

Virtual Reality and Augmented Reality Enabled New Product Development Process Model for Performance Apparel

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Consumer demands for performance apparel are constantly changing with the dynamic needs of life styles. Criticality of such demands and the determinants of efficiency, have driven considerations for mass customized products within sustainability boundaries of performance clothing manufacturing. Currently, relevant industries benefit from advanced digital technology applications; and in essence, virtual and augmented reality have gained popularity in apparel as they fuse the physical world with the virtual world. Within this context, this study sought to develop an empirical, new product development (NPD) process model, enabled with Virtual Reality (VR) and Augmented Reality (AR) to support, simplify, and reduce cycle times of processes to boost efficiency in the global apparel business. Data collection was based on 22 indepth interviews from industry experts and academics in the field. The interviews were conducted in both Sri Lanka and United Kingdom; and critically analysed qualitatively. Findings resulted in the development of the NPD process model which permitted visualisation of diverse NPD functional stages and information flow between value chain partners in the apparel value stream. Main advantages of such VR and AR in NPD are, 1) personalized customer needs through interactive platforms; 2) advancement of the decision-making process based on visualized environments; 3) optimisation of resource utilization by reducing number of physical prototypes. It is contended that VR and AR technologies will enable diversified product ideas into feasible product outcomes while assuring the sustainable growth in the business. This empirical model is an outcome of iterative process modelling, based on qualitative interviews and current literature. Subsequently, this process model will be a comprehensive guide for software developers to create relevant simulators to augment any NPD processes in performance clothing manufacturing and similar commodities in future.

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