AI Digitalization And Automation Of The Apparel Industry And The Human Workforce Skills

Anuthara Gangoda, Kelly Cobb, University of Delaware, USA
Sarah Krasley, Shimmy Technologies, New York, USA

Introduction: As the technological pace of change in the apparel industry gains momentum, organizations across the apparel industry are facing a rapidly changing context for skills training and the development of the workforce. For the fashion and apparel industry, AI digitalization, while challenging, offers a tremendous opportunity. With the emergence of big data, fashion and apparel companies are faced with a new relationship between consumers, suppliers, competitors, and labor. It is vital for companies to enhance these data flows and relationships to optimize their production processes and decision making. Fashion and apparel companies do not widely use artificial intelligence (AI) techniques as the scope of these methods is still unknown with acute research, the implementation and set-up of AI algorithms on real data are too complicated. The benefits of AI cannot be identified due to the lack of relevant business models and research. As well, the lack of workforce with the right skills to implement new AI processes (Thomassey and Zeng, 2018; Nattrass and Seekings, 2018). As the industry approaches the next industrial revolution, apparel businesses need to ensure that their workforces have the right technical skills in order to remain relevant and fit for the future, particularly as the current workforce ages (Alvanon, 2018). As a result, the apparel workforce is expected to continuously evolve faster, close the knowledge gaps to meet the needs of the changing marketplace. Training is happening within companies, but it is not enough to keep up with the lack of skilled workers, and it is reported that there are high dissatisfaction rates with the content and modes of training provided (Alvanon, 2018). Current fashion industry and apparel academic research must reflect the evolving field, in a collaborative effort with the industry, to overcome the challenges faced with the new technological adaptations. This research was aimed understanding the full impacts of the AI takeover might be, how it affects the apparel workforce, as well as what actions might be taken to better prepare the workforce to meet the requirements inherent with technological changes in the apparel industry.

The purpose of this research was to explore the impacts of AI digitalization and automation in regards to apparel industry processes, through objectives seeking to better understand how the transition to AI is affecting skill competencies required for the human workforce. As well, this research aimed to vision how to train the workforce and with what methods to train the workforce, in an effort to best prepare (both workers and businesses) for Industrial shift to AI and automation. The objectives of this research were to (1) To better understand the current status of apparel industry processes and workforce; (2) To comprehend how the apparel industry’s future should be aligned with the AI digitalization of apparel industry processes; (3) To anticipate how the apparel industry workforce must be trained and prepared for anticipated technological changes.

Method: The study adopted a qualitative approach, conducting semi-structured interviews with 21 participants from 5 different countries (USA, Sri Lanka, China, India, Hong Kong). Prior to the interviews,
the interested eligible participant’s consent was taken to participate in the research study by forwarding them the Informed Consent Form with the IRB approval. This research was conducted utilizing qualitative methods via in-depth, semi-structured interviews. The population of interest for this study were professionals (executives, middle-level executives, and designers) involved in the apparel business. Snowball non-probability sampling method (Blackstone, 2012) was utilized to solicit the research sample for this study. Sample recruitment was globally focused in order to attain a holistic understanding of what AI digitalization and automation meant to apparel industry professionals from different geographical locations. Thematic analysis approach was used for the data analysis. After the completion of the data verification process, the interview scripts were coded using qualitative research software NVIVO 11.0 and searched for themes with broader patterns of meanings. A Constant Comparative method (Glaser, 1965) was employed to evaluate the analyzed data and connections between emerging concepts, codes were organized into six subthemes.

**Results** from this study reveal significant collaborative opportunities between industry and academia, identifying and forecasting future skills requirements of the apparel workforce, and developing learning platforms to train employees on future skill needs. There are two main conclusions of this study. Firstly, while AI digitalization and automation is inevitable in the apparel industry in the next decade, critical emphasis must be on the sustainable implementation of technology. With the apparel industry mindset focused on achieving the next best technological developments at a blurring speed, ethical and sustainable best practices are not priorities, resulting in negative impacts to apparel workers. Optimistically, the implementation of Automation and AI solutions should provide solutions to industry issues, as opposed to creating new problems. The implications of technology must be analyzed and considered before adopting them to the working environment, while taking the necessary measures to avoid all negative consequences that it might cause presently, or in the future. Secondly, this research study concludes that apparel industry skill training must address the current and future technical and digital skill requirements of the workforce. It was found that currently, most skill-trainings are either focused on soft-skills or presently required technical/digital skills, but less focus is given to future skill requirements of the industry. It is imperative that industry and academia collaborate to develop best practices in terms of skill competencies so that entry-level workers (recent graduates) have relevant skills to enter into the workforce. As collaborators, they need to accurately forecast the next crucial industry skill-set and get prepared for it in advance through the right skill-development of the current and future workforce. Findings suggest that sustainable and ethical practices are critical within the emerging technology space, implementation of ethics regarding technology and sustainability as well as policies of accountability will be critical for the future of the apparel industry. Technology’s relevance to business ethics was a topic that was largely unexplored in this study. Ethics is a pervasive aspect of technology practice. Owing to the immense social power of technology, ethical issues are always in play, Ethics related to technology and AI in the Fashion Industry would be a relevant topic for future research. There is a tremendous opportunity for academia to lead efforts in the technological shift and to prepare students with relevant and most-appropriate 21st century skills. This research contributes to better understanding challenges and opportunities faced with the technological adaption of AI in the Fashion Industry.
References:


