



Importance of 3D presentation in the consumer's purchase intention

Herlyn Carlos Paz Vasquez

Universidad Nacional de San Martín, Peru.
Email: hcpazv@alumno.unsm.edu.pe

ABSTRACT

The article reviews existing literature to explore how 3D presentations can enhance the online shopping experience by providing consumers with a more realistic and engaging view of products. This includes discussing the technical requirements for implementing 3D presentations, such as output and input interface devices and interaction techniques, and examining case studies where 3D visuals have successfully improved consumer experience and sales in various sectors. The findings from the review suggest that 3D presentations can significantly impact consumer behavior, improving product understanding, engagement, and purchase intention. By providing an immersive and interactive experience, 3D presentations can overcome the limitations of physical inspection and social interaction typically missing from online shopping. The paper concludes by emphasizing the importance of businesses adopting 3D presentations as part of their marketing strategies to meet consumer demands and remain competitive in the digital marketplace. This review article offers valuable insights for marketers and e-commerce businesses looking to enhance their online presence and consumer engagement through 3D presentation technologies.

Keywords: 3D presentations; online shopping; consumer behavior; e-commerce; digital marketplace.

INTRODUCTION

BEHAVIOR, changing consumer needs, and the market enabled by internet technology have meant that companies must adapt to these circumstances (Thomas *et al.*, 2021). Marketing uses modern tools to promote products for sale (Sinha & Verma, 2020). According to Bir *et al.*, (2020), businesses have focused on taking advantage of people's daily decisions. Furthermore, Zhao & Xia (2021) say that lighting, approach, contact, and even environmental cues often influence

consumers' decision-making when purchasing products.

E-commerce allows consumers to search and purchase products daily (Kolotylo-Kulkarni *et al.*, 2021). Virtual stores have become an important alternative to physical stores. In addition, online shopping has grown in importance, frequency, and value (Buldeo Rai *et al.*, 2022). According to Helmy Mohamad *et al.*, (2022), as commercial activity changes, it will also achieve a shift in consumer behavior, calling into question the presence of physical stores in the future, so much so that

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merchants seek participation in online sales through the promotion of their products, converting website visitors into buyers (Fuller *et al.*, 2022).

A product catalog allows them to be presented (Tan *et al.*, 2021), and how they are displayed directly affects sales and price. However, this exposure does not guarantee that the consumer pays attention (Florack *et al.*, 2020) since they prefer to touch and interact as an essential way to make the purchase (Alzayat & Lee, 2021). The development of electronic commerce and platforms allows people to control their business (Tong *et al.*, 2022). In Peru, due to the increase in digital payments (Aurazo & Vega, 2021), consumers are more demanding, generating better marketing strategies (Fernández-Bonilla *et al.*, 2022) and impulsive purchases (Gulfraz *et al.*, 2022). However, the traditional methodology for developing online product catalogs does not offer the interaction that the consumer wants to experience, and according to Verhoef *et al.*, (2021), the change in the business model and the digital transformation puts pressure on companies, altering the relationship with consumers. Furthermore, Biemans *et al.*, (2022) say that marketing is based on understanding consumers and the market. Moreover, this methodology uses static images, which are used to attract attention and improve perception (Xia *et al.*, 2020) and as an essential part of the visual design and purchase decision (Berg & Lindström, 2021).

Static images do not reflect the true behavior of the product in the physical real world. Pino *et al.*, (2020) say that, for the consumer, it is important to physically inspect the product (Huang *et al.*, 2021) and have social interactions in the purchasing process (Kim *et al.*, 2020). Furthermore, the textual descriptions in the product do not consider said behavior, and (Dey *et al.*, 2021) are usually crucial to interpreting what you want to show. In addition, Belém *et al.*, (2020) influence the attitude of consumers, but important issues are often omitted.

For Kanani & Glavee-Geo (2021), this causes uncertainty in the consumer, which generates low purchase intentions and decreased sales by incorrectly idealizing the behavior of the product, as it makes them

feel insecure with its characteristics due to its abstract nature (Serravalle *et al.*, 2022). These inferences produce the acquisition of erroneous products, and according to (Jadil *et al.*, 2022), they generate fear and distrust in consumers since online purchasing is carried out without human interactions, where consumer trust is essential for the success of electronic commerce.

It must be considered that there are certain limitations to the problem's possible solution: The lack of interest of businesses to incorporate strategies that provide something new and different concerning the competition (Hurtado Ramos & Florez Ramírez, 2021). Lack of interest in entering new markets, poor cost management, and lack of knowledge in developing strategic plans, include modern technology in promoting products and services (Salazar Novoa, 2021).

Our review, then, has the purpose of analyzing the importance of the presentation of 3D environments in the consumer's purchase intention through a systemic bibliographic review, in which relevant information is collected so that merchants have information to decide to implement their use in a way that adapts to new technologies, at the same time they manage to position themselves as references in the market.

MATERIALS AND METHOD

The advancement of technology has produced a change in consumer behavior and needs (Thomas *et al.*, 2021). This is where the importance of analyzing and adapting to the circumstances of current commerce arises. That is why we ask ourselves: How important is the presentation of 3D environments in the consumer's purchase intention? To answer the question, we rely on the meta-review methodology where the categories are not assigned beforehand but are developed through data analysis, added or eliminated after comparing and examining the relationships between them (Reisoğlu *et al.*, 2017).

We searched the IEEE Xplore, Google Scholar, and ScienceDirect databases due to their accessibility and ease of use. They also present a greater probability of providing reliable information, considering filter criteria

and selection of documents in Spanish and English. The selected articles have been published in journals indexed in Latindex Catalogo, Scielo, and Scopus. Documents considered gray literature and those more than five years old (2018 to 2022) were excluded, adding up to 40 articles.

Thanks to the services of the National Council of Science, Technology and Technological Innovation (CONCYTEC, in Spanish) of the Peruvian State, most documents have been selected, obtaining information from a paid database. Subsequently, the documents were filtered and selected, and the information was managed using the Mendeley bibliographic manager to systematize the information and prepare citations and references, guaranteeing compliance with bibliographic and editorial criteria.

RESULTS AND DISCUSSION

The transformation and innovation of electronic commerce have altered consumer expectations and behavior, altering how traditional companies do business and disrupting numerous markets (Verhoef *et al.*, 2021). It must be recognized that the adoption of 3D presentation for consumers implies having a more specialized development team for its care and maintenance since, unlike images, the development process is much more complex. However, according to Alzayat & Lee (2021), the simulation experience of the product makes the consumer perceive it as if it were reality. The results of the review development were organized according to primary studies on the presentation of 3D environments that demonstrate their importance for e-business to attract consumers to expand their purchase intentions.

Study and description of the presentation of 3d environments

Success stories of 3d presentation

The study by Surahman *et al.*, (2019) is based on the survey of purchasing premium products in "NIELSEN Changing Consumer Prosperity". Nielsen found that local Indonesian e-commerce purchases 58% of premium

products. Some factors influence the purchase of premium products, such as Superior Quality 56%, Performance 51%, Design 43%, Experience 42%, and Brand 42%. There are 46% recommendations from customers' friends in the comments as the most influential factor. Therefore, a better product visualization was presented for the customer experience, and this visualization can be done using Visual 3D Object technology with a 3D warehouse library. The result of the implementation showed 88.9%, which was categorized as very good. This means that 3D visuals for e-marketplace products could improve customer experience, and this will become a good solution for product promotion and competitive advantage.

In the study conducted by Sulaiman *et al.*, (2020), they identified that the real estate business was one of the critical economic sectors affected by the COVID-19 pandemic. The potential buyer could no longer visit the property to experience the space. Given this situation, an advanced tool was needed to improve the marketing strategy in the real estate business. 360 photography and the virtual tour have become the most relevant marketing strategies for selling the property. As a new approach, Matterport was introduced as one of the online platforms that helps drive decision-making by the potential buyer through a Hyper-Real 3D virtual shift experience complete with accurate measurements and detailed information for each selected item. Matterport technology is also proven to reduce time and cost for the real estate business in creating building layouts and site surveys, planning remodels and upgrades, streamlining emergency planning, and tracking inventory and maintenance.

Research conducted by Kang *et al.*, (2020), Kim *et al.*, (2020), and Choi & Taylor (2014) present comparisons of consumer behavior when using 3D presentations based on different situations in which the consumer may find themselves, to evaluate the other results of using 3D presentations on the web. As an example, we show the most notable results of the study by (S. Kim *et al.*, 2020), who recruited 160 undergraduate students from Northeastern University in the United States, obtaining the following data presented below.

Features and functions of the 3D presentation

Kang *et al.*, (2020) compare static images and 3D presentations on different characteristics that consumers experience. The results are shown below. These results express the impact of 3D presentation on consumers' experience in the digital world. Likewise, it shows the advantages over static images, especially regarding information, interactivity, and enjoyment, which are essential to influencing purchase intention.

Minimum requirements for 3D presentation

According to Alcañiz *et al.*, (2019), there are three main requirements for a 3D presentation:

- Output interface device. An integral element of any 3D presentation experience is the hardware that presents information to the user. Hardware, known as display interfaces or output devices, presents information to one or more of the user's senses through the human perception system; most focus on stimulating the visual and auditory senses.
- Input interface device. An equally important part of developing a virtual experience is choosing the right set of input devices to allow the user to communicate with the 3D environment, such as 2D desktop input devices (mouses, joysticks), 3D tracking input devices, and a more natural man-machine interfaces (e.g., voice, natural body movements, bioelectrical and brain inputs).
- Interaction techniques. Interaction techniques are software methods that allow the user to interact with the virtual environment through interface devices. These techniques can be grouped into selection/manipulation, travel, orientation, and system control. The interaction techniques used have a profound effect on the quality of the user's virtual experience, as well as on factors such as presence, cognitive load, and human performance.

Use of 3D presentation in the marketing campaign

According to Kostyk & Sheng (2022), six stages should be considered when using 3D presentation in marketing according to strategic objectives:

1. Consider. It is important to form a positive attitude towards the brand at this stage. The 3D presentation effectively achieves this objective because it transmits positive emotions of pleasure and excitement.
2. Assess. In this stage, consumers' judgment about the attributes and quality of the product is analyzed. The 3D presentation represents reality, and this allows for consumer evaluation.
3. Buy. At this stage, the objective is to increase conversions and consumers' willingness to pay. The 3D presentation serves as a representation of a shopping environment in a variety of contexts. In addition, consumer purchase intentions increase through enjoyment, realism, a sense of presence, and perceived control.
4. Enjoy. At this stage, the objective focuses on improving the consumer experience. The 3D presentation provides a better experience than images or videos.
5. Advocate. At this stage, the objective is to facilitate direct communication with the consumer to increase brand awareness.
6. Bond. In this stage, the consumer-brand relationship is strengthened, and loyalty is generated. The 3D presentation provides an emotionally positive experience and increases satisfaction, allowing for effective bonding.

FINAL CONSIDERATIONS

This article presented a meta-review on the importance of 3D presentation in consumers' purchase intention. We obtained current information on the research and application topics related to the study's objective. In addition, the applied methodology allowed us to validate the results and obtain a substantiated review. From the development of the meta-review, we highlight that consumers have difficulties understanding the physical

capabilities of a product on the web, in addition to not having enjoyment and entertainment when reviewing and interacting with catalogs, which is reflected in purchase intention. Therefore, adopting the use of 3D environments for the presentation of products is important so that consumers have greater interaction, enjoyment, and purchase intention, thereby guaranteeing greater consumer interest in the business.

Conflict of interest

The author declares that there is no conflict of interest.

Statement of data consent

The data generated during the development of this study has been included in the manuscript. ■

REFERENCES

- ALCAÑIZ, M., BIGNÉ, E., & GUIXERES, J. (2019). *Virtual Reality in Marketing: A Framework, Review, and Research Agenda Previous Works on Virtual Experience in*. 10(July), 1-15. <https://doi.org/10.3389/fpsyg.2019.01530>
- ALZAYAT, A., & LEE, S. H. (MARK). (2021). Virtual products as an extension of my body: Exploring hedonic and utilitarian shopping value in a virtual reality retail environment. *Journal of Business Research*, 130(April 2020), 348-363. <https://doi.org/10.1016/j.jbusres.2021.03.017>
- AURAZO, J., & VEGA, M. (2021). Why people use digital payments: Evidence from micro data in Peru. *Latin American Journal of Central Banking*, 2(4), 100044. <https://doi.org/10.1016/j.latch.2021.100044>
- BELÉM, F. M., SILVA, R. M., DE ANDRADE, C. M. V., PERSON, G., MINGOTE, F., BALLE, R., ALPONTI, H., DE OLIVEIRA, H. P., ALMEIDA, J. M., & GONÇALVES, M. A. (2020). "Fixing the curse of the bad product descriptions" - Search-boosted tag recommendation for E-commerce products. *Information Processing and Management*, 57(5), 102289. <https://doi.org/10.1016/j.ipm.2020.102289>
- BERG, H., & LINDSTRÖM, A. (2021). Online product size perceptions: Examining liquid volume size perceptions based on online product pictures. *Journal of Business Research*, 122(December 2019), 192-203. <https://doi.org/10.1016/j.jbusres.2020.09.001>
- BIEMANS, W., MALSHE, A., & JOHNSON, J. S. (2022). The sales-marketing interface: A systematic literature review and directions for future research. *Industrial Marketing Management*, 102(February), 324-337. <https://doi.org/10.1016/j.indmarman.2022.02.001>
- BIR, C., DELGADO, M. S., & WIDMAR, N. O. (2020). Presenting smaller 'component designs' in place of large discrete choice experiment. *Journal of Agriculture and Food Research*, 2(May), 100083. <https://doi.org/10.1016/j.jafr.2020.100083>
- BULDEO RAI, H., TOUAMI, S., & DABLANC, L. (2022). Autonomous e-commerce delivery in ordinary and exceptional circumstances. The French case. *Research in Transportation Business and Management*, October 2020, 100774. <https://doi.org/10.1016/j.rtbm.2021.100774>
- CHOI, Y. K., & TAYLOR, C. R. (2014). How do 3-dimensional images promote products on the Internet? *Journal of Business Research*, 67(10), 2164-2170. <https://doi.org/10.1016/j.jbusres.2014.04.026>
- DEY, A. U., GHOSH, S. K., VALVENY, E., & HARIT, G. (2021). Beyond visual semantics: Exploring the role of scene text in image understanding. *Pattern Recognition Letters*, 149, 164-171. <https://doi.org/10.1016/j.patrec.2021.06.011>
- FERNÁNDEZ-BONILLA, F., GIJÓN, C., & DE LA VEGA, B. (2022). E-commerce in Spain: Determining factors and the importance of the e-trust. *Telecommunications Policy*, 46(1). <https://doi.org/10.1016/j.telpol.2021.102280>
- Florack, A., Egger, M., & Hübner, R. (2020). When products compete for consumers attention: How selective attention affects preferences. *Journal of Business Research*, 111(May 2019), 117-127. <https://doi.org/10.1016/j.jbusres.2019.05.009>
- FULLER, R. M., HARDING, M. K., LUNA, L. A., & SUMMERS, J. D. (2022). The impact of E-commerce capabilities on online retailer performance: Examining the role of timing of adoption. *Information and Management*,

- 59(2), 103584. <https://doi.org/10.1016/j.im.2021.103584>
- GULFRAZ, M. B., SUFYAN, M., MUSTAK, M., SALMINEN, J., & SRIVASTAVA, D. K. (2022). Understanding the impact of online customers' shopping experience on online impulsive buying: A study on two leading E-commerce platforms. *Journal of Retailing and Consumer Services*, 68(March), 103000. <https://doi.org/10.1016/j.jretconser.2022.103000>
- HELMY MOHAMAD, A., FAROUK HASSAN, G., & ABD ELRAHMAN, A. (2022). Impacts of e-commerce on planning and designing commercial activities centers: A developed approach. *Ain Shams Engineering Journal*, 13(4), 101634. <https://doi.org/10.1016/j.asej.2021.11.003>
- HUANG, B., JUANEDA, C., SÉNÉCAL, S., & LÉGER, P. M. (2021). "Now You See Me": The Attention-Grabbing Effect of Product Similarity and Proximity in Online Shopping. *Journal of Interactive Marketing*, 54, 1-10. <https://doi.org/10.1016/j.intmar.2020.08.004>
- HURTADO RAMOS, A. F., & FLOREZ RAMÍREZ, A. P. (2021). *Marketing audiovisual y posicionamiento en empresas dedicadas a la elaboración de productos de cacao, chocolates, confitería, distrito de Tarapoto 2019* [Universidad Nacional de San Martín]. <https://repositorio.unsm.edu.pe/handle/11458/4208>
- JADIL, Y., RANA, N. P., & DWIVEDI, Y. K. (2022). Understanding the drivers of online trust and intention to buy on a website: An emerging market perspective. *International Journal of Information Management Data Insights*, 2(1), 100065. <https://doi.org/10.1016/j.jjimei.2022.100065>
- KANANI, R., & GLAVEE-GEO, R. (2021). Breaking the uncertainty barrier in social commerce: The relevance of seller and customer-based signals. *Electronic Commerce Research and Applications*, 48(May 2020), 101059. <https://doi.org/10.1016/j.elerap.2021.101059>
- KANG, H. J., SHIN, J. HYE, & PONTO, K. (2020). How 3D Virtual Reality Stores Can Shape Consumer Purchase Decisions: The Roles of Informativeness and Playfulness. *Journal of Interactive Marketing*, 49, 70-85. <https://doi.org/10.1016/j.intmar.2019.07.002>
- KIM, J. (JEANNE), KIM, S., & CHOI, J. (2020). Purchase now and consume later: Do online and offline environments drive online social interactions and sales? *Journal of Business Research*, 120(September 2018), 274-285. <https://doi.org/10.1016/j.jbusres.2019.09.021>
- KIM, S., BAEK, T. H., & YOON, S. (2020). The effect of 360-degree rotatable product images on purchase intention. *Journal of Retailing and Consumer Services*, 55(February), 102062. <https://doi.org/10.1016/j.jretconser.2020.102062>
- KOLOTYLO-KULKARNI, M., XIA, W., & DHILLON, G. (2021). Information disclosure in e-commerce: A systematic review and agenda for future research. *Journal of Business Research*, 126(December 2020), 221-238. <https://doi.org/10.1016/j.jbusres.2020.12.006>
- KOSTYK, A., & SHENG, J. (2022). VR in customer-centered marketing: Purpose-driven design. *Business Horizons*. <https://doi.org/10.1016/j.bushor.2022.06.005>
- PINO, G., AMATULLI, C., NATARAAJAN, R., DE ANGELIS, M., PELUSO, A. M., & GUIDO, G. (2020). Product touch in the real and digital world: How do consumers react? *Journal of Business Research*, 112(June 2019), 492-501. <https://doi.org/10.1016/j.jbusres.2019.10.002>
- REISOĞLU, I., TOPU, B., YILMAZ, R., KARAKUŞ YILMAZ, T., & GÖKTAŞ, Y. (2017). 3D virtual learning environments in education: a meta-review. *Asia Pacific Education Review*, 18(1), 81-100. <https://doi.org/10.1007/s12564-016-9467-0>
- SALAZAR NOVOA, F. R. (2021). Influencia del marketplace en el desempeño comercial de la empresa Gusto Amazónico en el distrito de Tarapoto - 2020 [Universidad Nacional de San Martín]. In *Universidad Nacional de San Martín*. <https://repositorio.unsm.edu.pe/handle/11458/3994>
- SERRAVALLE, F., VANNUCCI, V., & PANTANO, E. (2022). "Take it or leave it?": Evidence on cultural differences affecting return behaviour for Gen Z. *Journal of Retailing and Consumer Services*, 66(November 2021), 102942. <https://doi.org/10.1016/j.jretconser.2022.102942>
- SINHA, S. K., & VERMA, P. (2020). Impact of sales Promotion's benefits on perceived value: Does product category moderate the results?

- Journal of Retailing and Consumer Services*, 52(December 2017), 101887. <https://doi.org/10.1016/j.jretconser.2019.101887>
- SULAIMAN, M. Z., NASIRUDDIN, M., AZIZ, A., ABU, M. H., HALILL, N. A., & AZUDDIN, M. A. (2020). *Matterport: Virtual Tour as A New Marketing Approach in Real Estate Business During Pandemic*. 502(Imdes), 1-6.
- SURAHMAN, A., WAHYUDI, A. D., & SINTARO, S. (2019). *Implementasi Teknologi Visual 3D Objek Sebagai Media Peningkatan*. 123-131. <https://doi.org/https://doi.org/10.24002/jbi.v11i2.3701>
- TAN, P. J., TANUSONDJAJA, A., CORSI, A., LOCKSHIN, L., VILLANI, C., & BOGOMOLOVA, S. (2021). Behavioural and psychographic characteristics of supermarket catalogue users. *Journal of Retailing and Consumer Services*, 60(August 2018), 102469. <https://doi.org/10.1016/j.jretconser.2021.102469>
- THOMAS, J. S., JAP, S. D., DILLON, W. R., & BRIESCH, R. A. (2021). Investigating the Role of Product Assortment in Technology-Enabled Sales Platforms. *Journal of Interactive Marketing*, 55, 31-51. <https://doi.org/10.1016/j.intmar.2020.12.001>
- TONG, T., XU, X., YAN, N., & XU, J. (2022). Impact of different platform promotions on online sales and conversion rate: The role of business model and product line length. *Decision Support Systems*, 156(February), 113746. <https://doi.org/10.1016/j.dss.2022.113746>
- VERHOEF, P. C., BROEKHUIZEN, T., BART, Y., BHATTACHARYA, A., QI DONG, J., FABIAN, N., & HAENLEIN, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122(July 2018), 889-901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- XIA, H., PAN, X., ZHOU, Y., & ZHANG, Z. (JUSTIN). (2020). Creating the best first impression: Designing online product photos to increase sales. *Decision Support Systems*, 131(December 2019), 113235. <https://doi.org/10.1016/j.dss.2019.113235>
- ZHAO, M., & XIA, L. (2021). Joint or separate? The effect of visual presentation on imagery and product evaluation. *International Journal of Research in Marketing*, 38(4), 935-952. <https://doi.org/10.1016/j.ijresmar.2020.11.007>

