A new approach to measure preferences of users in built environments

Citation for published version (APA):

Document status and date:
Published: 01/01/2017

Document Version:
Publisher’s PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:
• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher’s website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication
The measurement of user preferences has received much attention in consumer research in areas such as housing, retailing, recreation and transportation. A method that is widely used to estimate preference values of attributes of locations, products or services is conjoint analysis. Measuring the preferences quantitatively the method allows real-estate suppliers to determine the relative importance of attributes for meeting the demand of users. As an exploratory tool, however, it has limitations, as the attributes included in choice experiments need to be pre-defined and must be limited in number. Therefore, a complementary stream of research has focused on cognitive mapping methods to elicit consumers’ considerations of attributes and benefits in choice situations.

Arentze et al. (2008) and Dellaert et al. (2008) proposed a cognitive mapping method for revealing consumers’ mental representations of a choice problem in complex decisions. The so-called CNET method has similarities with means-end analysis. The cognitive mapping method does not impose restrictions on the number of attributes that can be included in the analysis. Furthermore, just as means-end analysis, it has the advantage of also revealing the benefits (reasons) underlying attribute considerations. On the other hand, it does not allow quantification of preference values and, hence, assessment of relative importance users associate to the attributes involved, as conjoint analysis does.

To combine the specific strengths of the two methods (conjoint analysis and cognitive mapping), in the present paper, we propose a new approach. The approach builds on the theory underlying the CNET model which states that cognitive links between alternatives and attributes and between attributes and benefits are more likely to be activated in a consumer’s mental representation if the expected gains of taking into account these links in terms of achieving better choice outcomes are higher (Arentze et al. 2015). In this paper we derive how this model can be used to determine the utility of attributes directly from mental representations and extend the model to complex decisions with multiple decision dimensions. In this way, the new method allows taking large sets of attributes into account and at the same time offers quantitative measurement of preferences. We illustrate the approach using data on 594 individuals’ means–end chain responses for a hypothetical shopping location decision problem.

KEYWORDS: Preference measurement, Shopping location choice, Cognitive mapping, Random-utility-maximization models