Chapter 16
Assessing Consumer Reactions with Neuroscientific Measurements

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ABSTRACT

Positive consumer reactions to corporate marketing activities are regarded a key driver of business success. Since consumer reactions occur to a large extent on non-conscious levels, traditional market research approaches provide limited insights into the consumer's perceptions and intentions. This chapter demonstrates how neuroscientific measurements can contribute to a deeper understanding about critical processes in the consumer's "black box". Two generic approaches will be outlined: Whereas brain imaging techniques create pictures reflecting brain activity in response to marketing stimuli, psychophysiological methods assess body signals as correlates of neural activity. The chapter provides a general understanding about the meaningful application of neuroscientific measurements in consumer research and presents a critical reflection on the opportunities and challenges of different neuroscientific measurements.

INTRODUCTION

Consumer research currently relies on a limited set of measurement techniques. To date, quantitative surveys and qualitative interviews are still the most widely used approaches to assess consumer reactions to any kind of marketing activities. However, it is quite obvious that people can only answer questions regarding their consciously reflected attitudes and intensions. Given that consumer reactions – to a large extent – occur on a non-conscious level, traditional questioning techniques might only capture the "tip of the iceberg". Moreover, survey data are vulnerable to serious biases (Gregg & Klymowsky, 2013) – such

DOI: 10.4018/978-1-5225-5478-3.ch016

as the social desirability bias (i.e. respondents may dissimulate their true attitude), self-enhancement bias (i.e. respondents wish to flatter themselves), and self-ignorance bias (i.e. respondents unwittingly express attitudes they do not have).

Against this backdrop, there is an urgent need to apply more advanced research methods which adapt to the complex nature of consumer behavior. In recent years, there was a rapid development of a new integrative discipline which has been labeled neuro-economics, neuro-marketing, or consumer neuroscience. The overarching aim of this emerging discipline is to transfer the insights and methodology from neurology to the study of consumer behavior in order to gain a deeper understanding about brand perceptions and consumer intentions. More generally speaking, neuroscientific measurements in consumer research are used to identify brain areas and cortical processes which are engaged in consumer reactions and economic decision making.

Current studies in the field of consumer neuroscience are concerned with a variety of marketing topics, such as shopping behavior (e.g. Knutson, Rick, Wimmer, Prelec, & Loewenstein, 2007), brand and product perception (e.g. McClure, Li, Tomlin, Cypert, Montague, & Montague, 2004; Deppe, Schwindt, Kugel, Plassmann, & Kenning, 2005) and advertising effects (e.g. Klucharev & Fernandez, 2005). One of the key finding from studies in the field of consumer neuroscience relates to the neuronal correlates of economic decision-making. For instance, Deppe et al. (2005) show how emotions influence consumer choices in a shopping situation. In a similar vein, McClure et al. (2004) demonstrate the effect of brand perception on brain activity and brand preferences. Further, the investigations of Plassman, Kenning, and Ahlert (2007) reveal that consumer loyalty is associated with activity changes in the neural reward system.

There is a set of instruments taken from neuroscience and medical research which has the potential to gauge data automatically, that is, without any verbal response from the participant (Green & Holbert, 2012). Such neuroscientific measurements can be classified in two categories: Brain imaging and psychophysiological techniques. Brain imaging techniques are used to depict brain activities in terms of spatial and temporal dimensions. In this regard, metabolic approaches measure substances which relate to neural activities (e.g. hemoglobin), whereas psychophysiological approaches directly track the outcome of neural activities (e.g. electric potential). In contrast to brain imaging techniques, psychophysiological methods capture body signals in the autonomic nervous system. Skin conductance, facial expressions, heart rates and eye movements serve as important indicators of neural consumer reactions (Kenning, 2014).

In the chapter's main body, several methods adapted from neuroscience, medical science and applied psychology will be critically discussed. After explaining the underlying concepts of each measurement approach the added value for consumer research will be outlined.

BRAIN IMAGING TECHNIQUES

Brain imaging techniques are used in consumer research to study psychological concepts like attention, affect, memory and desirability (Venkatraman et al., 2015). For example, based on a brain imaging study it was found that certain brain areas associated with pleasure, self-identification and rewards, strongly respond to well-known brands, whereas other parts in the brain associated with displeasure were evoked by unfamiliar brands (Hubert, & Kenning, 2008).

Different brain imaging techniques can be used in consumer research. In this chapter, the focus is on a direct and an indirect approach to visually depict brain activity. As an indirect approach, Functional