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Avatar Technology, the Need and the challenges of its Utilization in Academic Libraries in Nigeria: A Review

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Abstract

The dynamism of the global ecosystem has facilitated the invention and emergence of many technologies in recent times aimed at easing the way things are done and information disseminated. One such technology is the avatar. This paper to this end takes a look at avatar and why it is needed in academic libraries in Nigeria. The study applied a qualitative research design, utilizing the explanatory research approach to examine the need for libraries to utilize Avatar technology in the contemporary digital ecosystem. A systematic examination of related literature was carried out in the cause of the study, with special reference on articles that gave concise and accurate information on Avatar technology using various search engines and websites such as, Google cloud, Google Search, Google Scholar and ResearchGate, AcademiaEdu and other related websites. The paper discussed avatar from the conceptual point of view, tracing the root of the concept and why it is needed in academic libraries which has found from the reviewed literature include among others that avatar technology is much better than video conferencing, works well with Intranets that do not support video conferencing traffic, can prevent information bottlenecks due to personality clashes, can express emotion through facial expressions and body posture. The paper also looked at the some ethical issues to be considered in the use of avatar in academic libraries such as identity creation in which case avatars provide users the chance to come up with digital identities that may be different from their real-life identity as well as the challenges of using the technology in academic libraries on the ground that avatar technology, is a fairly new horizon and there is this mixed reactions as what good or harm is going to have on the digital ecosystem in this millennium considering the fact, that it is faced with this problem of identity theft, which is a serious ethical challenge. The paper finally made its recommendations which include inter-alia; that there is the need for librarians to be trained and retrained on the intricacies of the art of avatar representations in the library and they in-turn, train the users for effective service delivery and harnessing the gains of avatar technology in a digital ecosystem as well as academic libraries and librarians carrying out vigorous avatar-literacy campaign.

Keywords: *Avatar Technology, Information and Communication Technology, Academic Library, Information, Environment, Knowledge Management*

1.0.   Introduction

The contemporary global digital ecosystem is predominantly ruled by technologies but prominently by information and communication technology. This has forced libraries and other information centres to be automated and operate as integrated library systems. The implication is that most services if not all are now computer driven. The underlying fact, is that in the present dispensation; knowledge management using every desirable information technology with a view to easing work load based on astronomical growth in information becomes inevitable. Librarianship as practiced today is that of ensuring that every available information no matter where, is made available to teeming library users who are ever asking for more unlike in the past when information is hoarded in the library resulting to waste of intellectual capabilities thereby denying the desirable human and national development. In this millennium, information has become the ultimate asset to knowledge and global development and academic libraries being at the centre of research are under mandatory to find and apply all novel information management technology to manage the overloading and over information flow in the global society. Ultimately, in this contemporary world, nations are as relevant as the information at their disposal and the results of researches from the academia form bulk of information needed for national development. The question is, will the integration of the new technology – Avatar be of help to academic libraries in their quest to satisfy the information needs of their teeming patrons?

Avatars in broad sense entails representations of nouns in manners that they suit the choice of users and they may be customized or personalized as preferred by the their users. The representations may come in the form of humans, animals, abstract objects and any other objects as the case may be. Avatar technology therefore, is all about the use of graphical images to represent users in a virtual world and can be used for a variety of purposes, while in computing, avatars are also known as profile pictures, userpics, or picons often two-dimensional icons in online communities and internet forums (Garner, 2024).

Avatars can also refer to the technology used in the Avatar films, such as the DeepX 3D camera used to film underwater scenes in Avatar (Augmented Training System, 2024**).** It is as well seen as one, or at least a facsimile of one which may be you or I. It is a graphical image of a user, representing oneself or someone. This implies that an avatar is a computer representation of users in a computer-generated 3D world, used primarily in chat and entertainment web sites (Mason, 2024). It is on this ground that they were defined by Kim and Sundar, (2012) as the interactive mediators between users and self-visual descriptions in virtual environments in which case, they allow users to come up with assorted identities in a virtual ecosystem (Lin and Wang, 2014). In other words, *avatars represent a brand new meeting of human communications whereas, the virtual worlds are worlds where people come to socialize, where people come to build cities, work, and try utopian experiences, to build together and learn together*. Avatar can also denote an embodiment or concrete manifestation of an abstract concept. To this end, avatars, or virtual representations of living creatures and their networked environments, represent the next major wave in online communications.

Considering the fact that avatars can be used for different purposes as tools for communication and interactions, bringing imagery to reality which increases users' experience. This paper therefore tends to take a holistic review of the technology and where they can be used in academic libraries in Nigeria. This has become imperative, as a new technology, its adoption in academic libraries in Nigeria seems to be in the dark as none of the academic libraries in Nigeria can boast of having its adoption in mind. This paper is aimed to be an awakening call and to bridge the gap in knowledge in this part of the globe. So the paper will cover areas like the etymology of avatar, areas they can be deployed in libraries and ethical issues that must be handled by both libraries and users among others.

1.1. Objectives of the study

The specific objectives of the study are to:

1. Ascertain need for avatar technology to be deployed in academic libraries
2. Identify ethical challenges that may hinder the optimal adoption of avatar technology in academic libraries
3. Identify challenges in the use of Avatar technology in academic libraries.

2.0.   Methodology

The study applied a qualitative research design, utilizing the explanatory research approach to examine the need for libraries to utilize Avatar technology in the contemporary digital ecosystem. A systematic examination of related literature was carried out in the cause of the study, with special reference on articles gave concise and accurate information on Avatar technology using various search engines and websites such as, Google cloud, Google Search, Google Scholar and ResearchGate, AcademiaEdu and other related websites. The search strategy involved the use of key terms such as, "Avatar technology"; "history of Avatar", "libraries and Avatar "and "Use of Avatar in libraries." This methodological approach spanned two weeks to gather pertinent articles for the research papers. Following the compilation of articles from the databases, the researcher thoroughly examined and assimilated the content related to the need for libraries to integrate Avatar technology into library services and the associated challenges into the paper. The entire research project was completed within a period of four-month, demonstrating a commitment to rigorous investigation. Ethical considerations were meticulously observed throughout the research process, with proper referencing of authors cited in the paper and ensuring consistency in the presentation of research findings.

3.0.   Literature Review
3.1. Conceptual Overview
3.1.1.   The Etymology of Avatar Technology
In the existence and life of man, the established axiom is that one must know where he is coming from as to know where he is heading for. This principle holds also in the field of science and technology as every celebrated technology today has an origin. The much celebrated computer technology, which has today become the chief corner stone of every contemporary technology, is traced to the time of Abacus and today the world is talking of silicon chips computer that is now ruling the world. This is also to be said of avatar technology as it did not just come, but has an origin.

The term avatar has its root from Hindu mythology and dates back thousands of years and derived from Sanskrit word "avatara" (also

spelt avatarah) in the 18th century which stands for "to descend" or "to past down" and signifies the material. Notable of the Hindus avatars in Hindu mythology include, Matsya which is Vishnu's first avatar that appears as a fish to warn Manu of a great flood, Kurma was Vishnu's second avatar, who appears as a tortoise or turtle while, Varaha was Vishnu's third avatar but this time, appears as a giant boar. With Narasimha appearing as Vishnu's fourth avatar and has the upper body of a human and the head and claws of a lion. In fact, Varaha: Vishnu's third avatar and Mohini a female avatar of Vishnu all appear in stories about the Kurma avatar among others (Google Cloud, 2024). However, the noun version of the term "avatar" first appeared in medieval era texts, composed after the sixth century CE. While it first appeared in English in 1784 in the writing of W. Jones meaning appearance or incarnation of a powerful deity or incarnation or human or animal appearance of deity (Lochtefeld, 2002). On the other hand the use of word avatars as a concept was first introduced in the post-Vedic literature, particularly the Bhagavad-Gita of the epic Mahabarata but first coined for use in describing users' visual embodiment in Cyberspace by Chip Morningstar in the early days of Habitat back in 1985. All the same, from the Hindu etymological point of view of avatar, can be deduced to be a personification of a deity or the embodiment of a specific quality or characteristic.

3.2. Need for Avatar Technology in Academic Libraries

It is believed, that avatars or virtual representations of living creatures and their networked environments, represent the next major wave in online communications. Therefore can offer its share of technological benefits since they have less bandwidth-intensive than regular Internet applications. Generally, the underscored benefits include that avatar technology is much better than video conferencing, works well with Intranets that do not support video conferencing traffic, can prevent information bottlenecks due to personality clashes, can express emotion through facial expressions and body posture and can point at artifacts being discussed. In other words, people can bring their stuff, like files, to an avatar meeting and that avatars can act as personal representatives to maintain a sense of presence and cohesiveness within workgroups when members are absent among other general benefits in an office settings (Mason, 2024).

As noted in recent years, so many libraries with academic libraries inclusive especially in developed nations, have come to embrace the virtual reality as a way of enhancing their services to their teeming users. The assertion is that if you do not belong, you are irrelevant and as a library, as you are not following the trend of contemporary communication technology that have turned library automation and by extension virtual library the moving trend considering the rate information is growing, you cannot manually cope without the integration of information and communication technologies. As revealed by Tsoubrakakou and Gaitanou, (2011) the library as a social institution is known to have always been a social space, a community of users using the physical library environment to interact with library staff and increasingly in modern learning, to interact with one another through group learning activities. With the emergence of virtual and digital global ecosystem, there increased the act of social networking which has further provided opportunities to enhancing their interactive services but this time in a virtual reality application. A situation that has created an encouraging environment that has facilitated effective service delivery and easier and faster way for information delivery. So with avatars in academic libraries, it will provide opportunities for librarians to take to the next level their

face-to-face interaction with users but this time, into digital and virtual service delivery system. Against this backdrop, Grassian and Trueman, (2007) infer that library is one of the most widely known virtual worlds that have become popular in this online virtual setting created by its residents and which a plethora of researchers refer to it as a community space.

As explained by Rostami and Maier (2022), they can also guide users through virtual library spaces, provide assistance with locating resources and facilitate interactive learning experiences. Avatars also enable libraries to extend their reach beyond physical boundaries, allowing patrons to access library services and resources remotely. Avatar is also a good tool for hosting gaming programs which is now a new call for libraries more so those in developing nations. It behooves academic libraries to get involved considering its role in contemporary education and learning. Eventually to public libraries in the UK and their likes who did embrace the act of gaming as far back as in the 19th century and had gaming rooms as a way of keeping their patrons and to take them away from public buildings, the whole idea and all may be boring and distracting but one thing that is new and innovative writes Tsoubrakakou and Gaitanou (2011) in this contemporary epoch is their evolving role, through which efforts are made to meet the teeming information needs and expectations of host community and other stakeholders.

This technology is also seen as a second life, developed by Linden Lab in June 2003 which is considered by Tsoubrakakou and Gaitanou (2011) as a social networking place that promotes interactive library services to a new level of sophistication. The idea buttressed Tehrani (2008) is that Librarians from several libraries worldwide have the chance to "meet" in Second Life and get to know and provide better information to their library patrons through this exciting world and it is also a service point and learning environment for both business and academia added Foster (2005).

Generally, the integration of avatars into academic libraries service delivery systems have the potential to reshape the ways people access, disseminate, and interact with information and knowledge and at the same time, they will help in promoting a sense of communal interaction that breaks all geographical barriers. Be that as it may, Libraries from inception in line with their mandate are seen as the custodian of knowledge and culture therefore better positioned to providing for the people needed information resources and services. In this regard states Noy (2024) libraries have integrated digital technologies to enhancing their services as well as using these novel and innovative avenues to engage users and one of such technologies that have become prominent revealed Liu and Tinmaz, (2024) is the utilization of avatars which are digital representation of users and individuals who interact with these avatars within the library space. The implication asserted Rubin et al. (2010) is that avatars serve as digital representatives for libraries that offer a personalized and interactive experience for their clienteles.

The integration of avatar in academic libraries will also enhance collaboration, creativity, learning, and networking between librarians and their users through participation in such a virtual world (Tehrani, 2008),

3.3. Ethical issues in the Use of Avatars in Academic Libraries

It is no longer debatable, that avatars represent the real time embodiment of people in cyberspace and the fundamental avenue to meaningful community communication and a sense of place and memory as well as online tool for effective communication for the general population and the academic world. In this contemporary digital ecosystem, avatar stands as a representation of humans and in the case of libraries, users in virtual ecosystem providing for them avenues for identification, coming together and communication. All the same, there is much to it than the eyes could see just like other contemporary technologies such as the AI and blockchain. The utilization of avatars so to speak, also has its associated ethical issues in respect of its representations that need to be considered.

Available evidence based on findings from studies carried out revealed that there are many ethical implications and responsibilities which need to be considered when associating and interacting with digital humans. As revealed by Arya et al. (2024) some of the identified ethical implications relating to avatar representation in libraries include: identity creation in which case avatars provide users the chance to come up with digital identities that may be different from their real-life identity. While this can be empowering for individuals seeking self-expression or anonymity, it also raises questions about the representation of diverse identities within virtual spaces. Inasmuch as this may be encouraging for someone seeking self-expression or hiding his or her identity, it also raises questions about the representation of different identities within virtual spaces which may be quite different from users' actual identities.

There is also the issue of privacy as the creation and utilization of avatars in most cases entail the collection and sharing of personal data, including biometric information and behavioral patterns. And this may tantamount to invading of one's privacy without the consent and this calls to the fact that users consent must be sought as to knowing how their data should be collected, shared and utilized and for them to be better placed to have full control of them (Felker and Phetteplace, 2014)

As averred by Joy et al. (2022) Avatars blur the line between reality and virtual, raising questions about the authenticity of online identities and interactions. Users may present themselves differently through their avatars, leading to issues of deception, misrepresentation, and identity theft. Users need to maintain a clear understanding of the distinction between their real-life selves and their digital personas.

Presently, there is no evidence that designers of avatar put into consideration inclusivity. Avatars should be accessible to all users, regardless of physical or cognitive abilities. Designing avatars with different body types, abilities and communication styles will promote inclusivity and ensures that all users can fully participate in digital ecosystem.

3.4. Challenges in the use of Avatar Technology in Academic
Libraries in Nigeria
Man by nature is always withdrawn or skeptical when it comes to changes yet, they know that we are in a dynamic world and that the only thing that is constant is change and it is inevitable. To this end, the implementation of any trending technology especially in libraries are often faced with a lot of challenges not minding that industries and other profit oriented establishments receive with open arms new technologies that can aid their services and increase their profit. The reason for this situation may be attributed to the heterogeneous customers served by libraries as well as the attitude of some librarians who usually see the integration of new technology into the library operations as a threat to their job. Be that as it may, just like any other technology the deployment of avatars technology in any library has its own though not peculiar challenges apart from the ethical issues earlier highlighted. Among these challenges that require considerations and clarifications are as stated below:

In the first instance, avatar technology is a fairly new horizon and there is this mixed reactions as what good or harm is going to have on the digital ecosystem in this millennium considering the fact, that it is faced with this problem of identity theft, which is a serious ethical challenge. To this end, there is little or no agreement of what it actually means for the society in this epoch

Another major challenge is lack of holistic information on the technology as to allay the fear as to what they truly stand for. In other words, there is very little information being accessible to those who want to learn more about the technology.

Furthermore, there is this problem with terminology. If one should go by the etymology of avatar, the term avatar could be perceived the same way the seven blind men perceived and interpreted what they felt that the elephant was. Suffice to say, that there are some skeptics when it comes to this kind of technology and this is partly due to lack of information. Others relate its use only to the way this technology is being used in chat rooms across the Internet, allowing people to hide behind an image and even to change their character or sex. For some, this can be very good because it allows them to have more than one personality and can therefore, allow innovative ideas to flow by freeing those who are cast in one corporate light and who are afraid to break the illusion

4.0. Discussion of Result
The result of the literature reviewed, is an embodiment of other researchers' thoughts and findings on the topic being treated. The review did reveal that researchers strongly believe on the need to apply Avatar technology in academic library services. The underscored benefits include that avatar technology is much better than video conferencing, works well with Intranets that do not support video conferencing traffic, can prevent information bottlenecks due to personality clashes, can express emotion through facial expressions and body posture and can point at artifacts being discussed. Specifically in academic libraries, with avatars in academic libraries, it will provide opportunities for librarians to take to the next level their face-to-face interaction with users but this time into digital and virtual service delivery system. Against this backdrop, Grassian and Trueman, (2007) infer that library is one of the most widely known virtual worlds that have become popular in this online virtual setting created by its residents and which a plethora of researchers refer to it as a community space.

The review also revealed of ethical bottlenecks associated with the adoption of avatar technology which academic libraries in Nigeria like their counterparts in the other parts of the globe, will battle with. These ethical conundrums include; identity creation, issue of privacy, Avatars blur the line between reality and virtual, raising questions about the authenticity of online identities and interactions and the issue of inclusivity (Felker and Phetteplace, 2014; Joy et al. 2022 & Arya et al. 2024)

It study furtherance identified certain challenges that may militate against the employment of avatar technology in academic libraries in Nigeria though one may say, that these challenges are not peculiar to academic libraries in Nigeria. These identified challenges include; withdrawn or skeptical attitude of some librarians when it comes to changes, avatar technology being fairly new horizon and there is this mixed reactions as what good or harm is going to have on the digital ecosystem in this millennium considering the fact, that it is faced with this problem of identity theft, which is a serious ethical challenge, lack of holistic information on the technology as to allay the fear as to what they truly stand for and problem with terminology in that, to many, avatars mean different thing.

4.1. Conclusion and Recommendations

The paper focuses on the needs for avatars in academic libraries with emphasis also on the etymology, ethical considerations and challenges. Avatars network as noted will help address the chaos of information overload often experienced in libraries as it has the ability to tailor how they communicate with others by gathering, managing and organizing information in such a way that it will be more accessible and useful to individual users than ever before. Furtherance, utilizing avatar will provide the filtering, tuning, adjudication and other flow control of information. Besides, with avatar future generation of online users enter avatar inhabited spaces for help in the customer support sense, or in the library reference sense. Furtherance, the assertion is that the integration of avatar representation will enhance the enormous and engaging nature of digital libraries, fostering exploration and interaction among users. Academic libraries should therefore leverage on the transformative potentials of avatars to enrich both users and libraries and foster their experience in virtual reality and digital space by so doing giving them that sense of belonging in the virtual communities.

On the other hand, regardless of the opportunities, the study was able to identify certain ethical issues and challenges which include, identity creation, privacy resulting from collection and sharing of personal data, authenticity of online identities and interactions and inclusivity while the challenges are among others that avatar technology is a fairly new horizon and there is this mixed reactions as what good or harm is going to have on the digital ecosystem in this millennium

Despite all odds, just as posited by Damer (1998), avatars represent the real time embodiment of people in cyberspace and the fundamental avenue to meaningful community and a sense of place and memory. The inference is that avatars representations are needed in academic libraries as they will help in filtering information in this era of information explosion and they also have strong ties to knowledge Management which any library will like to deploy for effective and efficient information and knowledge management. In view of the above, the paper submits the following recommendations:

I. In the first instance since unease lies the head that wears the crown, the bulk of making the application of Avatars succeed in academic libraries falls on the table of the librarians. That being the case, librarians needs to be trained and retrained on the intricacies of the art of avatar representations in the library and they will in-turn, train the users for effective service delivery and harnessing of the benefits of the technology in a digital ecosystem. This implies that academic libraries and librarians in Nigeria, should carryout vigorous avatar-literacy campaign.

II. On inclusivity, developers and designers of avatars have a responsibility as a matter of necessity to ensuring that avatar creation tools are inclusive and respectful of all users, regardless of gender, race, ethnicity, or other attributes which include disabilities. Failure to do so can perpetuate stereotypes and reinforce existing inequalities within digital ecosystem. This implies that Avatars should be accessible to all users, regardless of physical or cognitive abilities. Designing avatars with diverse body types, abilities and communication styles promotes inclusivity and ensures that all users can fully participate in digital communities.

III. While there is need to leverage the creative and transformative importance of avatar, consideration should be given to balancing the approach with regards to upholding the ethical principles safeguarding users rights. This is to say, that users privacy, the principle of inclusivity as preached and enshrined as one of UN-SDGs and authenticity of online identities and interactions should be first on the list.

IV. As a follow up to the above, developers of avatars and platform operators must ensure they implement robust security measures to protecting user privacy and preventing unauthorized access to sensitive information.

V. Furtherance, avatars developers and platform operators must also ensure the implementation of measures aimed at verifying user identities and preventing fraudulent or malicious behavior within virtual spaces.

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