CORVINUS UNIVERSITY of BUDAPEST

**Doctoral School of Business and Management**

**THESIS SUMMARY**

To the doctoral dissertation

**Yuling Wei**

# The Role of Facial Enhancement Technology in Online Sales of Branded Color Cosmetics

**Supervisor: Prof. Ágnes Hofmeister-Tóth**

**Dr. Attila Endre Simay**

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## 1. Research background and relevance

Technology innovation has become an important knowledge resource for firms seeking to be competitive and aiming to maximize profits, particularly in the Industry 4.0 era (Yun *et al*., 2011; Zahera & Bansal, 2019). Facial enhancement technology (FET) as one of the most recent innovative digital technologies, has significantly influenced today's retail (Song *et al*., 2022) and consumer shopping experience (Cachero-Martínez & Vázquez-Casielles, 2021). FET is an umbrella term that includes, among other things, artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies in the beauty industry (Simay *et al*., 2023). The popularity of FET in recent years is partly made possible due to the rise of smartphone technology (i.e., camera, facial recognition technology, and touch screen) and social media platforms such as Instagram and TikTok, that promote the physical attractiveness of their users to garner likes and followers (Lee *et al*., 2014; Faqih & Jaradat, 2021; Khan & Khusro, 2021; Jorge *et al*., 2022; Simay *et al*., 2023).

FET works by superimposing virtual elements (Javornik, 2016) or applying digital masks (i.e., face lenses) to users' faces in a virtual environment, often in real-time (Rios *et al*., 2018). Users can access the FET apps by holding their faces up to the camera, and the app will automatically scan their faces while also providing a variety of face filters, stickers, and other virtual elements at the bottom of the screen. Then, users can select their favorite from the available options by scrolling down the

screen horizontally, applying it to their faces simultaneously, and taking selfies. The concept of FET was inspired by traditional cosmetics, where their use cannot be separated from the users' self-ideals and the prevalent social norms (Baghel & Parthasarathy, 2019). According to previous literature, there are primarily five types of FET on the market: face filters (Cowan *et al*., 2021; Yang *et al*., 2021), virtual makeup and try-on (Jaswal, 2021; Wang *et al*., 2022), facial distortion (Hawker & Carah, 2021; Javornik *et al*., 2022), age manipulation (Antipov *et al*., 2017; Sharma & Kumar, 2022), and gender bender (Gusev, 2021; Monteiro, 2023).

Previous studies have shown that when it comes to purchasing color cosmetics, female consumers prefer to shop at various cosmetic retail channels (Liu *et al*., 2013; Ngarmwongnoi *et al*., 2020). Since the COVID-19 pandemic began at the end of 2019, many cosmetic stores have been forced to close. Social distancing, as well as other government-stimulated regulations, has encouraged consumers to shop online (Chen *et al*., 2021). Due to the temporary closure and social distancing, local cosmetic retailers had to find and adopt innovative ways to promote and sell their products, such as through FET apps. FET apps have emerged as a novel way to improve consumer decision making, primarily as a trial function. By using FET apps, especially for virtual makeup and try-on apps, consumers can visualize how they look when color cosmetics are applied to their faces and then decide whether they want to buy them or not. FET may incorporate features that allow users to edit their facial

features (selfie-editing) and try various color cosmetic brands. Furthermore, for those who are only interested in entertainment, FET can assist users in taking beautiful selfies by applying virtual makeup.

The purpose of this dissertation is multifold: First, to explore the factors that may contribute to FET adoption. Second, to investigate the extent to which FET adoption contributes to subsequent online purchases (i.e., color cosmetics). Despite its strategic importance, the existing body of literature specifically discussing the essential role of AR-based FET on consumers' behavioral intentions is still scarce (Javornik, 2016; Wang *et al*., 2022). Additionally, the customers' adoption rate of FET is still relatively low with an unproven conversion rate on a mass scale (Monteros, 2021). The mechanisms by which users adopt FET and whether FET contributes to the online purchase intention of branded color cosmetics are still less explored.

The unified theory of acceptance and use of technology (UTAUT) developed by Venkatesh *et al*. (2003) is one of the most popular theories for explaining behavioral intentions to adopt new technology. The primary contribution of this dissertation is to extend the traditional UTAUT model (Venkatesh *et al*., 2003) and apply it in the context of FET. More specifically, UTAUT is used as a baseline model in this dissertation since it can be leveraged to examine determinants of AI adoption (Venkatesh, 2022) such as FET. While the UTAUT model captures the general technology acceptance factors well, in this dissertation, the author adds factors (i.e., body

esteem, price sensitivity, and social media addiction) that may be important in understanding consumer acceptance of the technology in focus. Building on self-presentation theory, the author considers it important to examine users' self-image (Fastoso *et al*., 2021) and include the variable body esteem in the adoption model. Moreover, Yim and Park (2019) found that people who held unfavorable body images had more favorable evaluations toward AR-based products, though larger utilitarian and social motives and how they were connected to online purchases remained unexplored. As a result, the author considers body esteem to be a valuable concept to include within the UTAUT-FET framework.

The structure of this dissertation is as follows: The second section comprises the theoretical foundations, where the author discusses the main theories utilized to develop the hypotheses. Following this, the third section details the research methodology. Moving forward, the fourth section presents the selected findings from the three studies. Subsequently, the seventh section explores theoretical contributions. Finally, the author examines the variances and connections among the three selected studies.

## 2. Theoretical foundation

### *2.1 Facial enhancement technology (FET)*

FET is an umbrella term used to describe Artificial Intelligence (AI)-based technologies that allow users to alter their facial features. FET includes face filter, virtual makeup, facial distortion, age manipulation and gender

bender. FET immerses users in a human-machine converged reality through an integrated cyber and physical environment utilizing computers and wearables (Kwok & Koh, 2021). FET works by superimposing virtual elements (Javornik, 2016) or applying digital masks (i.e., face lenses) to users' faces in a virtual environment, often in real-time (Rios *et al*., 2018). Users can access the FET apps by holding their faces up to the camera, and the app will automatically scan their faces while also providing a variety of face filters, stickers, and other virtual elements at the bottom of the screen. Following that, users can select their favorite from the available options by horizontally scrolling down the screen, apply it to their faces simultaneously, and take selfies. Going back in history, the concept of FET was inspired by traditional cosmetics, where their use cannot be separated from the users' self-ideals and the prevalent social norms (Baghel & Parthasarathy, 2019). According to previous literature, there are primarily five types of FET on the market: face filters (Cowan, Javornik, & Jiang, 2021; Yang *et al*., 2021), virtual makeup and try-on (Jaswal, 2021; Wang, Ko, & Wang, 2022), facial distortion (Hawker & Carah, 2021; Javornik *et al*., 2022), age manipulation (Antipov *et al*., 2017; Sharma & Kumar, 2022), and gender bender (Gusev, 2021; Monteiro, 2023). In this dissertation, the author summarizes these five types of FET and focus on virtual makeup and try-on.

### *2.2 FET-UTAUT*

One of the highly preferred theories to explain the behavioral intention to adopt new technology is the unified theory of acceptance and use of technology (UTAUT)

developed by Venkatesh *et al*. (2003). The UTAUT is an extension of at least two early theories that linked intention and behavior in consumer decision making, namely the theory of reasoned action (TRA) by Ajzen and Fishbein (1980) and the technology acceptance model (TAM) by Davis (1989). The UTAUT model is made up of six concepts: performance expectancy, effort expectation, social influence, facilitating conditions, behavioral intention, and user behavior. Various researchers have since adopted, adapted, and extended the model, including the addition of new moderators (Thongsri *et al*., 2018; Al-Adwan *et al*., 2022; Xiao *et al*., 2022). In the context of FET, the UTAUT model is relevant. Nonetheless, the author believes that some changes are required to fully capture the purpose of this dissertation. Therefore, the author introduces and integrates new concepts presented in this section. The newly proposed model serves two purposes: Firstly, to explain the factors influencing the use of FET apps. Secondly, to explain its connection with users' subsequent intentions to purchase branded color cosmetics.

## 3. Research methodology

### *3.1 Quantitative research method*

In this dissertation, the author primarily employed a quantitative online survey as the core research methodology, employing purposive and snowball sampling techniques for data collection. The sample populations varied across the studies: Study 1 focused on Chinese social media influencers (N=221), Study 2 on Indonesian FET users (N=262), and Study 3 on Chinese

FET users (N=473).

The dissertation examined six independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, body esteem, and price sensitivity), one dependent variable (online purchase intention), one mediator (facial enhancement technology adoption), and one moderator (social media addiction). In total, eight construct-level hypotheses were tested throughout the dissertation.

Several measurement scales were employed throughout the dissertation. In Study 3, the UTAUT scales, including performance expectancy, effort expectancy, social influence, and facilitating conditions, were adapted from Venkatesh *et al*. (2003). Additionally, the 5-item body esteem scale was adapted from Mendelson *et al*. (2001), the 5-item facial enhancement technology adoption scale from Venkatesh and Bala (2008), Abbad (2021), and Sprenger and Schwaninger (2021), and the 3-item online purchase intention scale from Suparno (2020). In Study 1, the 3-item price sensitivity scale was adopted from Lichtenstein *et al*. (1988). The construct was measured using a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). All three selected studies used Structural Equation Modeling (SEM) via SPSS and AMOS software to analyze the data. A 2-step approach, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), is implemented to prove the hypotheses and generate the results.

## 4. Findings

The author conducted three published studies to support this dissertation, comprising three quantitative studies. However, since this dissertation adapted UTAUT as the theoretical foundation, the main findings primarily stem from Study 3. Some relevant findings from Studies 1 and 2 are also presented in this section, helping to shape the research model for the dissertation. For instance, body esteem was tested in the relationship with FET adoption in Study 1 and Study 2. In Study 1, body esteem was not found to be a significant predictor of FET adoption, whereas in Study 2, both positive and negative views of body esteem exhibited a positive relationship with FET adoption. These results inspired the author to include both positive and negative body esteem in the final dissertation model.

In the following subsections, the author highlighted the findings of the selected publications to support this dissertation.

### *4.1 The e-WOM intention of artificial intelligence (AI) color cosmetics among Chinese social media influencers*

Abstract: The recent advancements in smartphone technology and social media platforms have increased the popularity of artificial intelligence (AI) color cosmetics. Meanwhile, China is a lucrative market for various foreign beauty products and technological innovations. This research aims to investigate the adoption of AI color cosmetics apps and their electronic word-of-mouth (e-WOM) intention among Chinese social media influencers. Several key concepts have been proposed in this research,

namely body esteem, price sensitivity, social media addiction and actual purchase. An online questionnaire design was used in this research. A combination of purposive sampling and snowball sampling of AI color cosmetics users who are also social media influencers in China yields 221 respondents. To analyze the data, this research employs Structural Equation Modelling (SEM) method via SPSS and AMOS software. A 2-step approach, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), is implemented to prove the hypotheses and generate the results. The results suggest that: 1) Social media addiction is a positive predictor of AI color cosmetics usage, 2) AI color cosmetics usage is a positive predictor of actual purchase, 3) actual purchase is a positive predictor of e-WOM intention and lastly, 4) there is a full mediation effect of actual purchase. This research draws on the uses and gratification (U&G) theory to investigate how specific user characteristics affect Chinese social media influencers' adoption of AI color cosmetics, as well as how this may affect their decision to purchase branded color cosmetics and their e-WOM.

Further reading: Simay, A. E., Wei, Y., Gyulavári, T., Syahrivar, J., Gaczek, P., & Hofmeister-Tóth, Á. (2023). The e-WOM intention of artificial intelligence (AI) color cosmetics among Chinese social media influencers. *Asia Pacific Journal of Marketing and Logistics*, 35(7), 1569-1598. https://doi.org/10.1108/APJML-04-2022-0352

*4.2 Using Artificial Intelligence to Promote Branded Color Cosmetics: Evidence from Indonesia*

Abstract: Artificial Intelligence (AI) color cosmetics apps emerged as an innovative solution to promote branded

color cosmetics and enhance consumer decision making, primarily as a trial function. This research aims to investigate factors influencing AI color cosmetics apps adoption in the lens of social comparison theory. The data was analyzed using Structural Equation Modelling (SEM) via SPSS and AMOS software. The results suggest that 1) the positive-view (versus negative-view) of body esteem increases price consciousness to a larger extent 2) the negative-view (versus positive-view) of body esteem increases AI color cosmetics apps adoption to a larger extent 3) price consciousness mediates the effect of body esteem on AI color cosmetics apps adoption 4) price consciousness moderates the effect of body esteem on AI color cosmetics apps adoption. Managerial implications of this research are provided for promotion managers of cosmetic retailers and AI color cosmetics app developers seeking to promote and reach a larger segment.

Further reading: Wei, Y., Simay, A. E., Agárdi, I., Syahrivar, J., & Hofmeister-Tóth, Á. (2023). Using Artificial Intelligence to Promote Branded Color Cosmetics: Evidence from Indonesia. *Journal of Promotion Management*, 29(5), 644-675. https://doi.org/10.1080/10496491.2022.2163036

*4.3 Using Facial Enhancement Technology (FET) in online sales of branded color cosmetics*

Abstract: As one of the most cutting-edge technologies in the digital age, facial enhancement technology (FET) has greatly enhanced consumer online shopping experience and brought new e-commerce opportunities for cosmetics retailers. The purpose of this paper is to extend the unified theory of acceptance and use of technology (UTAUT)

model in the context of FET. In addition to the concepts from the original model, the new FET-UTAUT model features (low) body esteem, social media addiction and FET adoption. A purposive sampling of FET users in China via an online questionnaire yields 473 respondents. To analyze the data, this research uses the structural equation modeling method via statistical package for the social sciences and analysis of a moment structures software. A two-step approach, exploratory factor analysis and confirmatory factor analysis, was used to test the hypotheses and generate the findings. Performance expectancy, effort expectancy, social influence, facilitating conditions and (low) body esteem have positive relationships with FET adoption. FET adoption has a positive relationship with online purchase intention of branded color cosmetics, and the empirical evidence for the moderating role of social media addiction in the relationship between FET adoption and online purchase intention is inconclusive. This research extends the traditional UTAUT model by proposing a novel FET-UTAUT model that incorporates additional key concepts such as body esteem, FET adoption and social media addiction. Managerial implications of this research are provided for FET designers and branded color cosmetic retailers.

Further reading: Wei, Y., Syahrivar, J., & Widyanto, H. A. (2023). Using facial enhancement technology (FET) in online sales of branded color cosmetics. *Journal of Systems and Information Technology*, 25(4), 502-530. https://doi.org/10.1108/JSIT-12-2022-0282

## 5. Contributions

*5.1 Theoretical contributions*

This dissertation has several theoretical contributions: First, this dissertation introduces a new concept, namely facial enhancement technology (FET). FET was used as an umbrella term in this dissertation to refer to artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies capable of altering users' facial features in a virtual environment. Research on FET, such as AI-powered face-related apps, in digital marketing is still in its infancy. Previous studies have discussed the role of AR, and VR apps in online shopping (Javornik *et al*., 2016; Erdmann *et al*., 2021); however, more studies must be carried out to understand how FET, an umbrella term for AI, AR and VR face-related technologies, may improve consumers' online shopping experiences and facilitate retailers' capabilities to reach a wider segment.

Second, this dissertation's primary theoretical contribution is to identify the antecedents of FET adoption and how it may lead to online purchases of branded color cosmetics. The theoretical framework proposed in this dissertation extends the traditional UTAUT framework (Venkatesh *et al*., 2003) by including additional key concepts such as body esteem, price sensitivity, FET adoption, and social media addiction. Based on the findings, this dissertation supports the effects of performance expectancy, effort expectancy, social influence, facilitating conditions, and body esteem toward FET adoption. Previous studies on AR and VR apps have investigated the role of self-esteem (Javornik *et al*., 2021; Lee *et al*., 2021). However, less attention has been paid to

the role of body esteem in FET (Wei *et al*., 2023). This dissertation provides empirical evidence to support the relationship between body esteem and FET adoption.

Third, this dissertation adds to the body of knowledge in social comparison theory by elucidating the roles of body esteem and online purchase behavior in the context of FET adoption, a relatively new innovation in interactive technology. This dissertation also provides empirical evidence on the relationships between body esteem and FET adoption. Previous studies have discussed the apps of FET (e.g., AI color cosmetics apps) in the beauty industry (Scholz & Duffy, 2018; Smink *et al*., 2019; Hsu *et al*., 2021; Javornik *et al*., 2021). Previous studies have also discussed the role of FET in consumers' selfie-editing behavior, such as to garner likes from followers in social media platforms and, possibly, to attract the opposite gender (Wang, 2019; Barker, 2020; Fastoso *et al*., 2021). To the best of our knowledge, this is the first dissertation to elaborate the precise relationship between body esteem and FET adoption.

Lastly, this dissertation introduces social media addiction as a moderating variable. To the best of our knowledge, this is the first dissertation to propose and provide empirical evidence of the moderating role of social media addiction in the relationship between FET and online purchases. Additionally, this dissertation investigates Chinese female FET users, Chinese social media influencers, and Indonesian users, who are still underrepresented in the FET literature. This dissertation also contributes to a deeper understanding of Chinese female FET users, social media influencers, and Indonesian users, exploring their interactions with AI

color cosmetics apps, a relatively new type of FET. The author emphasizes that Chinese beauty influencers and Indonesian users remain underrepresented compared to their Asian counterparts (e.g., Chen & Dermawan, 2020; Wang & Lee, 2021).

## 6. Conclusion

This is an article-based dissertation comprising three quantitative studies on FET. To interconnect these three studies, the dissertation adopts the UTAUT theoretical model as the foundational framework, which was utilized in Study 3. Additionally, this dissertation utilizes the research purpose of Study 3 to enhance the connection among these three studies.

Since each study has a different research purpose, target group, data collection period, and approach to respondent platform, the results also differ. For instance, in Study 1, body esteem is not a significant predictor of AI color cosmetics usage, while in Study 2, both positive and negative views of body esteem have a positive relationship with AI color cosmetics adoption. The differing results might be due to the target respondents for Study 1 being Chinese social media influencers, while the target respondents for Study 2 were Indonesian female users. First, the research countries were different, as China and Indonesia have some cultural differences that may lead to varying results in the same variable. Second, social media influencers had a commercial interest, as they were paid to promote tangible products, whereas their "virtual" alternatives served as a trial. Regular users primarily used FET for selfie-editing, entertainment, and virtual makeup

try-on purposes. Different usage purposes may lead to different results. However, these three studies all focused on branded color cosmetics and investigated the factors influencing the use of FET apps (e.g., AI color cosmetics usage and AI color cosmetics adoption).

This dissertation adopts all the variables in Study 3 but does not include some variables in Studies 1 and 2. For instance, the author did not adopt actual purchase (mediator) and e-WOM intention (dependent variable) in Study 1, nor price consciousness (mediator and moderator) in Study 2. The reason for not adopting actual purchase and e-WOM intention is because the purpose of this dissertation is to explore the factors that may contribute to FET adoption and investigate the extent to which FET adoption contributes to subsequent online purchases (i.e., color cosmetics). Actual purchase and e-WOM intention are not relevant to the purpose of this dissertation. Price consciousness, serving as both a mediator and moderator in Study 2 for body esteem and AI color cosmetics, however, in this dissertation, the author adopted price sensitivity rather than price consciousness for two reasons. First, price sensitivity serves the same role in Study 1 as in this dissertation. Second, the relationship between price sensitivity and AI color cosmetics usage has been tested in Study 1. Therefore, the author considers price sensitivity to be more appropriate. In conclusion, this dissertation includes six independent variables (i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, body esteem, and price sensitivity), one mediator (i.e., facial enhancement technology), one moderator (i.e., social media addiction), and one

dependent variable (i.e., online purchase intention) drawn from three selected published quantitative studies.

## References


Ajzen, I., & Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. *Englewood Cliffs*, NJ: Prentice-Hall.

Al-Adwan, A. S., Yaseen, H., Alsoud, A., Abousweilem, F., & Al-Rahmi, W. M. (2022). Novel extension of the UTAUT model to understand continued usage intention of learning management systems: the role of learning tradition. *Education and Information Technologies*, 27(3), 3567-3593. https://doi.org/10.1007/s10639-021-10758-y

Antipov, G., Baccouche, M., & Dugelay, J. L. (2017, September). "Face aging with conditional generative adversarial networks", In *2017 IEEE International Conference on Image Processing (ICIP)*, pp. 2089-2093. https://doi.org/ 10.1109/ICIP.2017.8296650

Baghel, D., & Parthasarathy, D. (2019). Knowledge Generation for Innovation in Ayurvedic Cosmetics MSMEs: Investigating Entrepreneur's Cultural and Symbolic Capital. *Science, Technology and Society*, 24(1), 101-121. https://doi.org/10.1177/0971721818821795

Barker, J. (2020). Making-up on mobile: The pretty filters and ugly implications of Snapchat. *Fashion, Style and Popular Culture*, 7(2-3), 207-221. https://doi.org/10.1386/fspc_00015_1

Cachero-Martínez, S., & Vázquez-Casielles, R. (2021). Building consumer loyalty through e-shopping

experiences: The mediating role of emotions. *Journal of Retailing and Consumer Services*, 60, 102481. https://doi.org/10.1016/j.jretconser.2021.102481

Chen, J. L., & Dermawan, A. (2020). The Influence of YouTube Beauty Vloggers on Indonesian Consumers' Purchase Intention of Local Cosmetic Products. *International Journal of Business and Management*, 15(5), 100-116. https://doi.org/10.5539/ijbm.v15n5p100

Chen, L., Rashidin, M. S., Song, F., Wang, Y., Javed, S., & Wang, J. (2021). Determinants of Consumer's Purchase Intention on Fresh E-Commerce Platform: Perspective of UTAUT Model. *SAGE Open*, 11(2), 1-17. https://doi.org/10.1177/21582440211027875

Cowan, K., Javornik, A., & Jiang, P. (2021). Privacy conc erns when using augmented reality face filters? Exp laining why and when use avoidance occurs. *Psych ology and Marketing*, 38(10), 1799-1813. https://do i.org/10.1002/mar.21576

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. https://doi.org/10.2307/249008

Erdmann, A., Mas, J. M., & Arilla, R. (2021). Value-based adoption of augmented reality: A study on the influence on online purchase intention in retail. *Journal of Consumer Behaviour*, pp. 1-21. https://doi.org/10.1002/cb.1993

Faqih, K. M., & Jaradat, M. I. R. M. (2021). Integrating TTF and UTAUT2 theories to investigate the adoption of augmented reality technology in

education: Perspective from a developing country. *Technology in Society*, 67, 101787. https://doi.org/10.1016/j.techsoc.2021.101787

Fastoso, F., González-Jiménez, H., & Cometto, T. (2021). Mirror, mirror on my phone: Drivers and consequences of selfie editing. *Journal of Business Research*, 133(1), 365-375. https://doi.org/10.1016/j.jbusres.2021.05.002

Gusev, D. A. (2021). Improved Identification of Portraiture of the Julio-Claudian Period with Mobile Apps. *Journal of Imaging Science and Technology*, 65(6), 060403-1 - 060403-36. https://doi.org/10.2352/J.ImagingSci.Technol.2021.65.6.060403

Hawker, K., & Carah, N. (2021). Snapchat's augmented reality brand culture: sponsored filters and lenses as digital piecework. *Continuum*, 35(1), 12-29. https://doi.org/10.1080/10304312.2020.1827370

Hsu, S. H. Y., Tsou, H. T., & Chen, J. S. (2021). "Yes, we do. Why not use augmented reality?" customer responses to experiential presentations of AR-based applications. *Journal of Retailing and Consumer Services*, 62(1), 102649. https://doi.org/10.1016/j.jretconser.2021.102649

Ibáñez-Sánchez, S., Orús, C., & Flavián, C. (2022). Augmented reality filters on social media. Analyzing the drivers of playability based on uses and gratifications theory. *Psychology and Marketing*, 39(3), 559-578. https://doi.org/10.1002/mar.21639

Jaswal, R. (2021). Augmented Reality's effect on online cosmetics consumer purchasing patterns: A study on virtual artists at Sephora. *Turkish Journal of*

*Computer and Mathematics Education*, 12(12), 730-737. https://turcomat.org/index.php/turkbilmat/article/view/7458/5977

Javornik, A. (2016), Augmented reality: research agenda for studying the impact of its media characteristics on consumer behaviour. *Journal of Retailing and Consumer Services*, 30, 252-261. https://doi.org/10.1016/j.jretconser.2016.02.004

Javornik, A., Marder, B., Barhorst, J. B., McLean, G., Rogers, Y., Marshall, P., & Warlop, L. (2022). 'What lies behind the filter? 'Uncovering the motivations for using augmented reality (AR) face filters on social media and their effect on well-being. *Computers in Human Behavior*, 128, 107126. https://doi.org/10.1016/j.chb.2021.107126

Javornik, A., Marder, B., Pizzetti, M., & Warlop, L. (2021). Augmented self-the effects of virtual face augmentation on consumers' self-concept. *Journal of Business Research*, 130(1), 170-187. https://doi.org/10.1016/j.jbusres.2021.03.026

Jorge, L. F., Mosconi, E., & Santa-Eulalia, L. A. (2022). Enterprise social media platforms for coping with an accelerated digital transformation. *Journal of Systems and Information Technology*, 24(3), 221-245. https://doi.org/10.1108/JSIT-08-2021-0154

Khan, A., & Khusro, S. (2021). An insight into smartphone-based assistive solutions for visually impaired and blind people: issues, challenges and opportunities. *Universal Access in the Information Society*, 20(2), 265-298. https://doi.org/10.1007/s10209-020-00733-8

Kwok, A. O., & Koh, S. G. (2021). COVID-19 and extended reality (XR). *Current Issues in Tourism*, 24(14), 1935-1940. https://doi.org/10.1080/13683500.2020.1798896

Lee, K. Y., Sheehan, L., Lee, K., & Chang, Y. (2021). The continuation and recommendation intention of artificial intelligence-based voice assistant systems (AIVAS): the influence of personal traits. *Internet Research*, 31(1), 1-10. https://doi.org/10.1108/INTR-11-2020-0668

Lee, Y. H., Ahn, H., Cho, H. J., & Lee, J. H. (2014). Advanced face recognition and verification in mobile platforms. *Journal of Systems and Information Technology*, 16(2), 126-137. https://doi.org/10.1108/JSIT-11-2013-0060

Lichtenstein, D. R., Bloch, P. H. & Black, W. C. (1988). Correlates of price acceptability. *Journal of Consumer Research*, 15(2), 243-252. https://doi.org/10.1086/209161

Liu, W. Y., Lin, C. C., Lee, Y. S., & Deng, D. J. (2013). On gender differences in consumer behavior for online financial transaction of cosmetics. *Mathematical and Computer Modelling*, 58(1-2), 238-253. https://doi.org/10.1016/j.mcm.2012.08.010

Lou, C. (2022). Social media influencers and followers: Theorization of a trans-parasocial relation and explication of its implications for influencer advertising. *Journal of Advertising*, 51(1), 4-21. https://doi.org/10.1080/00913367.2021.1880345

Monteiro, S. (2023). Gaming faces: diagnostic scanning in social media and the legacy of racist face analysis. *Information, Communication & Society*, 26(8), 1601-

1617. https://doi.org/10.1080/1369118X.2021.2020867

Monteros, M. (2021). *Want a pandemic-friendly way to try on makeup? There's an AR solution for that*. Retail Dive. Retrieved July 25, 2022. https://www.retaildive.com/news/want-a-pandemic-friendly-way-to-try-on-makeup-theres-an-ar-solution-for-t/594966/

Mościcka, P., Chróst, N., Terlikowski, R., Przylipiak, M., Wołosik, K., & Przylipiak, A. (2020). Hygienic and cosmetic care habits in polish women during COVID-19 pandemic. *Journal of Cosmetic Dermatology*, 19(8), 1840-1845. https://doi.org/10.1111/jocd.13539

Ngarmwongnoi, C., Oliveira, J. S., AbedRabbo, M., & Mousavi, S. (2020). The implications of eWOM adoption on the customer journey. *Journal of Consumer Marketing*, 37(7), 749-759. https://doi.org/10.1108/JCM-10-2019-3450

Rios, J. S., Ketterer, D. J., & Wohn, D. Y. (2018, October). How users choose a face lens on Snapchat. In *Companion of the 2018 ACM Conference on Computer Supported Cooperative Work and Social Computing*, 321-324. https://doi.org/10.1145/3272973.3274087

Scholz, J., & Duffy, K. (2018). We ARe at home: How augmented reality reshapes mobile marketing and consumer-brand relationships. *Journal of Retailing and Consumer Services*, 44 (1), 11-23. https://doi.org/10.1016/j.jretconser.2018.05.004

Sharma, S., & Kumar, V. (2022). 3D Face Reconstruction in Deep Learning Era: A Survey. *Archives of*

*Computational Methods in Engineering*, 29, 3475–3507. https://doi.org/10.1007/s11831-021-09705-4

Simay, A. E., Wei, Y., Gyulavári, T., Syahrivar, J., Gaczek, P. & Hofmeister-Tóth, Á. (2023). The e-WOM intention of artificial intelligence (AI) color cosmetics among Chinese social media influencers. *Asia Pacific Journal of Marketing and Logistics*, 35(7), 1569-1598. https://doi.org/10.1108/APJML-04-2022-0352

Smink, A. R., Frowijn, S., van Reijmersdal, E. A., van Noort, G., & Neijens, P. C. (2019). Try online before you buy: How does shopping with augmented reality affect brand responses and personal data disclosure. *Electronic Commerce Research and Applications*, 35(1), 100854. https://doi.org/10.1016/j.elerap.2019.100854

Song, M., Xing, X., Duan, Y., Cohen, J., & Mou, J. (2022). Will artificial intelligence replace human customer service? The impact of communication quality and privacy risks on adoption intention. *Journal of Retailing and Consumer Services*, 66, 102900. https://doi.org/10.1016/j.jretconser.2021.102900

Thongsri, N., Shen, L., Bao, Y., & Alharbi, I. M. (2018). Integrating UTAUT and UGT to explain behavioural intention to use M-learning: A developing country's perspective. *Journal of Systems and Information Technology*, 20(3), 278-297. https://doi.org/10.1108/JSIT-11-2017-0107

Venkatesh, V. (2022). Adoption and use of AI tools: a research agenda grounded in UTAUT. *Annals of Operations Research*, 308(1), 641-652. https://doi10.1007/s10479-020-03918-9

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. https://doi.org/10.2307/30036540

Wang, D. (2019). A study of the relationship between narcissism, extraversion, body-esteem, social comparison orientation and selfie-editing behavior on social networking sites. *Personality and Individual Differences*, 146(1), 127-129. https://doi.org/10.1016/j.paid.2019.04.012

Wang, L., & Lee, J. H. (2021). The impact of K-beauty social media influencers, sponsorship, and product exposure on consumer acceptance of new products. *Fashion and Textiles*, 8(1), 1-29. https://doi.org/10.1186/s40691-020-00239-0

Wang, Y., Ko, E., & Wang, H. (2022). Augmented reality (AR) app use in the beauty product industry and consumer purchase intention. *Asia Pacific Journal of Marketing and Logistics*, 34(1), 110-131. https://doi.org/10.1108/APJML-11-2019-0684

Wei, Y., Simay, A.E., Agárdi, I., Syahrivar, J., & Hofmeister-Tóth, Á. (2023), Using Artificial Intelligence to Promote Branded Color Cosmetics: Evidence from Indonesia. *Journal of Promotion Management*, 29(5), 644-675. https://doi10.1080/10496491.2022.2163036

Xiao, W., Wang, X., Xia, S., & Jones, P. (2022). What Drives Creative Crowdsourcing? An Exploratory Study on the Persuasion of Digital Storytelling. *Science, Technology and Society*, 27(1), 23-45. https://doi.org/10.1177/09717218211025355

Yang, D., Wu, T. Y., Atkin, D. J., Ríos, D. I., & Liu, Y. (2021). Social media portrait-editing intentions: Comparisons between Chinese and American female college students. *Telematics and Informatics*, 65, 101714. https://doi.org/10.1016/j.tele.2021.101714

Yim, M. Y. C., & Park, S. Y. (2019). "I am not satisfied with my body, so I like augmented reality (AR)": Consumer responses to AR-based product presentations. *Journal of Business Research*, 100 (1), 581-589. https://doi.org/10.1016/j.jbusres.2018.10.041

Yun, J. H. J., Park, S., & Avvari, M. V. (2011). Development and social diffusion of technological innovation: cases based on mobile telecommunications in national emergency management. *Science, Technology and Society*, 16(2), 215-234. https://doi.org/10.1177/097172181001600205

Zahera, S. A., & Bansal, R. (2019). A study of prominence for disposition effect: a systematic review. *Qualitative Research in Financial Markets*, 11(1), 2-21. https://doi10.1108/QRFM-07-2018-0081