

# **The Construct of Sports Stadium Atmosphere – Development and Validation of a MIMIC Measurement Model**

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## **Abstract**

### Research Question/Aim of Paper

Experiencing the special atmosphere of a sports event is regarded in sports marketing literature as one of the pivotal value-creating elements in live sport consumption (e.g. Beyer 2006, Höck & Ringle 2007, Holt 1995, Wakefield & Blodgett 1999, Westerbeek & Shilbury 1999) and is also a success factor for the commercialisation of team sports leagues in the media (Woratschek et al. 2006). Though, the bulk of previous research into the phenomenon of atmosphere as well as its influence on internal responses and external behaviors of consumers has almost exclusively been carried out in the context of retail stores or shopping malls (Turley & Milliman 2000). This research study aims at developing and validating a measurement model for the construct of Sports Stadium Atmosphere in the team sport context and applies a MIMIC-Model specification, which allows measuring the construct with formative and reflective indicators simultaneously.

### Theoretical Background

This study is theoretically grounded in emotion-oriented models from environmental psychology. In particular the behavioural model by Mehrabian and Russell (1974), Berlyne's (1960, 1971) theory of environmental aesthetics as well as Russell's and Pratt's (1980) model of the affective quality of environments are applied to develop the construct of Sports Stadium Atmosphere. The central idea of these theories is that the stimulus volume in a particular environment elicits specific affective responses of the people within the environment. This linkage between environmental stimuli (as causes) and a person's affective responses (as effects) constitutes the conceptual content of the concept of atmosphere. The definition and conceptualization of the construct also draws on findings from aesthetic theory (Böhme 1995, Tellenbach 1968) and recent empirical findings from consumer behaviour research.

### Research Design, Methodology and Data Analysis

Four qualitative pre-tests were carried out to generate formative and reflective indicators which were then used to specify the suggested MIMIC measurement model of Sports Stadium Atmosphere. Eventually, the MIMIC-Model consisted of 22

indicators, of which 15 were modelled as formative indicators causing the construct and 7 as reflective indicators representing the consequences of the construct. The formative indicators cover various sport event-specific environmental stimuli generated by the spectators, the organizer, the architecture of the stadium and the game action. The reflective indicators on the other hand represent feelings of high arousal and pleasure, which are typical affective responses of the spectators in a stadium according to the results of the pre-tests. Subsequently, quantitative data were collected among the spectators (N=1211) of a German second-division soccer team by means of a standardised questionnaire. Based on the collected data the model was validated using covariance (AMOS) and variance (PLS) structural equation modelling techniques. Comprehensive analyses were conducted assessing the reliability and the content, discriminant and convergence validity of the reflective part as well as the content validity, the indicator relevance and the degree of multicollinearity of the formative part of the model. Finally, the overall model was tested in respect to its nomological validity investigating the relationship to the constructs of Spectator Satisfaction and Positive Word-of-Mouth.

## Results, Discussion and Implications

The results of the validation analyses indicate high validity for both the reflective and formative part of the MIMIC-Model. Moreover, the reflective part demonstrated a high degree of indicator and construct reliability. A structural test of the overall model's external validity in a nomological network of the constructs Sports Stadium Atmosphere, Spectator Satisfaction and Positive Word-of-Mouth revealed high nomological validity of the measurement model.

With the development of a measurement model this research provides a fundamental precondition for future empirical studies investigating the phenomenon of atmosphere in the sporting context. Although, this study is concerned with the basic scientific problem of theory building and model development various recommendations for practitioners in the field of sport management can be derived from the results. The use of formative indicators revealed the most important drivers of a good stadium atmosphere. Permanent chants, acoustics like in a closed hall, an inciting stadium speaker and the immediate proximity of bleachers and grand stands to the playing ground turned out to be the most significant factors of a preferential sports stadium atmosphere. With these and other factors the atmosphere in a sports stadium can either directly or indirectly be manipulated by the stadium managers according to the spectators' preferences.

## References

- References Berlyne, D.E. (1960). Conflict, arousal and curiosity. New York: McGraw-Hill.
- Berlyne, D.E. (1971). Aesthetics and psychobiology. New York: Appleton-Century-Crofts.

- Beyer, T. (2006). Determinanten der Sportrezeption. Erklärungsmodell und kausalanalytische Validierung am Beispiel der Fußballbundesliga. Wiesbaden: Deutscher Universitäts-Verlag.
- Böhme, G. (1995). Atmosphäre. Essays zur neuen Ästhetik. Frankfurt am Main: Suhrkamp.
- Höck, C., & Ringle, C. M. (2007). Analyse der Zufriedenheit von Besuchern moderner Multi-funktionsarenen. *Marketing – Zeitschrift für Forschung und Praxis*, 29 (3), 181-193.
- Holt, D.B. (1995). How consumers consume: A typology of consumption practices. *Journal of Consumer Research*, 22 (June), 1-16.
- Mehrabian, A., & Russell, J.A. (1974). An approach to environmental psychology. Cambridge: MA: M.I.T. Press.
- Russell, J., & Pratt, G. (1980). A description of the affective quality attributed to environments. *Journal of Personality and Social Psychology*, 38 (3), 311-322.
- Tellenbach, H. (1968). Geschmack und Atmosphäre, Salzburg: Otto Müller Verlag.
- Turley, L.W., & Milliman, R.E. (2000). Atmospheric effects on shopping behavior: A review of the experimental evidence. *Journal of Business Research*, 49 (2), 193-211.
- Wakefield, K.L., & Blodgett, J.G. (1999). Customer response to intangible and tangible service factors. *Psychology & Marketing*, 16 (1), S. 51-68.
- Westerbeek, H.M., & Shilbury, D. (1999). Increasing the focus on "place" in the marketing mix for facility dependent sport services. *Sport Management Review*, 2, 1-23.
- Woratschek, H., Schafmeister, G., & Hoeneß, B. (2006). How can revenues be increased by selling sport broadcasting rights abroad? New insights from the managerial perspective. *Proceedings of the 14th EASM European Sport Management Congress*, September 2006, Nikosia, 224-226.