THE ROLE OF EMERGING TECHNOLOGIES IN ACADEMIC CAREER DEVELOPMENT

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Abstract

The paper examines the potentials of emerging technologies (ETs) in academic career development. Technology has become an important tool for education and career advancement. With the advancement of technology, digital tools and platforms have become increasingly prevalent in education, offering various opportunities for academic professionals to enhance their careers. The emergence of digital technologies such as Artificial intelligence, social networks, Machine learning, videoconferencing tools and electronic databases have broadened the opportunities for teachers and students to advance their career prospects and research activities. Data were sourced from systematic review of publications from various notable databases that relates to use of emerging technologies in academic career advancement including; Scopus, Web of science, Google scholar, and Researchgate. Our findings from the reviews indicates that emerging technologies have broken distance or physical presence barriers that often limit access to training and other career development activities. Thus, there are now limitless access to instructional materials, academic resources and platforms that can be leveraged upon to advance academic career development at any time and place. The evidence from the reviews also shows that emerging technologies have the potential to greatly impact academic career development in various ways such as: research publication, electronic/distance learning, virtual training, collaborations, meetings, mentoring, and other professional development programmes. However,

digital gap, poor digital literacy, ethical issues, and lack of supportive infrastructures such as quality internet and constant power supply remains a challenge to the use of emerging technologies for academic career development in Nigeria especially in rural areas. The paper concludes that emerging technologies has become a Catalyst for Academic Career Progression.

Keywords: Emerging technologies, Artificial intelligence, Mobile technology, Internet, Internet , Virtual Reality, Career development.

1. Introduction

Technology has become very important part of human life. Digital technology availability has increased dramatically in recent years, and it now permeates practically every area of our life. Nearly everything today is being influenced by disruptive technologies. The world is fast embracing digital way of life due to high penetration of technology across the globe. The Coronavirus pandemic accelerated the use of technologies particularly for online education and career development and guidance and services (Haleem, Mohd and Rajiv, 2022). People including students, researchers, and other academic professionals are now under greater pressure to leverage the gains of technology to advance their career and improve their productivity (Edeh, Ugboaja, Ugwuja, Igwe, Daniel and Richard-Nnabu, 2022). Recent advancements in technology, including machine learning, learning platforms, virtual reality, and distributed ledger technologies like blockchain, have made it possible to make many more significant changes to the way career and faculty development programs are run. Emerging technologies provide easy access to vast amounts of information and educational resources that support employment chances of academic professionals. Online databases, digital libraries, e-books, academic journals, and educational websites enable students and researchers to access up-to-date information and enhance their knowledge in various fields (Robinson and Hullinger, 2008; Zhou and Zhang, 2008).

Emerging technologies offers many opportunities for academic career development including digital discussion forums, virtual classrooms, and collaborative tools that enable individuals to connect with peers and experts from diverse backgrounds, exchange ideas, engage in group projects, and develop valuable networks, which can lead to research collaborations, mentorship opportunities, and career advancement. More so, digital technologies allow individuals to showcase their skills, achievements, and projects through online portfolios and digital credentials. These platforms enable students and professionals to create a comprehensive digital profile that can be easily shared with potential employers or academic institutions, enhancing their career prospects and demonstrating their expertise. Studies have also shown that digital technologies offer avenues for online career courses, career guidance and mentorship (Kumi-Yeboah, Sallar, Kiramba, and Kim, 2020; Oliveira et al, 2019; Robinson and Hullinger, 2008; Zhou and Zhang, 2008). Digital platforms connect students with mentors, professionals, and alumni who can provide valuable insights, advice, and guidance regarding career choices, internships, and job opportunities. These connections and mentorship relationships can greatly contribute to students' academic and professional growth. For instance, during the e COVID-19 pandemic has accelerated the adoption of remote and flexible learning models. Digital technologies enable students to access educational resources and participate in virtual classrooms from anywhere,

providing flexibility in managing their academic and personal commitments. Remote learning also opens doors to international collaborations and interdisciplinary opportunities, broadening students' horizons and enriching their academic careers. In summary, emerging technologies offer numerous prospects for academic career development, including access to information and resources, online learning platforms, collaboration and networking opportunities, research tools, digital portfolios, remote learning options, and career guidance. Embracing these technologies can empower teachers and students to enhance their employability skills, expand their knowledge, and achieve their career goals in the increasingly digital world (Kumi-Yeboah, Sallar, Kiramba, and Kim, 2020).

The increased use of technology necessitates a reevaluation of both the services offered and the methods through which they are delivered. Navigating emerging technologies and effectively utilizing them for academic career development requires a certain level of digital literacy to effectively use various tools and platforms, which some individuals may lack thereby hindering their ability to leverage digital technologies for their career advancement. This paper provides a comprehensive understanding of how digital technology is shaping academic career development. The highlights underscore the transformative potential of emerging technologies in academic career advancement, while also acknowledging the challenges associated with their use. The paper could serve as a valuable resource for researchers, educators, and academic professionals seeking to navigate the digital landscape and harness its potential for career advancement in academia.

2. Academic Career Development

A career is a person's "journey" through lifetime learning, employment, in-depth training, and the acquisition of new skills. It can be characterized as a type of work or vocation that typically requires some formal education or specialized training (Careers360 website, 2023). It could simply be referred to what you do for a living. Working experience, constant learning, productivity and professionalism often contributes to good career building and success. Academic career development is the process by which employers as well as scholars working in research, teaching, and/or administrative roles in academic or education contexts manage various tasks, behaviors, and experiences within and across jobs in a given period, with implications for scholars' work-related identity (Hannes; Cort, Tara and Daniel, 2019). Career development helps professionals develop skills for managing their careers throughout their lives and for understanding the nature of work and themselves (Bridgstock, 2009). Academic career development events help staff and students become more adept in navigating their professions and the working world, including how to get employment and advance in their jobs. (Bridgstock, Grant-Imaru and McAlpine, 2019). Training, professional certification and research are core part of academic career development. Not only do trainings expose academic practitioners to trends and new realities in their fields, it also affords them the opportunity to improve their employability skills and employment chances. Research is also seen as key component of academic career development. In fact, not only does research increase the visibility of an academic career professional, but it forms the basis for performance and promotion appraisals of staff for most educational institutions across the world.

Today, many scholars are relying on the opportunities provided by emerging technologies to promote their research works and also engage in research collaborations. Digital platforms have

made it much easier for researchers to achieve more visibility for their research publications across the world. Digital tools like video conferencing tools assist individuals and institutions to organize virtual academic workshops, seminars and conferences for professional development. Using electronic apps platforms such ZOOM App and other virtual meeting enable academics to engage in multiple career development events from the comfort of their homes. This reduces the risks, time and cost associated with travelling to attend physical events. Digital technologies help teachers and students to keep up with their skill updates and learning to be employable in fields and professions that are changing quickly (Bridgstock, Grant-Imaru and McAlpine, 2019). Considering the growing impact of digitalization, it has become more important than ever for individuals and organizations in the academic industry to improve their digital skills and invest more on technology infrastructures to enhance individual and faculty career development programmes. The elements of Academic career development are depicted in figure 1.

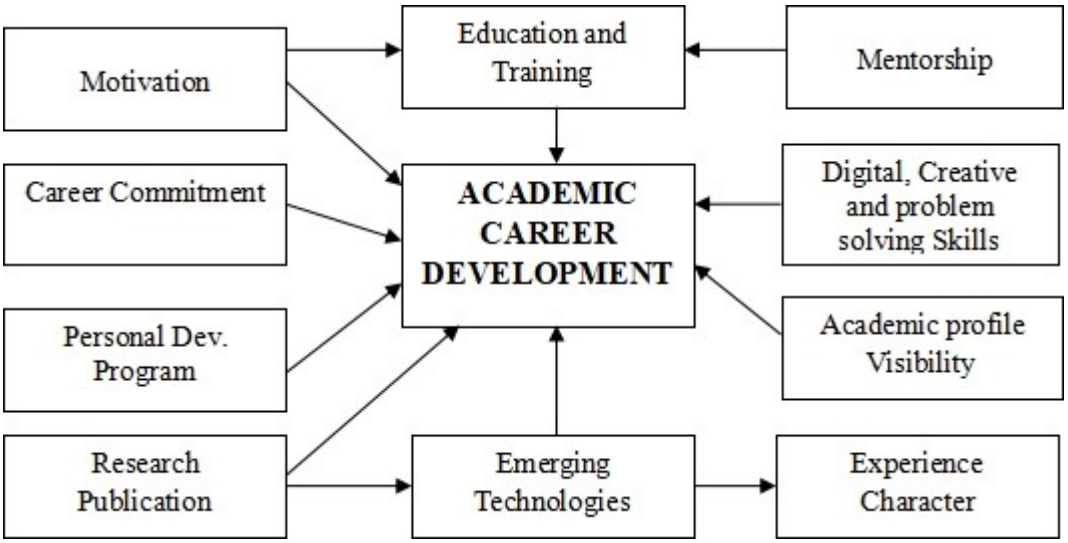

Figure 1: Elements of Academic Career Development

3. Academic Career Development Framework

Academic career development frameworks provide guidance and support to individuals pursuing careers in academia. These frameworks typically outline the various stages of an academic career and offer strategies and resources to help individuals navigate each stage successfully. According to University of StrathClyde Academic career development Framework guideline, the Academic Career Development Framework is designed to assist academics in their early careers in carrying out the duties of an academic member of staff. It strives to support early career academics in realizing their potential and building a long-term academic career, encouraging them to become high achievers and high performers (University of StrathClyde Academic Career development Framework guideline, 2023). The University of StrathClyde Academic career development Framework guideline indicates that it aims to assist academic staff to:

• establish a career development strategy with suitable mentoring from seasoned academic colleagues that will help them excel in their roles as fast as feasible and allow them to carry out the entire spectrum of academic responsibilities related to those roles.

• Obtain regular feedback on their performance and progress against their career development plan

Take part in approved learning experiences including the postgraduate certificates in academic practice.

• Establish the range of skills and experience on which they can continue to grow a successful academic career and which will support the achievement of their career potential.

Improve their leadership and research skills to engage in quality leadership and research.

(University of StrathClyde Academic Career development Framework guideline, 2023)

4.0. Overview of Emerging Technologies

Emerging technologies (ETs) are vital resources for addressing pressing worldwide issues like sustainable development, healthcare access, and climate change. Not only are technologies like blockchain and quantum computing exciting ideas of the future, but they are also essential to building more open and effective systems. ETs improve industries by opening up new job opportunities, increasing productivity, and facilitating improved human-machine cooperation. AI, for instance, is enhancing human capabilities and opening up new career prospects rather than merely replacing occupations. These technologies have transformed various aspects of human life, including communication, business, education, healthcare, entertainment, and more (Danil et al, 2019) and expand access to career supporting resources. The 2030 Agenda for Sustainable Development of the United Nations includes decent education as one of its core tenets. Its goal is to guarantee that every student receives an inclusive, equal education. In order to accomplish this, digital technologies have become a crucial instrument (Haleem, Mohd and Rajiv, 2022). The way people work, learn, and engage in civic life is being dramatically changed by the development of digital technologies. Career professionals have found it difficult to adjust as digital technologies become more widespread and offer chances to increase access to high-quality study and employment prospects worldwide (Brookings, 2023). It plays an integral role in academic career planning, management and development.

Emerging technologies in education open the door for new a pedagogical method that place a greater emphasis on student participation and broadens the opportunities for staff career development (Beebe, 2004). In order to meet the ongoing need for new skills among academic staff and students alike, a wide range of digital platforms and tools have arisen, including digital badges, bootcamps, and learning management systems, all of which facilitate access to trainings and employability opportunities for stakeholders in academic sector. The most recent wave of educational innovation represents a more fundamental change in the way education and skills data are obtained and communicated in the labour market. Emerging technologies make it easier

to obtain educational and labor market information, convey career information, and promote career management skills (Vuorinen and James, 2011). They are effective tools that can help academic professionals advance their careers in a number of ways, including by making it simpler for teachers to connect with mentors, attend online workshops and seminars, collaborate on research projects, and take professional certification program. In addition to being a tool, digital technologies are also a potent force for career advancement in the education industry (ELGPN, 2010). Many stakeholders in academic sector are relying on use of many digital tools and platforms learn and grow their careers. Digital technologies provide potential for academicians and students to engage in research and online education (Tulinayo, Ssentume, and Najjuma, 2018). They enable the creation, storage, processing, transmission, and display of information through services or activities that use electronic methods. All dimensions of human activity have been impacted by and restructured by digital technologies. They are deployed in certain ways that interrupt current activities, while in other ways they have a more incremental influence and enhance current activities (Ciarli, et al, 2021). Digital technologies are ubiquitous and its prospects can be leveraged by professional educators and students to promote their careers and academic profiles. Digital platforms like LinkedIn, Researchgate, Academia.edu, Google scholar, Twitter, Facebook and many electronic databases have become a strong career advancement tools for many scholars and students to share and grow their academic profiles and attract attentions to their works, skills and services. These digital tools and platforms can also help employees reach their full potential on a personal and professional level, as well as deliver the best results and success in their jobs.

4.1. Key Emerging Technologies for Academic Career Development

Some of the emerging technologies with potential impact on Academic Career Development are highlighted in figure 2.

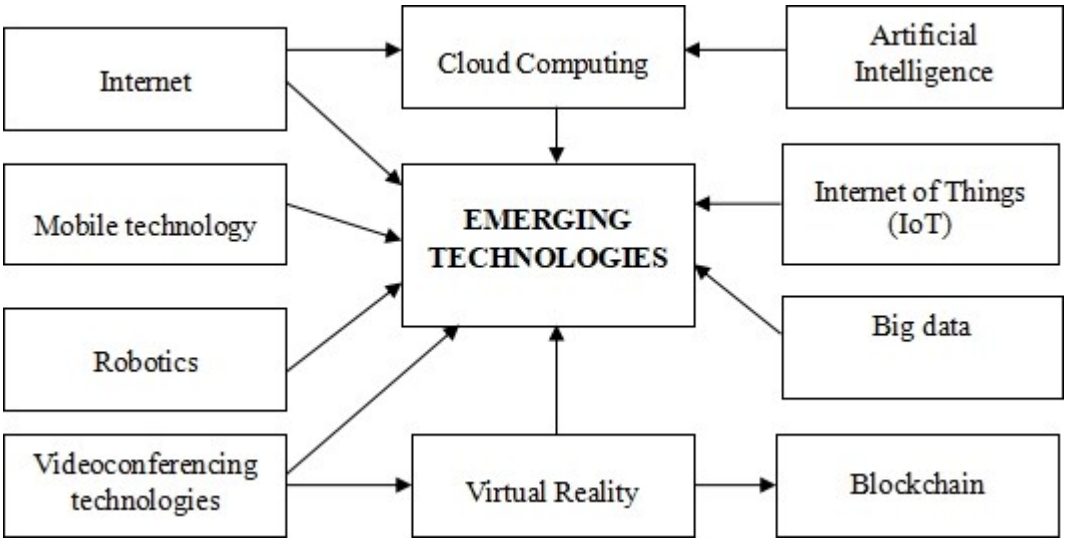

Figure 2: Emerging technologies with potential impact on Academic Career Developmen

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Internet: The Internet is a global network that enables the connection of computers and devices worldwide. It facilitates the exchange of information, communication through email, instant messaging, and video conferencing, access to websites, online services, and much more.

Mobile Technology: Mobile devices, such as smartphones and tablets, have become integral to modern life. They provide access to the Internet, communication channels, applications, and a wide range of services. Mobile technology has revolutionized industries like e-commerce, social media, and mobile banking.

Cloud Computing: Cloud computing allows the storage, management, and processing of data and applications on remote servers accessed via the Internet. It offers scalability, flexibility, and cost-efficiency, empowering businesses and individuals to store and access their data from anywhere at any time.

Artificial Intelligence (AI): AI encompasses the development of intelligent systems that can perform tasks that typically require human intelligence. This includes machine learning, natural language processing, computer vision, robotics, and more. AI is used in various fields, such as virtual assistants, autonomous vehicles, fraud detection, and personalized recommendations.

Internet of Things (IoT): The IoT refers to the network of interconnected devices embedded with sensors, software, and connectivity to exchange data. These devices can include smart home appliances, wearable devices, industrial sensors, and more. IoT enables automation, monitoring, and control of physical objects, improving efficiency and convenience.

Big Data: Big data involves the collection, storage, and analysis of large and complex data sets. It encompasses techniques for processing, interpreting, and deriving insights from vast amounts of structured and unstructured data. Big data analytics has applications in areas like business intelligence, healthcare, marketing, and scientific research.

Blockchain: Blockchain is a decentralized and distributed ledger technology that enables secure and transparent transactions and data storage. It provides a tamper-proof record of transactions and is primarily associated with cryptocurrencies like Bitcoin. However, it has broader applications in supply chain management, smart contracts, and secure data sharing.

Virtual and Augmented Reality (VR/AR): VR immerses users in a simulated environment, while AR overlays virtual elements onto the real world. Both technologies have found applications in gaming, entertainment, training simulations, design, and marketing, offering unique user experiences and visualizations.

These are just a few examples of the vast array of emerging technologies shaping our world. The continuous advancement and integration of these technologies have the potential to bring about further innovation and transformation across various industries and aspects of daily life.

5. Benefits of Emerging Technologies in Shaping Academic Career Development

Digital technologies have a significant impact on academic career development, offering numerous prospects for students and professionals alike. Here are some key areas where digital technologies are enhancing academic career development:

Access to information and resources: Emerging technologies provide easy and instant access to vast amounts of information and educational resources. Students and researchers can explore a wide range of online materials, research papers, e-books, and educational videos to enhance their knowledge and skills. This easy access to information promotes continuous learning and keeps individuals up-to-date with the latest developments in their field.

Collaborative learning and networking: Disruptive technologies enable collaboration and networking among academics and students across geographic boundaries. Online platforms and tools facilitate virtual discussions, group projects, and knowledge sharing. Through online forums, social media, and professional networking platforms, individuals can connect with peers, experts, and potential collaborators, expanding their academic network and fostering collaborative opportunities (Onyema et al, 2021).

Professional development: The rise of online learning platforms and Massive Open Online Courses (MOOCs) has provided new avenues for academic career development. Students and professionals can access high-quality courses and certifications from renowned institutions and industry experts. Also, Emerging technologies have made it possible to attend virtual conferences, webinars, and workshops remotely. This flexibility allows individuals to acquire new skills, fill knowledge gaps, and enhance their credentials while balancing other commitments. It also expands learning opportunities, enables networking with experts in the field, and allows individuals to stay updated on the latest research and industry trends, contributing to their academic and professional growth (Onyema et al, 2020; Nwobodo et al, 2015).

Research and publication opportunities: Emerging technologies have revolutionized the research and publication process. Online databases, digital libraries, and academic search engines enable researchers to access a vast array of scholarly articles and publications. Moreover, digital tools aid in conducting literature reviews, data analysis, and research collaboration. Online publishing platforms and open-access journals have also expanded the reach and visibility of research, increasing opportunities for academic recognition and impact.

Online presence and visibility:

Advanced technologies allow individuals to build their academic profile and establish an online presence through personal websites, academic profiles, and social media platforms. This digital presence enhances visibility and facilitates professional networking. Academics can showcase their research, publications, and achievements, attracting potential collaborators, mentors, and job opportunities. Additionally, active engagement on social media platforms can help

researchers stay connected with the academic community, participate in discussions, and share their expertise.

Enhanced communication and dissemination: Revolutionary technologies have transformed academic communication and dissemination. Webinars, video conferencing, and online collaboration tools enable real-time communication and remote participation in conferences, seminars, and workshops. These technologies eliminate geographic barriers and provide opportunities for global interactions and knowledge exchange. Additionally, digital platforms and social media provide channels for disseminating research findings to a wider audience, including policymakers, practitioners, and the general public.

E-learning platforms and online courses: Emerging technologies have revolutionized education through e-learning platforms and online courses (Onyema et al, 2020b). Educators and students can now access high-quality courses from renowned institutions worldwide, allowing them to acquire new skills, broaden their knowledge, and enhance their academic qualifications conveniently and at their own pace.

Career guidance and professional development: Innovative technologies provide access to career guidance resources, job portals, and professional development platforms (Vuorinen, 2006; Nwobodo et al, 2015b). These resources offer information on career pathways, job opportunities, resume building, interview preparation, and skill development, empowering individuals to make informed career choices and enhance their employability.

Data analysis: Futuristic technologies have transformed the research process especially data analysis. Advanced software tools and data analysis platforms enable researchers to collect, store, analyze, and visualize data more efficiently. This enhances the quality and depth of research, allowing for innovative findings and contributing to academic career development.

Online publishing and dissemination: Digital platforms have made it easier for researchers and academics to publish and disseminate their work. Open-access journals, preprint servers, and academic social networking platforms enable researchers to share their findings widely, increasing visibility and citation rates. This, in turn, can enhance their academic reputation and career prospects.

Career exploration and job opportunities: Digital technologies offer resources and platforms for exploring diverse career paths within academia and beyond. Online job portals, professional networking platforms, and academic career websites provide access to job opportunities, postdoctoral positions, and funding grants. Digital platforms also allow individuals to showcase their skills and experiences, increasing their chances of finding suitable positions and advancing their academic careers.

Overall, digital technologies have opened up new avenues for academic career development by enhancing access to information, promoting collaboration, facilitating learning and research, and expanding networking opportunities. Embracing these technologies can empower individuals

including educators and students to thrive in their academic pursuits and adapt to the evolving landscape of education.

6. Challenges of using Emerging Technologies for Academic Career Development

Emerging technologies have undoubtedly transformed various aspects of our lives, including academic career development. While these technologies offer numerous benefits, they also present certain challenges. Some of the challenges associated with using innovative technologies for academic career development include:

Technological barriers and accessibility issues: While emerging technologies have become increasingly ubiquitous, access and affordability remain significant challenges for many individuals, particularly those from disadvantaged backgrounds. Not everyone has equal access to digital technology, particularly in developing regions or marginalized communities (Heitner and Jennings, 2016). Limited access to high-speed internet, computers, or other necessary digital tools can create barriers to fully leveraging the potential of these technologies for academic career development. This digital divide can create disparities in academic career development opportunities, limiting the progress of those who lack access to necessary resources.

Technical Skills and Literacy: Effectively utilizing emerging technology for academic career development requires technical skills and digital literacy. Some individuals may lack the necessary knowledge or training to navigate digital platforms, use online resources, or employ digital tools effectively.

Information Overload: The vast amount of information available through digital technology can be overwhelming. Sorting through and evaluating the credibility and relevance of online resources can be time-consuming and challenging. Additionally, the constant flow of information can be distracting, making it difficult to focus on specific academic goals.

Quality and Credibility of Online Content: The internet contains a wide range of content, varying in quality, accuracy, and reliability. Distinguishing credible and authoritative sources from misleading or inaccurate ones can be challenging. Relying solely on digital resources without proper evaluation can impact the credibility and rigor of academic work.

Digital Distractions and time Management: Emerging technologies provides numerous distractions that can hinder academic career development. Social media, online games, and other forms of digital entertainment can divert attention away from productive activities, leading to procrastination and reduced focus on academic goals. Managing these distractions and maintaining focus on academic career development goals can be challenging. It requires discipline, effective time management strategies, and the ability to prioritize tasks in the face of competing digital demands.

Isolation and Lack of Human Interaction: While emerging technologies enables remote collaboration and networking, it may also contribute to feelings of isolation. Engaging primarily with screens and digital interfaces can limit face-to-face interactions, which are essential for building relationships, mentorship, and effective communication within academia.

Privacy and Security Concerns: Engaging with digital technology involves sharing personal information and data. The potential for data breaches, online scams, and privacy violations can raise concerns about the security of academic work, research, and personal information (Onyema et al, 2021b).

Technological Dependencies and Technical Issues: Reliance on digital tools and platforms can make individuals vulnerable to technological failures or disruptions. Technical issues such as connectivity problems, system crashes, or software glitches can disrupt workflow, hinder progress, and cause frustration (Obodoeze et al, 2017).

Maintaining a work-life balance: Emerging technologies can blur the boundaries between work and personal life. With constant connectivity and the expectation of being reachable at all times, it can be challenging for teachers and students to strike a balance between their academic pursuits and personal well-beings. The pressure to be constantly available and engaged can lead to burnout and negatively impact career development.

Online presence management: Maintaining a professional online presence is crucial for academic career development. However, managing one's online presence requires careful attention to privacy settings, online reputation management, and engaging with social media in a strategic manner. This can be time-consuming and challenging, particularly for those unfamiliar with digital platforms and their nuances.

Addressing these challenges requires a multi-faceted approach that includes providing equitable access to digital resources, promoting digital literacy and skills training, encouraging critical thinking and information evaluation, fostering a balanced approach to digital usage, and prioritizing human connection and support within the academic community.

7. Conclusion

Emerging technologies offer immense prospects for academic career development, providing access to resources, promoting collaboration and networking, enhancing research capabilities, facilitating publication and dissemination, enabling skill showcase, and offering opportunities for professional growth. Embracing these technologies can greatly benefit students and professionals in their academic journeys and career advancement. However, measures have to be put in place to address its limitations.

8. Future work

We will focus on investigating the influence of specific emerging technology tools or platform on the professional development and research output of academic staff of tertiary institutions in Southeast Nigeria.

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