Review of: "The Metaverse in Tourism and the Airline Industry"

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This paper aims to connect the Metaverse with applications in the areas of Marketing, Customer Service and Sales for the Tourism and Airline Industry, with a review of previous works and current developments by companies in said industry. The main contribution is such a review of the bibliography, announcements and releases.

This article introduces the term "Metaverse" as a result of extended reality technologies connected in some way to the Internet, and with NFT and blockchain technology. Section 2 presents a Matrix to help create experiences in the Metaverse by combining the degree of interactivity with motivation. Section 3 refers to the strategic areas in the Tourism and Aeronautical Industry, Marketing and Sales. Section 4 provides the context of the potential of the Metaverse in the Tourism industry compared to other sectors of activity. Finally, Section 5 describes some non-academic use cases by listing announcements and initiatives from different airlines and other companies in the industry with Metaverse experiences.

As far as this reviewer's experience is concerned, the main strength of this article is the selected topic: the intersection between the Metaverse with the tourism industry and airlines, because, in fact, it is an excellent use case to explore the full potential from the metaverse.

For a more academic treatment and style, I would suggest the following improvements:

a. Be exhaustive in your abbreviation list (if it is VR, it should be AR, XR and MR), and avoid plural (NFT).

b. Include a methodology to better describe your work. Not clear to me the role of the matrix here, and combination of academic literature with news or announcements by the industry. Not clear also the link or sequence between the different sections.

c. Describe the research objectives more explicitly. It's not clear to me if this is a feasibility study for the industry to consider using Metaverse, and then I would miss a SWOT, or a review of current trends and existing applications of Metaverse in the industry, which usually include a proposal for future developments or research.

d. This precision with the objectives would also help to better understand the structure of the document and the relationship between the sections. For example, in the matrix is mentioned "Education users", but is no longer discussed in the text, when probably is another very interesting use case to train crew and customers on new (XR or not) touristic/flighting experiences.

e. Complement your information with tables and schematics for providing insights and comparing literature search results and actual industry examples, in terms of some impact indicators, technology requirements, preliminary acceptance by customers, and so on. If not, it is difficult to appreciate quite interesting use cases such as the Istanbul Airport for autistic children. BTW, it is not clear to me if such experience is basically a marketing campaign or if it is using the extended reality to provide a better socio-emotional ability in the communication with the autistic children, according to some other previous research works.

f. Some of the conclusions have not been derived from the above text, and are certainly relevant and important to the topic, such as data protection regulation. I would expect to find in the conclusions a summary of the findings discussed previously in the same paper. Perhaps a "Discussion" or "Results" section is missing.

g. It would be better to use the bibliography as a list of references and embed them one by one (and possibly many others) in their proper place in the text.

Some recommended complementary references:

- Buchholz, Florian & Oppermann, Leif & Prinz, Wolfgang. (2022). There's more than one metaverse. i-com. 21. 313-324. 10.1515/icom-2022-0034.

  https://www.researchgate.net/publication/365440726_There%27s_more_than_one_metaverse

- Yogesh K. Dwivedi et al, Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy, International Journal of Information Management, Volume 66, 2022, 102542, ISSN 0268-4012, https://doi.org/10.1016/j.ijinfomgt.2022.102542. (https://www.sciencedirect.com/science/article/pii/S0268401222000767)

- Dongying Wei, Gemiverse: The blockchain-based professional certification and tourism platform with its own ecosystem in the metaverse, International Journal of Geoheritage and Parks, Volume 10, Issue 2, 2022, Pages 322-336, ISSN 2577-4441, https://doi.org/10.1016/j.ijgeop.2022.05.004. (https://www.sciencedirect.com/science/article/pii/S2577444122000296)

- Accenture - Meet me in the Metaverse, https://www.accenture.com/_acnmedia/Thought-Leadership-Assets/PDF-5/Accenture-Meet-Me-in-the-Metaverse-Full-Report.pdf

  - 5G AR wayfinding to Marvel Stadium (https://www.youtube.com/watch?v=N37k8ME9xz8)
  - Mesh for Microsoft Teams aims to make collaboration in the 'metaverse' personal and fun, https://news.microsoft.com/innovation-stories/mesh-for-microsoft-teams/#:~:text=courtesy%20of%20Microsoft-,On%20the%20Nth%20Floor,-Kipman%20and%20his
  - Travis Scott and Fortnite Present: Astronomical, https://www.youtube.com/watch?v=wYeFAIVC8qU
  - Digital Human as a Service (DHaaS) Using AWS Wavelength, https://www.businesswire.com/news/home/20211203005441/en/KDDI-and-Mawari-to-Launch-a-Digital-Human-as-a-Service-DHaaS-Using-AWS-Wavelength/
  - Known Traveller Digital Identity (KTDI) blockchain, cryptography, biometrics, passengers' mobile

devices,https://ktdi.org/

- City GPS - Metaverse & Money, https://icg.citi.com/icghome/what-we-think/citigps/insights/metaverse-and-money_20220330

  - Seoul to become the first city to enter the metaverse. What will it look like?, https://www.euronews.com/next/2021/11/10/seoul-to-become-the-first-city-to-enter-the-metaverse-what-will-it-look-like
  - "Boeing Wants to Build Its Next Airplane in the 'Metaverse',",https://www.reuters.com/technology/boeing-wants-build-its-next-airplane-metaverse-2021-12-17/
  - Siemens Energy Taps NVIDIA to Develop Industrial Digital Twin of Power Plant in Omniverse, https://blogs.nvidia.com/blog/2021/11/15/siemens-energy-nvidia-industrial-digital-twin-power-plant-omniverse/
  - Recruitment in the metaverse: will it become a (virtual) reality?, https://www.hrmagazine.co.uk/content/news/recruitment-in-the-metaverse-will-it-become-a-virtual-reality/

- McKinsey - Value creation in the Metaverse,https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/value-creation-in-the-metaverse

  - Opportunities in the metaverse How businesses can explore the metaverse and navigate the hype vs. Reality, https://www.geekwire.com/sponsor-post/opportunities-in-the-metaverse/
  - NVIDIA, BMW Blend Reality, Virtual Worlds to Demonstrate Factory of the Future, https://blogs.nvidia.com/blog/2021/04/13/nvidia-bmw-factory-future/
  - The top trends in tech,https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-top-trends-in-tech , check also: Tech-Trends-Exec-Summary.pdf
  - A new dawn in tourism history, https://ariva.digital/,https://ariva.game/