

"The Impact of Using Artificial Intelligence and Virtual Reality (VR) on the Production of Interactive TV Programs" (Case Study)

Lamiaa Fathy Saber Abo-Elnaga

Assistant Professor, Dept. of Photography, Cinea &TV, Faculty of Applied Arts, Damietta University- Egypt, lamiaafathy@du.edu.eg, Lamiaafathy1@yahoo.com

Abstract:

The media industry has evolved significantly thanks to the emergence of artificial intelligence and virtual reality technologies, making viewers part of a dynamic interactive experience. This study aims to explore how artificial intelligence and virtual reality can be integrated into the production of interactive television programs, and to examine their impact on viewership and content quality. The research problem lies in identifying the current practical applications of these technologies in television programs and achieving a balance between technological interactivity and maintaining the quality of storytelling. The research assumes that interactive narrative theory suggests that personal interaction with content enhances viewers' engagement and emotional connection to the story. The research follows a descriptive-analytical approach, with a case study of the "Genius" program, a visualization of an interactive version of it, and a survey of the program's participating audience. The research results indicate that the success of media organizations in the digital age depends on their ability to adapt, embrace technology, understand audience dynamics, and rely on modern innovations (virtual reality and artificial intelligence) to effectively develop interactive television programs. The researcher recommends training program creators to develop new technical skills and conducting future research on interactive news and documentary programs to measure the impact of artificial intelligence and virtual reality in various media fields. Artificial intelligence (AI) has become an integral part of the media and television broadcasting industries. It has revolutionized how content is produced and edited in more efficient and accurate ways. The media industry has evolved significantly thanks to the emergence of AI and virtual reality (VR) technologies, opening up new opportunities to create unique interactive experiences for viewers. Viewers are no longer passive recipients of content, but rather part of a dynamic interactive experience that they can directly influence. This study aims to explore how AI and VR can be integrated into the production of interactive television programs and examine the impact of these technologies on the nature of viewership, content quality, and the future of interactive media.

Research Importance: Bridging the gap in the literature on the integration of artificial intelligence and virtual reality in television content production. Providing strategies for media makers on how to use these technologies to improve audience engagement. Exploring the impact of these technologies on the future of the television industry and how viewers can transform from passive recipients to active participants.

Research objectives: Exploring how artificial intelligence and virtual reality technologies can be integrated into the production of interactive television programs. Evaluating the impact of these technologies on the viewing experience and audience behavior. Analyzing the technical and creative challenges associated with implementing these technologies in television production. Providing recommendations for developing sustainable and innovative interactive television programs.

Research problem: Despite the increasing use of artificial intelligence (AI) and virtual reality (VR) technologies in the gaming and digital entertainment industries, their application in television programming remains limited and faces technical and creative challenges. The core problem is understanding how these technologies contribute to developing interactive television content, maintaining narrative quality, and enhancing the viewing experience.

The research questions are: How can AI and VR technologies change the traditional television viewing experience? What are the current practical applications of these technologies in television programming? What are the technical and creative challenges facing television program creators in using these technologies? How can a balance be achieved between technological interactivity and maintaining quality storytelling?

Research Hypotheses: Integrating artificial intelligence and virtual reality into television programs improves the viewing experience and increases audience engagement. Interactive narrative theory posits that personal interaction with content enhances viewer engagement and emotional connection to the story. Technological innovation theory posits that technical and financial barriers pose major challenges to the adoption of technological innovations.

Technical challenges such as software complexity and production costs are major barriers to the widespread adoption of these technologies. AI can enhance storytelling rather than limit it by personalizing content and adapting it to viewer preferences.

Research Methodology: The research follows a descriptive-analytical approach, with a case study of the Egyptian variety show "Al-Abghari" (The Genius). The research also included a visualization of an interactive version of the program, and a survey of the program's audience.

Data Collection Tools: Literature review related to artificial intelligence and virtual reality in interactive television program production. Questionnaires were used to measure audience engagement with interactive programs. The study population is the audience and viewers of the Egyptian variety show "Al-Abghari."

Results: Artificial intelligence can produce successful television programs in the future, given the continuous advancement of technology. The success of media organizations in the digital age depends on their ability to adapt, embrace technology, and understand audience dynamics. Organizations that have invested in digital transformation and modern technologies have been able to enhance their sustainability and stay ahead of the competition.

The integration of artificial intelligence and virtual reality enhances the viewing experience and increases audience engagement. Identify the technical and creative challenges that hinder the widespread adoption of these technologies. Relying on modern innovations (virtual reality) works to develop interactive television programs effectively.

Recommendations: The need to train program creators to develop new technical skills, such as the use of artificial intelligence and virtual reality tools. Encourage and encourage increased investments in infrastructure and technical and technological support for the media industry to facilitate the adoption of these technologies (artificial intelligence and virtual reality). Maintain narrative e quality and emphasize the importance of preserving the creative elements of television programs while introducing modern technologies. Conduct future research on interactive news and documentary programs to measure the impact of artificial intelligence and virtual reality in various media fields.

Paper History:

Paper received March 15, 2025, Accepted May 06, 2025, Published on line July 1, 2025

Keywords:

AI-generated television programs, interactive television, interactive narrative theory, technological innovation theory

References:

- 1- Charlie Beckett, Edward Finn, Frederick Heintz, Frederick Heymans, et al. (2024): "A Report on Artificial Intelligence," United Nations Educational, Scientific and Cultural Organization (UNESCO).
- 2- Rahmi, Hisham (2024): "Transformations of the Narrative Text from Digital to Interactive," Al-Ma'rifa Magazine, Issue Thirteen.
- 3- Shams El-Din, Fathi, and Aqila, Abdul Mohsen (2024): "Virtual Reality and the Future of New Media in the Age of Artificial Intelligence," Dar Al-Nahda Al-Arabiya, Egypt.
- 4- Hafez Badawi, Hanaa (1999): "Methods of Organizing Society (Foundations and Principles)," Dar Al-Ma'rifa Al-Jami'a, Alexandria.
- 5- A. Bansal (Dr. Shweta) & Chhabra(Charu), (2024):" AI HORIZONS:
- 6- EXPLORING MULTIDISCIPLINARY FRONTIERS (NEW FRONTIER: THE AI POWERED MEDIA)", Volume – III,Reds Shine Publication , SWEDEN.
- 7- Aylett (Ruth),1999:"Narrative in virtual environments — towards emergent narrative. In M. Mateas and P. Sengers, editors, Narrative Intelligence: Papers from the AAAI Fall Symposium (Technical Report FS-99-01), pages 83–86. AAAI Press, Menlo Park.
- 8- Carmigniani, J., & Furht, B. (2011). Augmented Reality: An Overview. Retrieve.
- 9- (Chizoba),Emmanuel (2024) : " the intersection of broadcast media and technology: artificial intelligence, virtual reality and the future of storytelling".
- 10- https://www.researchgate.net/publication/383091185_the_intersection_of_broadcast_media_and_technology_artificial_intelligence_virtual_reality_and_the_future_of_storytelling
- 11- (Davis) Hilary, (Waycott) Jenny &(Schleser) Max, (2019) : "Digital storytelling Designing, developing and delivering with diverse communities, Managing Complexity and Creating Innovation through Design",1st edition
https://www.researchgate.net/publication/332648747_Digital_storytelling/link/5e09c02e92851c8364a4a8f4/download
- 12- D. Silva, (2024): "The impact of artificial intelligence on User Experience Medium",
<https://uxplanet.org/the-impact-of-artificial-intelligence-on-user-experience-d55635c20adf>

- 13- Gillis, A. S. (2024):" Augmented reality (AR). Retrieved from TechTarget":-
- 14- <https://www.techtarget.com/whatis/definition/augmented-reality-AR>
- 15- Karnchanapayap(Gomesh).2023:" Activities-based virtual reality experience for better audience engagement", Computers in Human Behavior, Volume 146.
- 16- LaValle, S. M. (2019). Virtual reality. Cambridge, England: Cambridge University Press.-
- 17- Li, M., & Zhang, Y. (2023):" The Future of Immersive TV: Blending AI, VR, and Traditional Broadcasting. Broadcasting Innovations Quarterly".
- 18- (Porteous) Julie,(Cavazza) Marc &(Charles) Fred ,(2010):" Applying planning to interactive storytelling: Narrative control using state constraints. ACM Transactions on Intelligent Systems and Technology, 1(2).
- 19- Reality),Proven, (2023):" Augmented reality in film industry: 20 revolutionary applications-(
- 20- Retrieved from Proven Reality" <https://provenreality.com/augmented-reality-in-film-industry/>
- 21- Svitlana F , ryna V, Yuliia S, Natalia G(2021). Multimodality and Digital Narrative in Teaching a Foreign Language, Arab World English Journal (AWEJ) Special Issue on CALL Number 7.
- 22- Frederick (1984).;"The New Communications", Belmont,CA :Wadsworth Publishing Co.Williams
- 23- <https://robllewellyn.com/innovation-definition/1>)
- 24- <https://fastercapital.com/arabpreneur/>
- 25- https://fac.umc.edu.dz/fil/images/cours_arabe_22/L2/%D9%86%D8%B8%D8%B1%D9%8A%D8%A9%20%D8%A7%D9%84%D8%B3%D8%B1%D8%AF.pdf
- 26- <https://www.repsol.com/en/energy-and-the-future/technology-and-innovation/technological-innovation/index.cshhtml>
- 27- https://www.madox24.com/2023/08/blog-post_28.htm
- 28- <https://www.academia.edu/118438162>
- 29- <https://www.bbc.com/arabic/articles/cn8gp59k3vno>
- 30- <https://www.sciencedirect.com/topics/computer-science/interactive-tv>
- 31- <https://fastercapital.com/arabpreneur>
- 32- <https://fastercapital.com/arabpreneur>
- 33- https://fac.umc.edu.dz/fil/images/cours_arabe.
- 34- <https://holistiquetraining.com/ar/news/media-management-in-the-digital-age-challenges-and-opportunities>
- 35- <https://www.linkedin.com/pulse/future-tv-platforms-new-era-personalized-interactive-ai-driven-%C3%BCst-hndae/>
- 36- <https://jasminemoradi.com/how-future-technologies-like-vr-ar-and-ai-can-make-tv-more-inclusive-my-insights>
- 37- <https://lbbonline.com/news/the-difference-between-xr-and-virtual-production>
- 38- <https://www.muvi.com/blogs/what-is-a-cloud-tv-all-you-need-to-know>
- 39- <https://www.advanced-television.com/2025/03/26/the-future-of-television-how-technology-is-shaping-the-industry>
- 40- <https://www.bbnimes.com/companies/the-emergence-of-digital-concierge-boards>
- 41- <https://www.aletihad.ae/opinion/4496265>
- 42- <https://7production.net/ar/news>
- 43- <https://www.newscaststudio.com/2025/02/06/industry-insights-the-state-of-ai-in-broadcasting-and-production>
- 44- <https://www.topview.ai/blog/detail/Netflix-AI-Create-Your-Own-TV-Shows-With-AI>

CITATION

Lamiaa Abo-Elnaga (2025), "The Impact of Using Artificial Intelligence and Virtual Reality (VR) on the Production of Interactive TV Programs" (Case Study), *International Design Journal*, Vol. 15 No. 4, (July 2025) pp 247-257