Merseburger Schriften zur Unternehmensführung

Band 10

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# Artificial three-dimensional Stimulus Presentation Formats and their Effects on the Measurement of Consumer Preferences

Shaker Verlag
Aachen 2009

**Bibliographic information published by the Deutsche Nationalbibliothek**
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the internet at http://dnb.d-nb.de.

Zugleich: an der Fakultät für Wirtschaftswissenschaft der Otto-von-Guericke-Universität Magdeburg unter dem Titel "Artificial three-dimensional Stimulus Presentation Formats and their Effects on the Measurement of Consumer Preferences" vorgelegte und angenommene Inauguraldissertation.

Datum der Disputation: 10.09.2009



Printed in Germany.

ISBN 978-3-8322-8586-9
ISSN 1613-592X

Shaker Verlag GmbH • P.O. BOX 101818 • D-52018 Aachen
Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9
Internet: www.shaker.de • e-mail: info@shaker.de

Kurzinformation zu:

**Berneburg, Alma:**
**Artificial three-dimensional Stimulus Presentation Formats and their Effects on the Measurement of Consumer Preferences**
**Shaker Verlag, Aachen 2009**

Band 10 der Reihe „Merseburger Schriften zur Unternehmensführung“

When looking into market research processes and especially the measurement of consumer preferences, practitioners again and again face the trade-off between cost and time matters on one hand and the reliability and validity of test results on the other hand. The quicker and less costly the study, the less dependable the findings – especially in a lab environment under artificial circumstances. Against this background, virtual reality technologies and three-dimensional simulations are often promoted as a promising tool to face this trade-off. Firstly, they might include some profound benefits in time, cost and flexibility matters in comparison to using physical prototypes. Secondly, due to their higher degree of realism compared to simpler artificial stimuli (e.g. two-dimensional pictures), they could very well deliver more dependable results.
Up to now, however, this claim is based on theoretical considerations rather than on empirical data. The work at hand therefore tries to give insights into the effects of artificial three-dimensionality and an enhanced degree of realism in a virtual reality environment on the test results in the measurement of consumers' preferences.

To research the benefits and threats of artificial 3D-stimulus presentation formats in market research processes, some comparative analyses seem necessary. This work tries to contribute to this branch of research by placing a special focus on test persons' reactions to varying stimulus presentation formats with different dimensions (2D vs. 3D) in the measurement of consumer preferences with conjoint analysis. In three separate studies a 3D monitor, which allows to present objects in a natural and intuitive three-dimensional and spatial manner, was used to analyse the following research topics:

- ⇨ the degree of realism created by the dimensionality of the stimulus presentation format
- ⇨ the comparability of test results derived with classical (physical), 2D or 3D stimulus presentation formats (convergent validity)
- ⇨ the quality of the internal (predictive) validity derived with 2D or 3D stimulus presentation formats
- ⇨ the quality of the external validity derived with 2D or 3D stimulus presentation formats
- ⇨ the special influence of familiarity and prior product knowledge on the test results derived with 2D or 3D stimulus presentation formats

The results imply that 3D simulations represent a considerable step towards substituting costly real physical dummy products and prototypes in the measurement of consumer preferences. Three major influencing factors seem to be of a special importance when deciding on the best possible stimulus presentation format: prior product knowledge, the importance of the visual attributes and the age of test persons.