Optimising Apparel Digital Production in Industrial Clusters

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Abstract : Fashion stakeholders are becoming increasingly aware of technological innovation in manufacturing. In 2020, the COVID-19 pandemic caused transformations in working patterns, such as working remotely rather thancommuting. To enable smooth remote working, 3D fashion design software is being adoptedas the latest trend in design and production. The majority of fashion designers, however, are still resistantto this change. Previous studies on 3D fashion design software solely highlighted the beneficial and detrimental factors of adopting design innovations. They lacked research on the relationship between resistance factors and the adoption of innovation. These studies also fell short of exploringthe perspectives of users of these innovations. This paper aims to investigate the key drivers and barriers of employing 3D fashion design software as wellas to explore the challenges faced by designers.It also toucheson the governmental support for digital manufacturing in Seoul, South Korea, and London, the United Kingdom. By conceptualising local support, this study aims to provide a new path for industrial clusters to optimise digital apparel manufacturing. The study uses a mixture of quantitative and qualitative approaches. Initially, it reflects a survey of 350 samples, fashion designers, on innovation resistance factors of 3D fashion design software and the effectiveness of local support. In-depth interviews with 30 participants provide a better understanding of designers' aspects of the benefits and obstacles of employing 3D fashion design software. The key findings of this research are the main barriers to employing 3D fashion design software in fashion production. The cultural characteristics and interviews resultsare used to interpret the survey results. The findings of quantitative data examine the main resistance factors to adopting design innovations. The dominant obstacles are: the cost of software and its complexity; lack of customers' interest in innovation; lack of qualified personnel, and lack of knowledge. The main difference between Seoul and London is the attitudes towards government support. Compared to the UK's fashion designers, South Korean designers emphasise that government support is highly relevant to employing 3D fashion design software. The top-down and bottom-up policy implementation approach distinguishes the perception of government support. Compared to top-down policy approaches in South Korea, British fashion designers based on employing bottom-up approaches are reluctant to receive government support. The findings of this research will contribute to generating solutions for local government and the optimisation of use of 3D fashion design software in fashion industrial clusters.

Keywords : digital apparel production, industrial clusters, innovation resistance, 3D fashion design software, manufacturing, innovation, technology, digital manufacturing, innovative fashion design process

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