UPLIFT CIRCULAR FASHION BUSINESS THROUGH APPLICATION OF VIRTUAL PROTOTYPING FOR REFASHIONING

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Degree of Master of Science

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Dissertation submitted in partial fulfillment of the requirements for the degree Master of Science in Textile and Clothing Management

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DECLARATION

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ABSTRACT

As a dynamic industry in the globe, the fashion industry is still growing with constantly changing trends. Even though the apparel industry is transforming with new technology and innovation, the limitations in waste management systems and traditional take – make – waste linear business models accumulate higher level of waste every day. Therefore, the industry demands more circular initiatives such as upcycling (redesign and refashion); green and clean lifecycles of products; timeless designs; Product Service Systems (PSS) such as rent lease, swap, secondhand/ vintage clothing; on demand production under circular fashion business models. Circular fashion concept is one of the key aspects in the circular economy, which aims to minimize the waste and optimize the resources. Though the published literature profusely discussed the sustainable fashion, there is still a gap between how theory applies into practice. On the other hand, digital technologies (mostly CAD technologies) are emerging to enable strategic adoptions into the apparel industry such as on demand manufacturing, mass customization and virtualization; which controls unnecessary productions, thus waste. Therefore, the aim of this research was to explore digital technology applications (CAD and Blockchain technology) to establish a new venture in circular fashion business. Accordingly, the study tested the viability of utilizing 2D/3D CAD technologies in proposed circular fashion business approach. In particular, it focused on the capabilities of aforementioned digital technologies for a novel business model for circular fashion, focusing refashioning second-hand clothing. Importantly, 2D/3D CAD technologies were utilized in re-fashioning the second-hand clothes while the Blockchain technology was suggested to establish the traceability and as a networking tool for the supply chain in proposed circular fashion business. Subsequently, this business model was developed with the contribution of industry (CAD and fashion design) experts. As a result, this study extends the existing circular fashion business model with a novel approach of digital technologies and tested CAD applications. This proposed model suggests longevity of product lifespan by encouraging the refashioning second-hand clothing as an upcycling option through CAD and relevant digital technology.

Key words: CAD, Circular Business Models, Circular Fashion, Refashioning, SHC, Virtualization.

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LIST OF ABBREVIATIONS

AR – Augmented Reality

BMG – Business Model Generation

BMI – Business Model Innovation

CAD – Computer Aided Design

CAM – Computer Aided Manufacturing

CE – Circular Economy

CF – Circular Fashion

DIY – Do It Yourself

DLT – Distributed Ledger Technology

DOI – Digital Object Identifier

EF Renew – Eileen Fisher Renew Programme

IOT – Internet Of Things

PAAS – Product-As-A-Service

PDS – Pattern Design Systems

PSS – Product Service Systems

RAAS – Retail-As-A-Service

SHC – Second Handed Clothing

VR – Virtual Reality

WRAP - Waste & Resources Action Program