Body Scanning Technology Preferences among Consumers

Saiful Islam and Casey R. Stannard, Louisiana State University, USA

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The search for perfectly-fitted apparel has long been a struggle for consumers (Apeagyei, 2010; Istook, 2008; Shin & Baytar, 2014). Poor fit accounts for a significant amount of clothing dissatisfaction. According to one study, 43% of surveyed consumers expressed dissatisfaction regarding the fit of apparel purchased online (Kunst, 2019). Accurate fit of apparel depends on using correct measurements of the human body (Apeagyei, 2010). Thus, researchers have tried to find the most efficient and accurate method of measuring the human body.

Three-dimensional body scanning is a non-contact method of measuring the human body. This process is highly accurate, quick, efficient, and reproducible (Braganca, Arezes, & Carvalho, 2015; Gill, 2015). 3D body scanning technology had great potential for successfully being employed in the apparel industry. But the successful implementation of this technology depends on the acceptance of body scanning by consumers. Research suggested that men and women were equally likely to adopt body scanning technology (Drake, 2007). However, researchers have also suggested that women were more concerned about body shape than men (Grogan & Richards, 2002). These concerns could indicate that there is a difference in the type of body scanning technology which will be preferred by men versus women.

There were different types of body scanners: 1). Traditional scanners used a booth fitted with cameras or depth sensors to extract measurements. One example was the SS20 3D body scanner from Size Stream®, which used infrared depth sensors (Size Stream, 2019a). 2). A recent 3D body scanning technology from Size Stream® was Size Stream @ Home®, in which participants wore a scan suit and used a mobile phone's camera with an app to perform scans (Size Stream, 2019b). 3). Another was available through the MTailor® mobile app (MTailor, 2019). Customers could determine their size and shop from the company website. The MTailor® app used a mobile camera to record a video of the individual customer and uses artificial intelligence to extract body measurements to predict size (MTailor, 2019).

Theoretical Framework and Purpose

The Technology Acceptance Model (TAM) explains and predicts consumers' behavioral intentions and actual behavior regarding acceptance of new technologies (Davis, 1989). Perceived usefulness and perceived ease of use are two major predictors of technology acceptance (Davis, 1989). According to Davis (1989), the intention to adopt a technology depends on the belief that the adoption will help the user to perform a task better (perceived usefulness). Consumers will not be willing to try a technology which is hard or inconvenient to use. This is called perceived ease of use (Davis, 1989).

The purpose of this research was to find out consumers' preferred type of body scanner using the Technology Acceptance Model (Davis, 1989) as a framework. The investigated technologies were a traditional body scanner (Size Stream® SS20), a suit-based scanner (Size Stream @ Home®), and a mobile-based scanner (MTailor®). TAM was utilized to determine consumers' adoption behavior in terms of perceived usefulness and perceived ease of use among the three types of body scanning technologies. Moreover, the effect of gender in the preference of body scanning technology was assessed. Four hypotheses were developed: H1: There will not be a significant difference in the perceived usefulness of the three types of body scanners. H2: The mobile-based scanner will have significantly higher perceived ease of use than the traditional body scanner. H3: The suit-based scanner will have significantly higher perceived ease of use than the traditional body scanner. H4: There will be a significant difference in preferences between men and women in adopting a particular type of body scanning technology.

Methods and Procedures

An online survey was designed using Qualtrics software. Participants were shown the three types of body scanners. Participants were presented with a single body scanner at a time. Each body scanner page contained an image and description of scanning procedures, clothing requirements, and possible use of the scans. Following the overview of each body scanner, participants were asked 7-point Likert-type questions related to the perceived usefulness and perceived ease of use (Davis, 1989).

Following IRB approval, the survey link was posted to social media. Participants were required to be at least 18 years of age and reside in the US. A total of 220 (45 men, 170 women, and 5 others) surveys had valid responses. Hypotheses were tested using mixed procedure and t-test using SAS® 9.4 software.

Results and Discussion

Hypothesis one was not supported. The participants' perceived usefulness varied across the body scanners (P <0.001). Whenever consumers possess a positive notion of perceived usefulness, they tend to use the technology (Davis, 1989). Participants comments suggested that the traditional body scanner is the most useful one among the three scanner types investigated.

Hypothesis two was supported. The participants felt the mobile-based scanner was easier and more convenient to use than the traditional scanner (P =0.001). When consumers perceive that the adoption of a technology is easy and it is helpful to be skilled in using the technology, then they will tend to adopt that technology (Davis, 1989). As most contemporary consumers are familiar with using mobile phones, it was not surprising that they would feel the mobile based scanner was easier to use (Pivetta, Harkin, Billieux, Kanjo, & Kuss, 2019). Additionally, body scanning can be performed in any location using the mobile-based scanner making it easier to use than the traditional body scanner which had to be visited in specific locations.

Hypothesis three was not supported. The ease of use for the suit-based scanner and the traditional scanner did not differ significantly (P =1.0). For both scanners, participants must either purchase or locate a scanner to get a scan making neither particularly easy to use.

Hypothesis four was partially supported. The preference between men and women for body scanning technologies had a significant difference (P =0.0196) only for the mobile-based

body scanner. Whereas for the other two types of body scanners, there was no significant difference in preference between the genders. Men preferred the mobile based scanner. Previous researchers suggested that women were more fashion concerned and had higher dissatisfaction regarding clothing fit (Al-Mousa, 2011). Written comments suggested that women were skeptical about the accuracy of the mobile-based scanner which may affect clothing fit. This perception of inaccuracy could be a reason for women not favoring the mobile-based scanner.

Conclusion

Consumers possessed significantly different perceptions of the usefulness across the three body scanners. The mobile-based scanner had higher perceived ease of use than the traditional scanner. This difference may be due to the relative comfort of most consumers with mobile technology today.

Gender has important implications for adopting certain types of body scanners. There was a significant difference in preference between the genders for adopting the mobile-based scanner. Men preferred this technology. Future research should investigate the perceived ease of use between body scanners when consumers actually get to experience each type of scanner.

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