international DESIGN JOURNAL
Print ISSN 2090-9632
Online ISSN 2090-9640

The impact of cognitive Internet of Things technology on wearable device advertisements

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Abstract:

The researcher's investigation into IoT technology, particularly the cognitive IoT branch linked with artificial intelligence and machine learning, highlights its potential to revolutionize advertising. These technologies, known for their flexibility, precision, and innovation, have paved the way for advertisements designed specifically for wearable devices. By leveraging direct interaction with individual behavior, this integration allows for the creation of highly personalized, accurate, and interactive advertising messages. The researcher concludes that the future of advertising will likely incorporate smart wearable devices connected to this advanced branch of IoT, leading to a fundamental transformation in the structure, content, and overall approach to advertisements. Accordingly, the following key studies were referred to and utilized in this research: THE COGNITIVE INTERNET OF THINGS - Aneta A. Wiktorzak and others – 2018 - DOI: 10.34668/PJAS.2018.4.3.01 , Wearables and Internet of Things (IoT) Technologies for Fitness Assessment: A Systematic Review - João Passos & others – 2021 - DOI:10.3390/s21165418, and Applications of Smart Clothing – _Brief Overview - Siqi Jiang & Others – 2021 – DOI:10.25367/cdatp.2021.2.p123-140

Problem: - How can Internet of Things (IoT) technology contribute to the effectiveness of advertisements for wearable devices? - How can the user experience be improved through interactive advertisements on wearable devices?

Objectives: A study on the impact of the Internet of Things (IoT) technology on the behavior of interactive users through its application to wearable device advertisements.

Significance: It is clarified in the following points: - Increasing awareness of the importance of studying the Internet of Things technology. - Improving the effectiveness of advertisements specific to haptic devices.

Methodology: - Inductive Method: Inductive research is used through the study of a phenomenon and its boundaries, and the details related to it. - Deductive approach: The deductive research method is used to examine attempts to apply this technology in the field of designing and implementing advertisements specific to wearable devices.

Research results: -The technology of the cognitive Internet of Things is the evolution of the Internet of Things and is related to artificial intelligence and machine learning. -Our understanding of our cognitive abilities and the capabilities of the human mind, along with the attempt to comprehend the surrounding mysteries, provides and develops technological tools that generally change the shape of human life. - The integration that is happening and will happen in the future between our technological tools and advertising, such that advertising becomes closely related to the tool, will make advertising the informational interface for technology and its tools in the future. - The interactivity that occurs on the physiological side of the user/interactor's interaction with wearable smart devices corresponds to an implicit, authentic interactivity between the user/interactor and the presented smart informational advertisement content. - Wearable devices are considered an important cognitive advertising interface for all sectors of human activities. These devices, linked to cognitive Internet of Things technology, will change advertisements and content.

Paper History:

Paper received October 17, 2024, Accepted December 22, 2024, Published on line March 1, 2025

Keywords:

Internet of Things- Cognitive Computing- Cognitive Internet of Things Study Background

References:

1- Rubin, A. A. (2019, 08 21). Retrieved from Polish Journal of Applied Sciences: https://pjas.ansl.edu.pl/index.php/pjas/article/view/120

2- Rahman, H. R. (2018, January). Retrieved from ScienceDirect: https://www.sciencedirect.com/science/article/pii/S2210832717300364

3- Wu, Q. (2014, Mar 11). Retrieved from arXiv info-Cornell University: https://arxiv.org/pdf/1403.2498

4- Mohamed Saifeddine Hadj Sassi, F. G. (2019). Retrieved from ScienceDirect: https://www.sciencedirect.com/science/article/pii/S1877050919313924

5- Jayavardhana Gubbi, R. B. (2013, September). Retrieved from ScienceDirect: https://www.sciencedirect.com/science/article/abs/pii/S0167739X13000241

6- Sheth, A. (2016, March 17). Retrieved from IEEEexplore: https://ieeexplore.ieee.org/abstract/document/7435181

7- Luigi Atzori, A. I. (2010, October 28). Retrieved from ScienceDirect: https://www.sciencedirect.com/science/article/abs/pii/S1389128610001568

8- Andrade, M. (1967). COGNITIVE PSYCHOLOGY. (T. Radtke, Ed.) Santa Clarita, California, USA: College of the Canyons.

9- Braisby, N. (2005). Cognitive Psychology. (N. B. Gellatly, Ed.) New York, USA: Oxford University Press i.

10- Anderson, J. R. (2014). Cognitive Psychology and Its Implications (Vol. Seventh Edition). New York, USA: Worth Publishers.

11- Silverman, J. F. (2006). Cognitive Science: An Introduction to the Study of Mind. California, USA: Sage Publications, Inc.

12- III, D. J. (2017, May 2). Retrieved 20 9, from ibm: https://www.ibm.com/investor/att/pdf/JEK_UBS_FINAL_with_Disclaimer.pdf

13- Luigi Atzori, A. I. (2010, October). Retrieved 9 2024, from ResearchGate: https://www.researchgate.net/publication/222571757_The_Internet_of_Things_A_Survey

14- Li Da Xu, W. H. (2014, NOVEMBER). Retrieved 8 2024, from IEEExplore: https://ieeexplore.ieee.org/document/6714496

15- Jin ho Park, M. M. (2019, August 01). Retrieved 7 2024, from Springer Nature Link: https://link.springer.com/article/10.1186/s13673-019-0190-9

16- Ovidiu Vermesan, J. B. (2017). Cognitive Hyperconnected Digital Transformation Internet of Things Intelligence Evolution. Gistrup, Denmark: River Publishers.

17- Jin ho Park, M. M. (2019, August). Retrieved 9 2024, from researchgate: https://www.researchgate.net/publication/334845789_CIoT-Net_a_scalable_cognitive_IoT_based_smart_city_network_architecture

18- Li Da Xu, W. H. (2014, January 16). Retrieved 8 2024, from IEEExplore: https://ieeexplore.ieee.org/document/6714496

19- Xu, W. S. (2016, June 09). Retrieved 9 2024, from IEEExplore: https://ieeexplore.ieee.org/document/7488250

20- Naudet, D. A. (2020, 09 29). Retrieved 8 2024, from chistera: https://www.chistera.eu/sites/www.chistera.eu/files/Interaction%20in%20Cognitive%20IoT%20-%20Dimitra%20Anastasiou.pdf

21- Others, Y. K. (2021, August). Retrieved 9 2024, from ScienceDirect: https://www.sciencedirect.com/science/article/pii/S0268401220308082

22- Others, J. F. (2019, June). Retrieved 8 2024, from PMC home page: https://pmc.ncbi.nlm.nih.gov/articles/PMC6502424/pdf/WPS-18-119.pdf

23- Raman, P. R. (2017). The Internet of Things. USA: Taylor & Francis Group.

24- ÜNAL, E. A. (2023). WEARABLE TECHNOLOGIES. Ankara, Türkiye: iksad publishing house. Retrieved from https://iksadyayinevi.com/wp-content/uploads/2024/01/WEARABLE-

TECHNOLOGIES.pdf

25- Dubs, K. K. (2018). Wearable Devices - A Technological Trend with Implications for Business Models. Linköping, Sweden: Linköpings University.

26- Sommer, J. K. (2015). Retrieved 8 2024, from academia: https://www.academia.edu/12140477/Watch_Out_for_the_Wearables_The_Persuasive_Ideologies_of_Smartwatch_Advertising

27- Kieran Brophy, S. D. (2021, June). Retrieved 8 2024, from researchgate: https://www.researchgate.net/publication/352738097_The_future_of_wearable_technologies

28- Rauschnabel, N. K.-W. (2019, February). Retrieved 7 2024, from researchgate: https://www.researchgate.net/publication/328543461_How_functional_and_emotional_ads_drive_smartwatch_adoption_The_moderating_role_of_consumer_innovativeness_and_extraversion

29- Rutherford, J. J. (2010, May-June). Retrieved 9 2024, from IEEExplore: https://ieeexplore.ieee.org/abstract/document/5463002

30- João J. Ferreira, C. I. (2021, May). Retrieved 8 2024, from sciencedirect: https://www.sciencedirect.com/science/article/abs/pii/S0747563221000327

31- Pethuru Raj, A. C. (2017). Cognitive Internet of Things Enabling Technologies, Platforms, and Use Cases (Vol. First edition). New York, USA: taylorandfrancis.

32- PradnyaMhatre, S. P. (2021). Retrieved 9, 2024 from VIVA-Tech International journal for Research and Innovation: https://www.viva-technology.org/New/IJRI/2021/161.pdf

33- Kanupriya. (2022, October). Retrieved 10 2024, from researchgate: https://www.researchgate.net/publication/364228125_Current_and_future_perspectives_on_smart_glasses

34- T M CHAKRAVARTHY, S. K. (2021, MAY). Retrieved 10 2024, from IRE Journals: https://www.irejournals.com/formatedpaper/1702720.pdf

35- Raad, H. (2021). Fundamentals of IoT and Wearable Technology Design. (E. Hossain, Ed.) New Jersey., USA: Wiley.

36- Rafa Rahman, M. E. (2019, September 12). Retrieved 9 2024, from sage: https://journals.sagepub.com/doi/full/10.1177/1553350619871787

37- Sara Khosravi, S. G. (2022, October 8). Retrieved 9 2024, from mdpi: https://radar.gsa.ac.uk/8751/1/281133.pdf

CITATION Riham Salem, et al (2025), The impact of cognitive Internet of Things technology on wearable device advertisements, International Design Journal, Vol. 15 No. 2, (March 2025) pp 21-32