Chapter 5
E-Services Mobile Applications and Conjoint fMRI Analysis

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ABSTRACT

Previous researches, documents and studies have shown that neuromarketing and conjoint analysis have been used in many areas of consumer research, and they provide benefit for further understanding of consumer behaviour. Together these two methods may reveal more information about hidden desires, expectations and restrains from customers' brain. This paper attempts to examine these two research methods together as a companied analysis. More specifically this study utilizes fMRI and conjoint analysis as a tool for analysing consumer´s preferences and decision making. This paper provides theoretical background with short history of conjoint analysis and contributions for the audience of consumer research 1) how conjoint evaluation models works, 2) different conjoint models, 3) counting attribute interactions in conjoint analysis, and 4) brain activation triggers in fMRI and connection to conjoint analysis. Researchers, scholars and practitioners of consumer behaviour may learn new method of understanding user´s preferences and decision making.

1. INTRODUCTION

With the help of neuromarketing one can discover the desires, expectations and hidden restrains of the consumers' options, by transferring the technology of medical imaginery, which causes a major change in the relationship of the company and their customers. Neuromarketing originates in neurosciences, and its objective is to understand the functioning of the human spirit by using interdisciplinary. On the contrary neuroeconomy and neurofinances are interested in the decision-making processes of the economic agents and particularly in the study of the role and, respectively, the emotions and the knowledge inside them. These branches are connected to economy and behavioural finances (Boricean, 2009). There are differences between neuroeconomy and neuromarketing. In this article, we are going to put together neuromarketing and one of its method fMRI with conjoint analysis.

Conjoint analysis is a sophisticated technique for measuring consumer attitudes and preferences (Rao, 2014). Like the multi-attribute model, it helps understand why consumers prefer certain products and it

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decomposes overall preference into a series of additive terms. However, there is an important difference between conjoint analysis and the multiattribute model: The multiattribute model is compositional; it builds up an inferred overall attitude as the sum of measured subcomponents. The conjoint model is decompositional; it measures overall preference and decompose this into inferred sub-components (Novak, 1996). The method has been applied successfully for tackling several marketing decisions such as optimal design of new products, target market selection, pricing a new product, and competitive reactions. A significant advantage of the method has been its ability to answer various "what if" questions using market simulators; these simulators are based on the results of an analysis of conjoint data collected on hypothetical and real choice alternative (Rao, 2014).

In Finn's (1985) terminology, benefit refers to an individuals' estimation of the amount of utility which will be supplied by a particular product. The amount of benefit deduced form a product or an attribute, apart from the intrinsic values of that product or attribute, depends on the individuals' prior product experience, the ability to estimate the desirability of different aspects of the new product, and on declining marginal utility, in addition, imagery which depends on society's association with the product and is a function of price, place and promotions, also influences the amount of benefit. Finn considers benefit to be an output of the consumption process. By obtaining, preparing, using, and disposing products, consumers have developed a frame of reference for evaluating the benefits of new products. In Reynolds and Gutmann (1984) terms, such consumers are capable of inferring both the functional and psychophysical consequences of particular product-attributes (de Bont, 1992).

2. THE HISTORY OF CONJOINT ANALYSIS

While the foundations of the conjoint analysis go back to the 1920s, however year 1964 marks the start of conjoint measurement, with the seminar paper by Luce, a mathematical psychologist, and Tukey, a statistician. Shortly thereafter a number of theoretical contributions (Krantz & Tversky, 1971) and algorithmic developments (Carroll, 1973) appeared.

Conjoint analysis is a general term that may represent several analytical techniques that involve a posteriori decomposition of the decision process. Nonmetric conjoint analysis, as frequently used in marketing studies and described by (Green & Wind, 1973), uses rank order preference data to generate 'part worth utilities' - similar to beta weights in regression - that represent respondents use additive, main effects only, decision models (Priem, 1992). The term conjoint analysis means decomposition into part-worth utilities or values of a set of individual evaluations of, or discrete choices from, a designed set of multiattribute alternatives (Louviere, 1988, 93). Metric conjoint analysis, however, uses interval-scaled preference rating data. This allows the evaluation of full multilinear - main effects plus interactions - decision models based on the error theory of multiple regression, making the technique appropriate for examining the interactions associated with contingency judgments. The clinical judgment literature employs metric conjoint techniques in examining the decision rules of diagnostics (Priem, 1992).

Despite a common reliance on experimental design techniques to construct combinations of attributes, the various conjoint analysis paradigms differ in response model used to obtain information from subjects, methods of analysis, and inferences that can be made about judgment or choice behaviour (Louviere, 1988, p. 93). Conjoint tasks may be viewed as multiattribute decision problems (Krantz & Tversky, 1971). The purpose of the analysis is to identify the relative contribution of attributes and their