

# Unlocking Shelf Performance Potential in Stationary Retail Using Artificial Intelligence: Learning from Digital Shelf Twin Data

**Luisa Roggenkämper**

Justus Liebig University Giessen

**Sven Feurer**

Bern University of Applied Sciences

**Monika Schuhmacher**

Justus-Liebig-University Gießen

Cite as:

Roggenkämper Luisa, Feurer Sven, Schuhmacher Monika (2023), Unlocking Shelf Performance Potential in Stationary Retail Using Artificial Intelligence: Learning from Digital Shelf Twin Data. *Proceedings of the European Marketing Academy*, 52nd, (114472)

Paper from the 52nd Annual EMAC Conference, Odense/Denmark, May 23-26, 2023



# Unlocking Shelf Performance Potential in Stationary Retail Using Artificial Intelligence: Learning from Digital Shelf Twin Data

## **Abstract**

Finding the optimal shelf design is a constant problem for stationary retailers. Valuable, prior research focuses on single or few placement dimensions in controlled settings, thereby neglecting the complexity of real-life settings. Further, linking planograms to performance data is potentially biased due to low planogram compliance in retail stores. We set out to overcome these limitations by using digital shelf twin data of a brick-and-mortar retailer containing ca. 15,000 actual product positions and by using machine learning to forecast purchases. Random forest classifier achieves the best performance, predicting binary (yes vs. no) purchases of products to an AUC of 0.77. Feature engineering reveals the relative importance of placement characteristics, indicating that vertical product positions and the number of shelf bay in which a product is placed within a section have the highest impact. Implications for managers and researchers are discussed.

**Subject Areas:** *Marketing-Mix Effectiveness, Marketing Planning and Implementation, Retailing*

**Track:** Methods, Modelling & Marketing Analytics