2nd Meeting of AG MARKETING

17th-18th of August 2020, virtual

Program Committee: Friederike Paetz, Daniel Guhl

Call for Abstracts

2nd Meeting of
AG MARKETING
17th - 18th of August, 2020 (virtual)

Invitation:

We cordially invite abstracts from scholars and practitioners in the field of quantitative marketing!

Purpose:

We are experiencing unusual times and the scientific exchange is currently being hampered in particular by the cancellation of numerous conferences. We want to counteract this as AG MARKETING. In order to strengthen the scientific dialogue, we have therefore decided to let the 2nd meeting of the AG MARKETING take place entirely virtually!

With the help of a videoconferencing system, we will organize sessions where you can present your current research projects. Helpful feedback and thought-provoking impulses can also be provided digitally and facilitate scientific discussions, which are essential for our research!

AG MARKETING invites methodological, theoretical, or empirical papers that aim to contribute to the understanding of quantitative marketing issues. This call is not limited to any specific field of marketing and welcomes quantitative contributions in areas like *innovation management*, *sales management*, *pricing*, *advertising*, *market segmentation*, *digital marketing*, *consumer behavior*, *sustainability marketing*, *revenue management* etc.

Interested researchers are invited to submit an abstract for virtual presentation. Abstracts will undergo a peer-review process. No fee will be charged for this virtual meeting, and all registered attendees may request a "confirmation of attendance" for their organization!

Date:

The working group meeting will be **virtually** held on **Monday, 17th of August, 2020, and Tuesday, 18th of August, 2020.**

Publishing options:

All accepted abstracts are published in the journal *Archives of Data Science, Series A.* Furthermore, accepted presenters for the *2nd$_t$ Working Group Meeting of AG MARKETING* will have the opportunity to submit the final version as a full paper for the journal *Archives of Data Science, Series A*. Articles must be 10-14 pages using the provided style. Please submit the final paper directly to the journal and obtain the journal's guidelines for authors:
https://www.archivesofdatascience.org/journals/series_a/author-guidelines?c=AgMcaE

Deadline for submissions of full papers: **31st of December, 2020!**

Important Deadlines:
- **Abstract submission**: Please submit your abstract (max. 500 words, plain text with 1-3 references) until **17th of July, 2020** via mail to agmark-workshop@tu-clausthal.de
- **Notification about acceptance**: until **24th of July, 2020**
- **Registration**: Please register via mail to agmark-workshop@tu-clausthal.de until **31st of July, 2020**.

We hope that we can accommodate you with this virtual format of the 2nd meeting of the AG MARKETING and look forward to many exciting submissions!

Please feel free to contact us if you have any questions!

Kind regards,
Friederike Paetz (friederike.paetz@tu-clausthal.de)
and Daniel Guhl (daniel.guhl@hu-berlin.de)

Final schedule

Monday, 17th of August 2020		Tuesday, 18th of August 2020	
schedule	*event*	*schedule*	*event*
14:45	Come-together (open microphones)		
14:50 - 14:55	Welcome	14:50 - 14:55	Welcome
15:00 - 16:00	Session A	15:00 - 16:00	Session C
16:00 - 16:15	Break (open microphones)	16:00 - 16:15	Break (open microphones)
16:20 - 17:20	Session B	16:20 - 17:20	Session D
		17:20 - 17:30	Farewell/Announcements

Sessions

Monday, 17th of August 2020

Zoom-link: https://hu-berlin.zoom.us/j/91691477055

Session A (Chair: Winfried Steiner)

- Conjoint meets AI (*Peter Kurz*)

- Did you find this content helpful? Linking brand specific review contents to helpfulness of a product review (*Nadine Schröder*)

Session B (Chair: Thomas Niemand)

- When Zeros Count: Confounding in Preference Heterogeneity and Attribute Non-attendance (*Narine Yegoryan, Daniel Guhl, Friederike Paetz*)

- Determinants for the recovery of product lines' revenues (*Friederike Paetz, Winfried J. Steiner, Harald Hruschka*)

Tuesday, 18th of August 2020

Zoom-link: https://hu-berlin.zoom.us/j/94601306971

Session C (Chair: Daniel Guhl)

- Metric and Scale Effects in Consumer Preferences for Environmental Benefits (*Vlada Pleshcheva*)

- Simultaneous Internal and External Reference-Price Response in Brand Choice Models (*Ossama Elshiewy, Anne O. Peschel*)

Session D (Chair: Friederike Paetz)

- Examining Best-Worst Scaling's validity and reliability: Worth a try? (*Benedikt Martin Brand, Cristopher Siegfried Kopplin*)

- Predictive Validity in Choice-Based Conjoint Analysis: Adaptive Designs or Incentive Alignment? (*Verena Sablotny-Wackershauser, Marcel Lichters, Daniel Guhl, Bodo Vogt*)

Abstracts

Conjoint meets AI

Peter Kurz, bms marketing research + strategy, Germany

Background on Artificial Neural Networks
In the past few decades, Artificial Neural Networks (ANNs) have been used to identify and model choice behavior in a wide variety of fields (e.g., Bishop, 1995). To give some examples from the field of market research, ANNs have been applied to model price elasticities in fast moving consumer goods area and car ownership (e.g., Hensher and Ton, 2000). ANNs aim to efficiently recognize patterns in the data, without being explicitly programmed where to look. A key feature of ANNs lies in their capability to approximate any Data Generating Process (DGP), provided that sufficient processing units are available; this feature is known as the Universal Approximation Theorem (Hornik et al., 1989). However, despite the strong pragmatic appeal of ANNs, they have been criticized for being too much data driven and theory poor, in effect presenting the analyst with a black box-model of the DGP. This limitation has hampered their use by discrete choice modelers and market researchers. Whereas many researches in the last years worked on using ANNs to model the choice behavior, we don't know actual papers using ANNs to generate Experimental Designs for Choice Models.

The challenge of creating optimal Experimental Designs
In day-to-day research work client studies get more and more demanding. Number of Attributes and Levels are constantly increasing, and sample sizes get even smaller. Therefore, in many cases it is not easy to find sufficient experimental designs. Studies with large number of attributes (and therefore hundreds of parameters to estimate) combined with necessary restrictions and prohibitions on attribute level (that can't be shown together) often brings the established algorithms at their limits. Furthermore, most of the experimental designs used in day-to-day research are developed to estimate only aggregate models of choice behavior.

The Power of Artificial Neural Networks Creating Experimental Designs
The aim of an ANN based design generation is to find a perfect design, considering the above-mentioned problems and minimize the statistical- and measurement error. Goal is to find a solution where all estimated values are equal to "0" when all answers are perfectly random. On the one side we know the answers (simply random figures) and on the other we know which attribute-level combinations we could show. Therefore, it is relatively easy to generate a large number of synthetic datasets to train ANN's. After a long enough training period the selected ANN can find nearly optimal solutions, even for very complex experimental designs. Using hundreds of synthetic datasets, we explore to what extent ANNs are able to generate ideal experimental designs when the underlying DGP is known to the analyst. We focus on standard criteria for good experimental designs like orthogonality, level balanced overlap and utility balance (see Huber, Zwerina 1996). Additionally, we will present first results from a real dataset using a split design: Choice tasks based on experimental design generated with the complete enumeration algorithm versus ANN generated choice tasks.

- Hensher, D.A., & Ton, T.T. (2000). A comparison of the predictive potential of artificial neural networks and nested logit models for commuter mode choice, *Transportation Research Part E*, 36(3), 155-172.
- Hornik, K., Stinchcombe, M., & White, H. (1989). Multilayer feedforward networks are universal approximators, *Neural Networks*, 2(5), 359-366.
- Huber, J., & Zwerina, K. (1996). The importance of utility balance and efficient choice designs, *Journal of Marketing Research*, 33(3), 307-317.

Did you find this content helpful? Linking brand specific review contents to helpfulness of a product review

Nadine Schröder, Vienna University of Economics and Business, Austria

Before making a purchase, many customers consult product reviews to get information on the product experience. As a way to structure the vast amount of reviews, platforms make use of the helpfulness function. Consumers who considered a certain review as helpful may vote accordingly. Consequently, a lot of studies have addressed what review characteristics influence the number of helpful votes. Interestingly, even though a survey among customers shows that information on product performance or consumer satisfaction is considered as helpful, studies related to review helpfulness have focused on effects of, e.g., star rating or reviewer characteristics as drivers of helpfulness. In fact, only a subgroup has considered content related review aspects. In this regard, these studies mainly focused on readability or sentiments of product reviews. Some studies even use a text mining approach but do not investigate the resulting contents. In fact, to the best of our knowledge, no previous study has comprehensively analyzed which particular review topics are helpful for future customers when making their purchase decision. We extend prior research by using the Latent Dirichlet Allocation (LDA) as a text mining approach. The LDA allows us to identify review topics that are interpretable and do not depend on the identification of topic categories beforehand. In a second step, these topics serve as predictors in various types of count models to assess the helpfulness of a review. We use reviews for four major laptop brands that were collected on amazon. We find that topics which are considered helpful for one brand not necessarily have an effect on helpfulness for another brand. Marketers may benefit from knowing helpful topics in different ways. In particular, they may adjust their product description or even future product development. Reviews with helpful topics might also be displayed more prominently.

- Cao, Q., Duan, W., & Gan, Q. (2011). Exploring determinants of voting for the helpfulness of online user reviews: A text mining approach. *Decision Support Systems*, 50, 511-521.
- Griffiths, T., & Steyvers, M. (2004). Finding scientific topics. *Proceedings of the National Academy of Sciences,* 101, 5228-5235.
- Zeileis, A., Kleiber, C., & Jackman, S. (2014). Regression models for count data in r. *Journal of Statistical Software*, 27, 1-25.

When Zeros Count: Confounding in Preference Heterogeneity and Attribute Non-attendance

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Daniel Guhl, Humboldt University Berlin, Germany
Friederike Paetz, Clausthal University of Technology, Germany

A central premise in marketing is that consumers are heterogeneous. Many critical marketing decisions, e.g., new product development, market segmentation, targeting, and pricing, rest upon the accurate estimation of consumer preferences. The main focus in the literature so far has been on developing models and estimation procedures that allow uncovering heterogeneity in preference. As a result, different extensions of the standard multinomial logit (MNL) model have been proposed (e.g., mixed multinomial logit (MMNL), generalized multinomial logit). Further efforts have been directed at extending the MNL model to capture more flexible forms of preference heterogeneity with multi-modal parameter distribution (e.g., mixture-of-normals MNL (MN- MNL), Dirichlet process prior). However, more recently, some scholars have focused on models that, in addition to het-erogeneity in preferences, also account for consumers' heterogeneous attribute information usage (e.g., Gilbride et al. 2006; Yegoryan et al. 2020). These models acknowledge that consumers may ignore subsets of attributes when making decisions, which is also commonly termed "attribute non-attendance" (ANA). ANA may arise due to various reasons. For example, consumers may find some attributes simply irrelevant or ignore attributes due to complexity and limited cognitive resources. Identifying ANA and accounting for it in choice models is essential, as otherwise, the estimated parameter distribution would be biased, leading to suboptimal marketing decisions.

In this paper, we document and explore the application of ANA models in ten different datasets, which vary in terms of the choice context, the associated financial risk of the purchase decision, and the number of attributes, i.e., the complexity of the task. As a result, we can systematically compare the in- and out-of-sample performance of ANA models against models that only account for preference heterogeneity, including MMNL and MN-MNL, across different contexts.

We find that models that explicitly account for ANA generally outperform MMNL and MN-MNL models. Furthermore, we explore the differences in the uncovered preference distributions of the models and outline in which cases accounting for ANA is crucial. Biases in parameter estimates (both mean and variance) resulting from neglecting ANA are more substantial when the share of ANA is high (e.g., when financial risks are low, and decision task complexity is high). Moreover, we find that the true parameter distribution's location relative to zero also affects the magnitude and direction of the biases in estimated parameters.

Lastly, we present how the empirical results translate into managerial implications, e.g., biases in willingness-to-pay estimates when neglecting ANA.

In conclusion, across multiple empirical applications, we find that accounting for ANA is important. We highly recommend choice modelers and practitioners to extend their tool-box and consider models that also accommodate consumers' heterogeneous attribute information usage.

- Gilbride, T.J., Allenby, G.M., & Brazell, J.D. (2006). Models for heterogenous variable selection. *Journal of Marketing Research*, 43(3), 420-430.
- Yegoryan, N., Guhl, D., & Klapper, D. (2020). Inferring attribute non-attendance using eye tracking in choice-based conjoint analysis. *Journal of Business Research*, 111, 290-304.

Determinants for the recovery of product lines' revenues

Friederike Paetz, Clausthal University of Technology, Germany
Winfried Steiner, Clausthal University of Technology, Germany
Harald Hruschka, University of Regensburg, Germany

Optimal product line designing is a challenging task for marketing managers, as managers have to take into account preference heterogeneity of potential consumers. Product line design approaches that are explicitly based on consumer preferences have proven their advantages compared to other design approaches. Nowadays, consumer preferences can be efficiently measured via conjoint-analytic approaches like conjoint choice analysis. The results of such conjoint studies, i.e., individual part-worth utility estimates, built the input for product line optimization tools.

In conjoint approaches, consumer preferences are determined for pre-specified attributes and attribute levels, and several factors affect the precise estimation of these preferences, e.g., the degree of preference heterogeneity. Predicted revenues for product offerings strongly depend on how good the true preference structure of consumer is recovered by the conjoint model, because estimated utility structures serve as an input for product line design tools which search for a promising or an optimal product line design solution. Companies should therefore be interested into the robustness of approaches used for optimal product line design. Here, both the underestimation and the overestimation of revenues is undesirable.

In a Monte Carlo study, we compare absolute differences between predicted revenues based from true part-worth utilities and predicted revenues based on (re-)estimated part-worth utilities. For the determination of revenues, we used the SMRT module of Sawtooth Software with the Genetic Algorithm as search method.

We compare different scenarios that vary in several experimental factors associated with the degree of the underlying preference heterogeneity. For all scenarios, optimal product lines are determined by using two different optimization approaches that differ in their consideration of the degree of preference heterogeneity. While the first approach combines the single best segment-specific product solutions to a product line, the second approach simultaneously determines an optimal product line for the entire market. The first approach is computationally faster than the second approach and primarily applied in practice.

We find that the recovery of true preferences measured by the correlation between true and re-estimated preference structures is significantly affected by the underlying degree of heterogeneity. The heterogeneity factors, e.g., separation between segments or inner-segment heterogeneity, show the same significant impact on the absolute difference between the product line revenues calculated from the true versus the re-estimated preferences in both optimization approaches. However, the simultaneous product line approach proved to be significantly more robust to biases in the input data, i.e., mis-specified part-worth utility estimates, and leads to more precise predictions of revenues. As a recommendation for companies, we suggest that marketing managers should rely on the more complex, i.e., computational more sophisticated, simultaneous optimization approach to obtain accurate predictions of product line revenues.

- Balakrishnan P.V., & Jacob, V.S. (1996). Genetic algorithms for product design. *Management Science*, 42, 1105-1117.
- Steiner, W., & Hruschka, H. (2002). Produktliniengestaltung mit Genetischen Algorithmen. *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung (ZfbF)*, 54(7), 575-601.

Metric and Scale Effects in Consumer Preferences for Environmental Benefits

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The present study investigates how the framing of information on the environmental impact of vehicles affects consumers' preferences for identical improvements in car quality. In particular, the effects of two metrics (fuel consumption vs. CO_2 emissions) and three scales of one metric (CO_2 in kg/km vs. g/km vs. g/100 km) are examined.

For a rational agent, the presentation of fuel consumption (FC) and CO_2 to assess personal fuel costs and the environmental impact of a car is redundant because each metric presents a "translation" of the same underlying information (Ungemach et al. 2017). First, from a technical perspective, FC and CO_2 emissions are linearly connected by a constant factor and are thus isomorphic in describing the environmental friendliness of a car. Second, rescaling identical information should not change consumer decisions. However, as this study demonstrates, the type of information presented to consumers significantly affects the valuation of fuel savings and environmental benefits from a reduction in FC versus CO_2.

The research goal relates to the broad literature on how the framing of information affects consumers' decisions (Tversky & Kahneman 1981). A number of empirical studies have demonstrated that contextual features associated with a decision affect consumers' preferences and choices, sometimes resulting in preference reversal (Thaler et al. 2013). The current study's contribution lies in quantifying the differences in consumers' preferences for two measures of the same information that have not been previously directly compared. Al-though consumers' preferences for a reduction in FC and CO_2 emissions of cars are extremely important in the context of environmental policies, no prior work has directly compared consumers' preferences for them. Prior research on revealed preferences has not been able to separately identify these effects because the metrics are perfectly correlated, and research on stated preferences has either focused on one of these environmentally important attributes or considered both measures simultaneously and thus did not disentangle the separate effects of each metric.

The present study recovers the distributions of consumer preferences for FC and CO_2 in-dependently based on consumer choices from optimally designed choice experiments and by applying a mixed (random coefficient) logit model. The estimation accounts for consumers' unobserved heterogeneity in tastes for car attributes in addition to the observed heterogeneity in the respondents' socio-demographic characteristics, car use experience, environmental attitudes, and knowledge.

The findings suggest that individuals fail to recognize how transport-related CO_2 emissions translate into 'private' costs and ultimately incur higher financial costs and cause greater environmental costs. The biases persist even when the environmentally friendly product is also cost-minimizing. The insights of this study serve to guide policymakers and car manufacturers on how to present information on car offers.

- Thaler, R.H., Sunstein, C.R. & Balz, J.P. (2013). Choice Architecture. *The Behavioral Foundations of Public Policy*, 428-439.
- Tversky, A., & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science*, 211(4481), 453-458.
- Ungemach, C., Camilleri, A.R., Johnson, E.J., Larrick, R.P., & Weber, E.U. (2017). Translated Attributes as Choice Architecture: Aligning Objectives and Choices Through Decision Signposts. *Management Science*, 64(5), 2445-2459.

Simultaneous Internal and External Reference-Price Response in Brand Choice Models

Ossama Elshiewy, University of Göttingen, Germany
Anne O. Peschel, Aarhus University, Denmark

Brand choice models with reference-price (RP) response have a long tradition in marketing and consumer research (Mazumdar et al. 2005). Research distinguishes between internal RP and external RP. For internal RP, consumers are assumed to compare price expectations developed from past purchases to current prices when making a choice (also referred to as memory-based RP). For external RP, consumers make choices by constructing a RP from the currently observed distribution of prices in the choice set (also referred to as stimulus-based RP). In most previous studies, a clear distinction was made between internal and external RP response in brand choice models (either based on model fit or by comparing both model results side by side). Some studies from the 1990s allowed both RP concepts simultaneously in one brand choice model. However, none of these studies did account for so-called asymmetric RP response which allows important behavioral response patterns (e.g. loss-aversion, see Kahneman & Tversky 1979). Consequently, a more realistic RP response with respect to internal and external RP may be missing in these early approaches from the 1990s. Other related previous studies allowed for asymmetric RP response and then proposed a data-driven profiling of consumers with respect to being either internal RP consumers or external RP consumers. These approaches do not allow consumers to employ both RP concepts in their brand choice behavior. Only one single previous study has simultaneously allowed asymmetric internal and external RP response in one brand choice model (Van Oest 2013); but the author did not fully account for heterogeneity across consumers in RP response (especially with respect to loss-aversion). There is general consensus that ignoring consumer heterogeneity in brand choice models with RP response leads to biased parameter estimates. Even more relevant than incomplete consumer heterogeneity is that Van Oest (2013) did not allow an interaction between the two RP concepts when analyzing the impact on brand choice. In addition, more recent advances have been particularly concerned to model purchase incidence in brand choice models to avoid calculating endogenous internal RP. This important feature of brand choice models has been neglected in all relevant previous research analyzing both RP concepts in one model. From this background, we propose a brand choice model applied to real purchase data that allows consumers to make choices based on both internal and external RP as well as an interaction between these two RP concepts. Following relevant advances, we account for asymmetric RP response, consumer heterogeneity, and purchase incidence. Results show that both response types are identified in one model and that losses from external RP interact with both gains and losses from internal RP. The contribution of our research is twofold: First, we improve the current practice in RP modeling by allowing for more realistic choice behavior. Second, the results from our model provide novel insights and contribute to the body of knowledge in RP research. This will ultimately contribute to the pricing literature and enable managers to optimize their pricing strategies.

- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-291.
- Mazumdar, T., Raj, S., & Sinha, I. (2005). Reference price research: Review and propositions. *Journal of Marketing*, 69(4), 84-102.
- Van Oest, R. (2013). Why are consumers less loss averse in internal than external reference prices? *Journal of Retailing*, 89(1), 62-71.

Examining Best-Worst Scaling's validity and reliability: Worth a try?

Benedikt Martin Brand, University of Bayreuth, Germany
Cristopher Siegfried Kopplin, University of Bayreuth, Germany

As surveys employing (Likert) scale items suffer from several shortcomings, such as difficulties in interpreting these rating score data, varying validity and reliability of items and constructs, and omitted reference domains for items, Finn and Louviere (1992) introduced the Best-Worst Scaling (BWS) attempting to overcome these. This comparably novel methodology was developed by Louviere and Woodworth in 1990 as an extension of Thurstone's paired comparison approach. As part of discrete choice modeling, respondents answering BWS surveys need to determine their best and worst item within a choice set over multiple rounds. Even though this rather nascent method provides a couple of advantages, such as acquiring additional information about the worst choice, providing distinct demarcation between similar items, enabling inter-attribute comparisons, solving biases inherent to rating scales, and overcoming cultural response biases (Auger et al., 2007), it also contains some limitations. Due to the design algorithm generating multiple BWS constellations according to common choice design criteria (frequency balance, level balance, orthogonality, positional balance) in combination with selecting two items per choice set, difficulties arise in assessing BWS' validity and reliability. Thus, many questions about BWS' validity and reliability remain unanswered (Mi et al., 2019). Besides, applying BWS in its initial composition only reveals the utilities of items relative to each other. Consequently, items' absolute importance or effectiveness cannot be derived. Therefore, we contribute to current research by overcoming the before-mentioned limitations of BWS and by examining BWS' validity and reliability employing multiple criteria based on an empirical example. Hence, we analyze BWS' internal and external validity, focusing on hit rates, mean absolute error and root mean square error, its internal reliability in the form of test-retest reliability, and apply cross-validation using ranking tasks. Moreover, we evince possibilities for anchor scaling to reveal not only relative utilities but also absolute evaluation. Based on an empirical example dealing with effective measures to reduce product returns and thereby decline the related negative environmental impact, consumers (n=288) were asked to evaluate 13 items. Results yielded high hit rates, very low mean absolute errors and root mean square errors, verifying BWS' high internal validity. Moreover, criteria scrutinizing internal reliability demonstrate a high consistency, especially for chosen worst items. Regarding predictive validity, the BWS choices were forecasted moderately precise based on random subsample draws and with a varying amount of respondents used for test vs. training data categorization. Here, the selected best items were predicted more often correct compared with the worst items.

- Auger, P., Devinney, T.M., & Louviere, J.J. (2007). Using best–worst scaling methodology to investigate consumer ethical beliefs across countries. *Journal of Business Ethics*, 70(3), 299-326.

- Finn, A., & Louviere, J.J. (1992). Determining the appropriate response to evidence of public concern: The case of food safety. *Journal of Public Policy & Marketing,* 11(2), 12-25.

- Mi, X., Tang, M., Liao, H., Shen, W. & Lev, B. (2019). The state-of-the-art survey on integrations and applications of the best worst method in decision making: Why, what, what for and what's next? *Omega,* 87, 205-225.

Predictive Validity in Choice-Based Conjoint Analysis: Adaptive Designs or Incentive Alignment?

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Marcel Lichters, Otto-von-Guericke-University Magdeburg, Germany
Daniel Guhl, Humboldt University Berlin, Germany
Bodo Vogt, Otto-von-Guericke-University Magdeburg, Germany

Choice-based conjoint (CBC) analysis represents one of the most widely applied preference measurement techniques in both academia and practice. Focusing on CBC's data acquisition procedure, the present study refers to two principles previously established to improve CBC's predictive validity: Incentive alignment (e.g., Ding et al., 2005) and adaptive designs, specifically adaptive choice-based conjoint (ACBC) analysis according to Sawtooth Software (Johnson & Orme, 2007). While incentive-alignment has been proven to encourage consumers to respond deliberately and truthfully, ACBC has shown to increase CBC's capability to learn about consumer preferences. Separate research strands demonstrate that both principles by themselves improve CBC's predictive validity (Huang & Luo, 2016). However, a more integrative view lacks so far. The present study is the first to compare both principles' predictive validity and to test whether combining both in an incentive-aligned ACBC achieves superior results. Each of the three experiments incorporates a new mechanism to incentive-align ACBC. Study 1 and 2 also include hypothetical ACBC, and incentive-aligned CBC conditions. Study 3 additionally implements a hypothetical CBC condition. Across all studies, results indicate that both principles (incentive-alignment and adaptive designs) have their merits with regard to increasing predictive validity of CBC. This holds for in-sample validation (e.g., hit rates, mean hit probabilities) and also for predictions to an independent hold-out sample. Most interestingly, our results indicate incentive-aligned ACBC to achieve a significantly better predictive validity than both principles in isolation. Besides, when applied in isolation, incentive alignment and adaptive designs achieve comparable results. Finally, as a side-finding, our results confirm previous accounts regarding an improvement of ACBC's predictive validity stemming from its (optional) fourth Calibration stage. Although incentive-aligned ACBC reaches superior predictive validity, its application bears the highest costs in market research practice. For this reason, we sought to analyze the methods' performance-to-cost ratio to elicit their cost-effectiveness. We asked two German market research institutes that regularly handle conjoint studies to evaluate our studies monetarily. Considering the three studies and hypothetical CBC as the cost base (= 100%), the companies estimated an average extra charge of 15% for incentive-aligned CBC, 23% for hypothetical ACBC, and 39% for incentive-aligned ACBC. ACBC's main cost drivers thereby covered additional expenditure for management, programming, analysis, and longer interview times. Nonetheless, despite higher total costs for ACBC, both hypothetical and incentive-aligned ACBC are recommendable for application, because of their superior performance-to-cost-ratio. Specifically, the average cost per 1% increase in prediction hit rate above chance level is about €527 for hypothetical CBC, €297 for incentive-aligned CBC, but only €181 (€257) for incentive-aligned (hypothetical) ACBC. Overall, our results encourage rethinking the use of conjoint methodology in favor of incentive-aligned ACBC.

- Ding, M., Grewal, R., & Liechty, J.C. (2005). Incentive-aligned conjoint analysis. Journal of Marketing Research, 42(1), 67-82.
- Huang, D., & Luo, L. (2016). Consumer Preference Elicitation of Complex Products Using Fuzzy Support Vector Machine Active Learning. Marketing Science, 35(3), 445-464.
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