

From Values to Action: Exploring the Consumption Values of Portable 3D Body Scanning Technology and Their Effect on Usage Intention

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Introduction: In the fashion industry, 3D body scanning technology was originally developed to assist designers in the fit and design development process, as well as to aid in garment production (Daanen & Psikuta, 2018). However, recent technological advancements have also enabled consumers to access this technology conveniently on their smartphones, enabling them to scan their body shapes and measurements, as well as virtually trying on different clothing items (Ruggtek, 2022). Specifically, the portable 3D body scanning technology can enrich consumers' online shopping experiences by providing them a diverse range of functionalities, such as body measurement accuracy, compared to the past. Furthermore, this technology helps the fashion industry become more customizable and sustainable. Despite its associated benefits, consumers' adoption of portable 3D body scanning technology remains low. The reason is that many consumers lack accurate information about the functionality, availability, and benefits of this technology and still perceive it as an expensive and complex technology to use (Karjaluo et al., 2022). To address this consumer hesitation, this study aims to *1) investigate consumption values of portable 3D body scanning technology, and 2) explore the decision-making mechanism of using this technology based on consumption values, trust, and satisfaction.* The findings are expected to contribute to defining consumption values of portable 3D body scanning technology, analyzing consumers' preferences regarding this technology based on these values, and proposing marketing strategies that consider the impact of consumption values on its usage intentions.

Literature Review and Hypothesis Development: The theory of consumption values is the key theoretical framework for this study (Sheth et al., 1991). This theory suggests that consumers evaluate products and services based on various dimensions of values, which influence their purchasing decisions and behaviors. It presents a multidimensional framework shedding light on five distinct value categories within each consumer's decision-making process: 1) functional (perceived utility and benefit), 2) social (building social connection), 3) emotional (the subjective feeling), 4) epistemic (satisfaction derived from curiosity), and 5) conditional (related to specific circumstances) values. Building upon this framework, we anticipate differences in the impact of the five consumption value dimensions on the intention to use portable 3D body scanning technology, which many consumers still do not precisely understand. This fosters hesitation in forming initial usage intentions and exposes various concerns, such as personal data security.

Overcoming these challenges and motivating them to use portable 3D body scanning technology necessitates providing consumers with a high level of trust and satisfaction in this technology (Karjaluo et al., 2021; Youn et al., 2023). Hence, the following hypotheses were proposed: **H1:** There are five dimensions (a. Functional, b. social, c. emotional, d. epistemic, and e. conditional) of consumption values for portable 3D body scanning technology. **H2:** Consumption values positively influence the usage intention for portable 3D body scanning technology. **H3:** Consumption values positively influence trust. **H4:** Trust positively influences the usage intention for portable 3D body scanning technology. **H5:** Trust positively influences satisfaction. **H6:** Satisfaction positively influences the usage intention for portable 3D body scanning technology.

Method: This study selected the smartphone app for 3D body scanning as one of the portable 3D body scanning technologies to analyze usage intention. The Nettelo 3D body scanning smartphone app was deemed suitable for our research purposes due to its easy accessibility, user-friendliness, and availability. In addition to the primary function of body scanning, it recommends and customizes different clothing types. Participants were instructed on how to use this app, including various features such as measuring body metrics, size advice, body tracking, and social interaction with virtual avatars created by their body size data. The analysis in this study focused on females, as they exhibit a greater interest in experiences such as photographing, digital avatar creation, and virtual fitting, in contrast to males (Wang et al., 2020). Specifically, females express considerable curiosity regarding self-expression, body shape, and clothing fit (Davies et al., 2020). Using an online survey, we recruited 403 US females aged 18 and above. The measurement involved assessing consumption values, trust, satisfaction, and usage intention for portable 3D body scanning technology (e.g., Sheth et al., 1991; Hasan et al., 2021) on a 7-point Likert scale. Cronbach's alpha for all variables ranged from .81 to .95., indicating overall satisfactory consistency of measures.

Results: Confirmatory factor analysis ensured reliability and validity and confirmed the five dimensions of consumption values for portable 3D body scanning technology. Specifically, the mean of functional value ($M_{\text{functional}} = 4.74$) showed a higher level than other values. Structural equation modeling examined H2-H6 in SmartPLS 4, displaying a good model fit to the data set. The result showed that social, emotional, epistemic, and conditional values positively influence usage intention for portable 3D body scanning technology, supporting H2b-e. However, the functional value did not significantly affect usage intention, rejecting H2a. In assessing the mediating role of trust in the relationship between consumption value and usage intention, functional, emotional, and conditional values were significantly related to trust, supporting H3a, c, and e. However, social and epistemic values did not directly impact trust, rejecting H3b and H3d. Furthermore, trust did not directly influence the usage intention for portable 3D body scanning technology, rejecting H4. These results indicated that satisfaction emerged as the key mediator in the relationship between trust and usage intention. Last but not least, trust influenced satisfaction, and in turn, influenced usage intention, supporting H5 and H6 (see Figure 1).

Conclusion: Our research findings show that the functionalities of portable 3D body scanning technology, such as rapid measurement, technological accuracy, and customization, contribute to forming functional consumption value among potential users. Furthermore, we highlight that the functional value of this technology can lead to usage intention by establishing trust and satisfaction. Satisfaction plays a significant role in prompting usage intention among consumers who have gained trust in portable 3D body scanning technology, which aligns with the finding of Karjaluoto et al. (2021). On the other hand, social, emotional, epistemic, and conditional values directly influence usage intention, indicating that consumers with high levels of these values can easily adopt this technology without needing to build trust. This study contributes theoretically by integrating the consumption values associated with portable 3D body scanning technology. Furthermore, continuous sharing and updating of information about the functionalities of portable 3D body scanning technology with both their current and potential users are crucial for building trust and satisfaction. Thus, the marketers of portable 3D body scanning technology must communicate effectively with users and potential users regarding the functionalities and features, as well as promoting it appropriately to attract more users.

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