

AI IN FASHION INDUSTRY

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ABSTRACT

Fashion is a fabulous industry. It is perceived with glamour, vibrance, beauty, money, fame and massive profits from the outside. However, from the inside, it is a wounded industry. An industry with a size of 3 billion USD, 150 billion units of products per year, and annual growth of 3–4% CAGR, the fashion industry is characterized by low shelf-life products, wrong forecasts, low inventory turnovers, frequent discounts, low realized margins and operating profits, and ever-increasing competition. Best of the fashion retailers make operating profits of 10–12%, making it extremely difficult for most fashion businesses to sustain. An investigation into the existing literature enabled us to conclude that most of the fashion industry's challenges point out wrong forecasts. On the periphery, technology is rapidly invading fashion industry with the most emerging forms such as Artificial Intelligence, Machine Learning, Deep Learning, Artificial Neural Networks, Human-Robot Interface and a list of others, already making their way into this industry in recent years. The field of fashion forecasting in light of data-driven intelligence does not remain untouched by these new developments in the practitioners' world; however, very little has been documented in this area's academic literature.

In this piece of work, we address some of these issues. We start with an exhaustive literature review in the fashion industry and narrow it down to the fashion forecasting industry. We discuss some recent works in fashion forecasting, thereby developing a 'framework of AI-based fashion forecasting' and empirically validate the framework with a qualitative case study of the world's first fashion intelligence company based in Bengaluru, India. We observe that the internet and particularly social media have a lot to offer in terms of data and especially photographs or images of consumers that carry information on what they wear. We attempt to study the relationship between fashion and social media engagement of fashion consumers and reveal that 'fashion identity' is the connecting element between fashion motivations and social media motivations. We create a 'conceptual model of fashion identity' from existing

literature to answer one of our research questions, ‘Why Social-media-based information can reveal fashion forecasts?’. From here, we create a ‘framework of short-range fashion forecasting’ and argue on how internet may assist in fashion forecasting. Subsequently, we move to our primary objective to create a ‘conceptual framework of fashion e-forecasting’. As the name suggests, this framework may create forecasts based on data from social media, e-commerce, and other web data. After conceptually developing this framework based on previous frameworks present in this area and available literature, we validate this empirically through a case study. The case study chosen for this purpose addresses forecasting based business problem of a family owned fashion retail business. We collect data in the form of photographs of consumers on their social media pages using a popular and emerging research method called ‘Netnography’ and convert this into attributes and labels using numeric binary coding. A total of 176 photographs were picked from 634 interested participants for further study. Using hierarchical clustering followed by k-means clustering on software SPSS, 7 clusters or popular combinations of attributes and labels were retrieved, giving rise to 20 popular styles of the chosen product that consumers are wearing now. We finally made illustrations of these 20 popular styles as an output of the research. The case study validates our hypothesis that fashion forecasting or ‘nowcasting’ in the present context may be done by using data from the internet.

The present study is unique in multiple ways. First, it suggests a novel method of fashion product development in the light of data-driven intelligence; second, it documents some of the rapid developments in the field with the onset of technology. It also addresses some of the fundamental questions that are becoming more relevant in the recent years.