green: Shifting Sustainability from Niche to Common. Green price costs are higher than non-green goods, but the advantage is that green products are more sustainable and save money on them.

Overall, the findings show that at Fz, the highest amplitudes occur. Fz is in the human brain's frontal lobe. The decision-making on the frontal lobes takes place (Collins & Koechlin, 2012). The field is more important to the method of decision making. The parietal area comprises approximately one quarter of each hemisphere and has two primary functions: 1)

sensation and perception and 2) sensory input integration and understanding, mainly with the visual field.

These will assist marketing managers to prepare effective marketing plans for marketing mix elements to reach their potential goal and benefit on the basis of the results of the report. It will allow advertisers to hit their clients by concentrating more on the promotion elements of the marketing mix. The advantages of concentrating more on promotion are that it can educate, reassure, and remind consumers of the demand for marketers and their goods through promotion. In addition, the price also needs to be standard in order to control green buying behaviour, making it easier to make sustainable choices.

Implication

In terms of practical contributions, the outcome of this research will not only help industrial players, but will also provide a consistent framework as to how, through the implementation of this principle, companies can achieve sustainability. Therefore, neuromarketing will increase understanding about how it affects the subconscious response to decision-making, and marketers will be more alert and knowledgeable about the mechanisms of customer decision-making so that they can make better consumer goods. The data collected would help marketers create appealing shop environments, prepare sales strategies and generate marketing materials such as ads that promotes the company's positive image and encourages higher sales. This research therefore allows marketing experts to get to know the actions of consumers by using different neuromarketing techniques.

The study presented neuromarketing as a new approach to business and analysis strategies with respect to its application to methodology. This is because neuromarketing goes beyond traditional marketing strategies, which are unable to explore the subconscious minds of customers. There is evidence provided by Calvert & Brammer (2012); Ariely & Berns (2010) and Venkatraman et al., 2014), who accepted that neuroscience tools have gained increasing attention and made it possible to examine brains when those tasks are completed, which provides additional inside customer knowledge to marketers. For this purpose, in conjunction with neuroimaging, it seems promising to analyse the decision-making process of customers.

Suggestion for the future research

Neuromarketing may detect any subconscious gestures that are not consistent with the traditional method of study. This evidence provides marketers with a new marketing opportunity to improvise their marketing strategy and improve sales growth. This concludes that with neuromarketing strategy, the basic but fundamental marketing strategy principle

becomes stronger. This approach must be considered in future research instead of the traditional method.

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