

## Implementation of the concept of sustainable development in food retail: latent semantic analysis of SMM communication

The conceptual framework in the marketing field is evolving in ways that can help to develop research that improves individual, organizational, societal, and bioenvironmental well-being [Infusing Ecological Value into Academic Marketing Research (van Heerde et al. 2021)]. Companies are embedding sustainable development goals into strategies, turning to sustainability marketing. Despite the growth of responsible production, sustainability requires increasing consciousness among consumers and ideally deconsumption [Furchheim et al., 2020]. Retailers proved to be important mind makers for customer behavior transformation for more responsible production and consumption. The current work is motivated by the need for a comprehensive analysis of retailer's sustainability communication as an important driver for consumer behavior change for sustainability.

Natural language processing methods are applied for analyzing the six largest Russian (holding about 30 % of the market) retailer's social media marketing (SMM). We have chosen the social network "Vkontakte", as the most active within the analyzed period. Our dataset consists of Russian language SMM posts for 7 (seven) years from 1 January 2015 till December 2021. There are 12836 posts in the dataset with 29079 unique words. Latent semantic analysis (LSA) based on Latent Dirichlet allocation (LDA) method was applied for topic mining for clustering the main issues and extraction of sustainability-related topics within SMM communication.

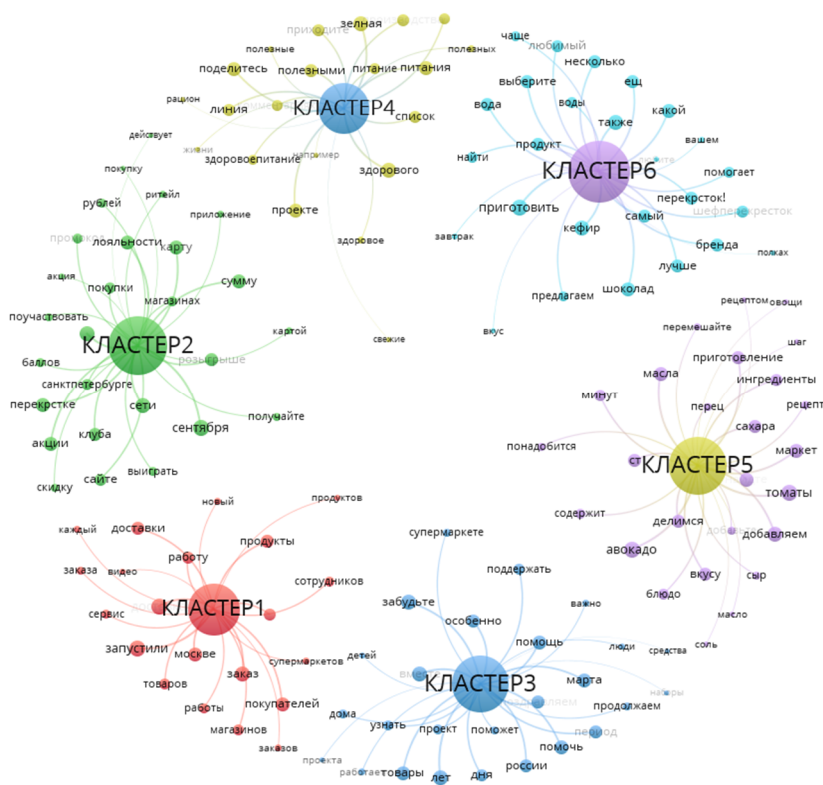


Figure 1. Key words and topics of SMM communications in food retail 2015-2021.

The database of the retailer's SMM posts was preprocessed for LDA modeling. The major preprocessing tasks include lemmatization (generate the root form of the inflected words); tokenization (chopping of meaningful text up into pieces, called tokens); removing stop words from the text corpus (the corpus (e.g. "and", "or", "who")) and high- and low-frequency words; feature extraction based on the term frequency-inverse document

frequency (TFIDF) method. Using LDA, we identified 7 general topics from SMM communication. For each topic, we reported the 10 words with the highest frequency. After attributes were extracted, we manually assigned suitable names for them after reading and understanding the high-frequency words therein.

Further, research focused on sustainability-related SMM communication, regarding the triple bottom line: ecology, society, economy. Text processing has revealed sustainability-related topics in marketing communication: Good Health and Well-being (goal 3), Responsible Consumption and Production (goal 12), Sustainable Cities and Communities (goal 11).

The study advances the stream of current research on sustainability marketing focusing on retail making several thoughtful contributions.

First, the topic modeling based on LDA allowed to structure retailer's communication. Basically LDA has extracted 7 key topics within retailer's smm communication: promos, loyalty programs, online delivery, recipes, healthy food, charity and social activities.

Second, the LDA application has discovered the following sustainable development goals in retail's communication: Good Health and Well-being (goal 3), Sustainable Cities and Communities (goal 11), Responsible Consumption and Production (goal 12), Partnerships (goal 17).

Importantly, the 7-years period data analyze the smm communication agenda in dynamic, tracing changes. The research shows annual growing number of sustainability-related topics and increase of engagement rates from consumers. However, structure analysis has shown dominance of economic-related topics that prevailed over social-related topics. Meanwhile, environmental-related topics are the less mentioned/ discussed in retailer's communication compared to economic and social issues. Conversely, according to the model by Giddings (2002) the environmental issues should dominate, science environment is the ground for sustainable social and economic development.

Significantly, the research revealed the gap in sustainability communication of retailers on different internet platforms. Specifically, this information on sustainability-related activities of retailers is published on the professional web sites and news platforms, but may miss in social networks. Therefore we assume that currently the sustainability-related activities of retailers are dominantly oriented on investors. Consequently, according to the "greenness matrix" (Simula, 2009) there is a missed-opportunity. Particularly, customers are not aware of actual sustainability of retailer. Thus, there is opportunity to move away from promo-based competitive advantage by increasing sustainability-related communication in social networks. That could improve customer relationships development, increasing customer concern and loyalty.