

# Mapping the digital disruption landscape: a bibliometric analysis unveiling trends and patterns in the era of technological transformation

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## Abstract

The widespread adoption of digitalized systems has characterized the development of several research areas, including the framework of sustainability. This paper aims to analyze the digital disruption in sustainable development through a quantitative analysis of scientific literature spanning from 1995 to 2023, focusing on two research directions: 1) detecting recursive semantic structures to classify the literature based on common lexical features; and 2) discovering distinctive thematic patterns over time. Natural language processing and social network analysis were integrated and performed, and in the context of discussion of the limits and potentiality of topic modeling, we propose a comparison between a hierarchical probabilistic model (latent Dirichlet allocation) and a generative model in embedding spaces. The results showed a significant difference in effectiveness and performance, and in detecting semantic areas of domains, where environment, business, and smart cities are recursive elements between two models.

**Keywords:** sustainability, latent Dirichlet allocation, word embedding, embedded topic model, performance