



Assimilation and Transformation: Application of Digital Textile Printing

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Introduction/Significance: The goal of this project was to develop textile designs and implementing the design using digital textile printing in order to showcase a textile design collection based on time spent studying abroad in Italy. Designers such as Helmut Lang, Akris, and Dolce and Gabbana have featured the use of digitally printed textiles in their runway collections (Binkley, 2010). For these designers, digital printing is a huge shift from traditional screen printing process, which is more expensive and time consuming (Binkley, 2010). The scope of the project was to create original textile designs from photographs digitally manipulated and investigate the potential of applying the design process using digital textile printing.

Theoretical Framework/Literature: The framework for this project follows Wilson's (2001) "design process" of textile design: a) need, b) research, c) idea generation, d) design, and e) finished design. Digital textile printing was utilized to facilitate this design framework due to advances in technology and availability of technology at Auburn University. Digital textile printing is an ever-expanding technology for the fashion industry (Malik, Kadian, & Kumar, 2005). Advances range from independent online retailers and academic institutions, to haute couture fashion houses. The advantages for digital textile printing involve evolutions expanded from previous technology. Digital textile printing enables for greater printing abilities including printing photography or artwork. Digital textile printing, when compared to screen printing, the previous printing method, has a higher price per copy for longer printing runs (Malik et al., 2005). Digital printing allows for new media to be utilized in printing methods such as taking a photograph and then digitally printing it instantly on fabric (Malik et al., 2005). However, the digital printing technology is shorter than the other methods and still advancing, there are limitations associated with research and development. One major limitation for this innovation is price. Along with an increase of price per copy, inks and other required materials are higher in price, which could serve as a limitation for possible investment of the technology (Malik et al., 2005). The technological aspect of digital printing has also seen limitations, specifically with the printing process involving heat application; high temperatures may ruin or alter the ink (Malik et al., 2005). Despite advantages and limitations, digital textile printing is evolving rapidly and being used across many branches of the fashion industry.

Methods. A pilot survey was conducted in order to determine the most successful pairings of the textile designs to garments as well as color schemes in order to determine which designs to digitally print. The finished textile and garment designs were exhibited, and at the exhibition, a survey was administered to determine the level of success of the designs and purchase intention of potential consumers (Low & Lamb Jr., 2000). Specific objectives include: a) to create original textile designs applying cost-effective personalized digital textile printing technology (PDTP); b) to investigate the potential of commercializing the design developed from the PDTP; and c) to

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find out the challenges of applying the PDTP by constructing garments from the textile designs. First, the designs were created and digitally printed using an Hewlett-Packard large format plotter printer. Next, a survey was created in order to determine the level of success of designs that the purchase intentions of potential consumers. Third, after receiving IRB approval, a questionnaire was administered during the exhibition so that participants could respond to the questions by looking at the actual designs of textile and garments designs. Participant's perception on design success and characteristics, purchase intention, perceived price points, and product development were investigated. Participants were 25 male (3.8%) and female (96.2%) of the fashion show with age ranging from 17 to 43, with a mean age of 34.58 and a standard deviation of 16.22 visitors, which is typical for potential consumers of apparel products. Important themes and frequencies of design success, purchase intention, and price perception was tested and extracted from the analysis of open-ended questions and nominal scales.

Results/Conclusions: Among the results, the PDTP printed designs were evaluated as beautiful (31%), intricate (37.9%), innovative (32.8%), and stylish (25.9%). Based on a provided scale of apparel products by Low and Lamb. (2000), participants determined that they would like to see the textile designs made into scarves (29.3%) due to the complex nature of the patterns (10.3%). When asked for other examples of apparel products they would like to see the textile designs made into, participants recommended scarves (8.6%) and pants (10.6%). Participants were asked which garment design they would be most likely to purchase which was the top (20.7%) due to the style (5.2%) and color (5.2%), which could determine consumer's preference for the chosen color combinations, fit, and style. The textile design entitled "Lake Nemi" was determined to be the most preferred at 10.3%; the design "Lake Nemi" is higher complexity and thus correlates to the participants purchase intention due to the design style and color. Participants determined that of the garment designs on display, they would purchase the top for \$50-\$100, the skirt for \$50-\$100, the sleeveless dress for \$50-\$100, and the long sleeved dress for \$50-\$100. The identified results provided practical feedback on the success of designs and the potential for consumers of apparel products purchase intention and the perception of monetary worth of the apparel pieces.

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