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Developing a Modular Architecture of Apparel Product

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Abstract : Apparel products (or apparel) with the sense of aesthetics, usability (ergonomics) and function are fundamental and varied in people's daily life. The numerous apparel thus produced by apparel industry, have been triggered many issues, such as the waste of sources and the environmental pollutions. In this study, a hybrid architecture called modular architecture of apparel (MAA) has been proposed to deal with the variety of apparel, and thus to overcome the aforementioned issues. Generally, the establishment of MAA takes advantage of the modular design of a general product that a product is assembled with many modules through their modular interface connector. The development of MAA is to first analyze the structure of apparel in terms of the necessity to form an apparel and the aesthetics, ergonomics, and function of apparel; then to divide apparel into many segments (or module in product design) based on the structure of apparel; to develop modular interfaces and modular interface connectors in terms of the features of apparel's modules. It is noted that in the general product design, modules of a product are only about the function and ergonomics, but in MAA, the module of aesthetics is developed. Further, an apparel design with employing the MAA is carried out to validate its usefulness and efficiency. There are three contributions out of this study, the first is to overcome the aforementioned issues (i.e. waste of source and environmental pollutions); the second is the improvement of the modular design for product by considering aesthetics; the third is to add the value in realizing the personalized mass production of apparel in the near future.

Keywords : apparel, architecture, modular design, segment
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