Artificial intelligence in the fashion industry

Artificial Intelligence (AI) technology is changing the retail landscape. Generative AI is being used to produce creative outputs; tasks that have traditionally been considered exclusive to humans. In particular, generative adversarial networks (GANs), an Artificial Intelligence technology, powerful machine learning models that can generate realistic images, videos, and voice outputs, are successfully performing creative tasks previously unique to humans. In retail fashion, where products are designed to meet both the aesthetic and hedonic needs of the consumer and speed and novelty are important, GANs offer a cost-effective means of generating new product designs.

Research being carried out by Ohbyung Kwon, Professor of Management Information System at Kyung Hee University, involves examining consumers’ evaluations of fashion products designed using generative adversarial networks (GANs), an Artificial Intelligence (AI) technology. They analyse consumers’ buying behaviour and offer practical advice for businesses that are considering using GANs to develop products for the retail fashion market.

They hypothesise that consumption values positively affect purchase intentions and test the hypotheses that the use of GAN technology affects the relationship between each of the four consumption values (functional, social, emotional and epistemic) and the consumers’ purchase intentions.

When participants were unaware that AI technology had been used, they tended to perceive GAN-generated images as more novel than the original ones. They also viewed top designs based on GAN-generated images more novel than the original ones. Participants in the second group viewed and evaluated top designs based on a non-GAN-generated image. Participants in the third group viewed and evaluated top designs based on a non-GAN-generated image. Participants in the third group viewed and evaluated top designs based on a non-GAN-generated image. Participants in the third group viewed and evaluated top designs based on a non-GAN-generated image.

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WILLINGNESS TO PAY

Another important factor which can predict the perceived value of products and consumer needs is willingness to pay. This can also explain consumers’ buying behaviour in that it reflects the perceived quality of the product. The researchers also hypothesise that willingness to pay positively affects purchase intentions and test the hypotheses that the use of GAN technology affects the relationship between functional, social, emotional and epistemic values and the consumers’ willingness to pay.

AI TECHNOLOGY

With regards to their awareness of AI, consumers fall into three categories: laggards, aficionados and realists. Most consumers are realists who are aware of both the benefits and risks of AI technology. The laggards believe that AI technology carries high level of risks and low level of benefits, while the aficionados perceive high level of benefits and low level of risks with AI. Rapid advances in AI technology enable new consumer experiences and therefore affect consumption values. AI technology is being applied to the retail fashion industry in order to improve consumption experiences. Consequently, the researchers want to identify the effect of AI technology. Subjects are grouped according to their exposure to non-GAN technology, GAN with disclosure and GAN without disclosure, so that the researchers can test the hypotheses that there are differences among the three groups and each of the four consumer values.

EXPERIMENTAL METHODS AND PROCEDURE

The team around Prof Kwon and Dr Sung developed sample products in the form of GAN-generated and non-GAN-generated images of long-sleeved t-shirts as experimental stimuli. There were four different top designs in the style of artistic works of van Gogh, Monet, Jeong-seon and Ukiyo-e.

An online advert resulted in 163 participants between 20 and 39 taking part in the experiment. Each participant was assigned to one of three groups: non-GAN, GAN without disclosure and GAN with disclosure.

Participants were directed to visit a website and uploaded one of several images of the long-sleeved t-shirts and evaluated it. Those in the first group viewed and evaluated top designs based on a non-GAN-generated image. Participants in the second group viewed top designs based on GAN-generated images but were not told that the designs were generated using AI. Those in the third group also viewed top designs based on GAN-generated images and this information was disclosed to them. The participants were asked to compare the uploaded designs with a design on the original image. Interestingly, most members of the GAN without disclosure group asked if they could actually purchase the tops.

RESULTS

Statistical analysis of the results revealed the influence of each consumption value dimension on the participants’ willingness to pay. Functional consumption values affect purchase intentions for retail fashion products. Differences in the effects of consumption values on consumers’ responses were uncovered, revealing the effects of AI technology. The results demonstrate that when GAN technology is used, functional, social and epistemic consumption values affect willingness to pay. Furthermore, when GAN technology is not used, social and epistemic consumption values affect purchase intentions. When participants were unaware that generative AI technology had been used, they tended to perceive the GAN-generated images as more novel than the original images.
Fashion design is a task that has traditionally been considered exclusive to humans. Now, AI is capable of producing creative outputs.

This study proposes practical advice to businesses that are considering using GANs to develop products for the retail fashion market. Over time and that AI is socially desirable among 20- to 39-year-olds.

**PRACTICAL IMPLICATIONS**

This study evaluates the utility of GANs from consumers’ perspective and proposes practical advice to businesses that are considering using GANs to develop products for the retail fashion market. To date, little research has been carried out on the impact of GAN-designed fashion products and consumers’ buying behaviour in a retail context. This research offers practical implications for the application of AI in the fashion industry and GANs in particular. The researchers have demonstrated that consumers value GAN-generated product designs more than products designs using traditional methods. They have also shown that emotional value ranks highest among the consumption values, and therefore promote the use of GANs in generating customised designs.

While research has demonstrated that the negative effects of AI aversion on social value can be more noticeable when it comes to product design, this study has established that social value improves when the consumer is made aware of the use of GAN technology. The researchers recommend that companies emphasise the use of state-of-the-art technology and give consumers time to recognise the value of GAN-generated products, highlighting that “rather than replacing humans, AI fosters collaboration.”

**References**


Gukwon Koo is a Master student at the School of Management, Kyung Hee University, Seoul, Republic of Korea.

Gukwon Koo is Professor of Management Information System at the School of Management, Kyung Hee University, Seoul, Republic of Korea.

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