


ORIGINAL RESEARCH ARTICLE

Open Access



Knowledge and use of academic social networking tools among Nigerian physiotherapy educators

Chidozie Mbada¹, Olukoya O. David², Adedayo Adeniyi³, David Olakorede², Adekola Ademoyegun^{2,4*} , Kikelomo Mbada⁵ and Francis Fatoye¹

Abstract

Background and aim The advent of academic social networking tools (ASNTs) has brought a paradigm shift to academic culture and practice dynamics; however, there is an apparent dearth of information on its adoption among health professions academics in developing countries. This study aimed to assess knowledge, use, and perceptions of ASNTs among physiotherapy educators in Nigeria.

Methods This cross-sectional study involved 20 consented physiotherapy educators from five universities in South-west Nigeria offering physiotherapy degrees. A self-administered questionnaire with adequate face and content validity was employed to assess knowledge, perception, barriers, and use of ASNTs. Descriptive statistics of frequency and percentages were applied.

Results A majority of the respondents had knowledge and utilized ASNTs such as Research Gate (80%), Google Scholar (80%), Google Plus (70%), LinkedIn (50%), and Academia.edu (50%). Mynetresearch (5%) and Lameresearch (5%) were not popular, while Llaslo.com, Quarzy, and Myscience.ch were not known. ASNTs were used to raise personal profiles in the research community (100%), publicize research (95%), share authorized content (85%), attract funds (65%), attract future employers (65%), and actively discuss research and discover job opportunities (45%). Electricity failure (70%), lack of infrastructural facilities (70%), unavailability of internet facilities (60%), lack of technical knowhow (45%), time constraints (45%), and personal factors (45%) were the significant barriers in utilizing ASNTs.

Conclusion Nigerian physiotherapy educators were knowledgeable and adopted most ASNTs. Power failure, lack of technical know-how, infrastructural and internet facilities, and personal factors limit the utilization of ASNTs among Nigerian physiotherapy educators.

Keywords Academic social network tools, Academics, Physiotherapy, Educators

*Correspondence:
Adekola Ademoyegun
aademoyegun@gmail.com
Full list of author information is available at the end of the article

Introduction

Social networking is the practice of using dedicated web-sites and electronic applications to interact with other users or to locate people of like interests with a view of making and sharing information, ideas, as well as other forms of expression via virtual connections [1]. On the other hand, social network comprises a set of individuals who are interconnected through certain relationships such as friendship, co-working, or information exchange [2]. In its traditional form, members of a social network communicate through face-to-face conversations, telephone calls, and letters. However, with advancing technology, came the evolution and proliferation of social network sites which is an online community where people interact with one another through graphic presentations, virtual experiences, and simulations [3]. The social network sites are networked communication avenues where user-provided content such as individual profiles, ideas, interests, and other information can be publicly viewed by others, who in turn create connections with contents produced by the user on the site [4]. In sum, an electronically connected social network aims to facilitate creating a personal profile, link or connect a user with others, supervise the activities of all users appearing in the list, as well as create new links [5, 6]. The social networking tools that are designed for the academic community are called academic social networking tools (ASNTs).

Currently, ASNTs are revolutionizing how teaching, research, services, and administration are conducted [7, 8]. Thus, resulting in a paradigm shift from the traditional methods of consulting textbooks and libraries to internet-based learning tools and environments [8, 9]. Accordingly, Maney posits that higher education has been changed by the internet revolution, and the current century is no more “university model” dominated [10].

At present, ASNTs have global coverage but varying degrees of adoption among academics and students [11] for purposes not limited to discovering researchers/experts and relevant documents, improving one’s profile/visibility and followership, disseminating research outputs/publications, creating network/collaborations, discussing/disseminating research findings, finding a job/consultation, and sharing information/metrics [12]. Also, the advent of ASNTs has birthed the idea of “social scholarship” where, among other things, social scholars write articles and disseminate research outcomes and outputs on blogs, restricted Wikis, and social bookmarking sites, which invite comments as a means of “soft peer review” [13].

Every ASNT is peculiar, with varying potentials. For instance, ResearchGate supports scholars’ various activities [14] and connects users to non-academic social

networking sites such as Facebook, Twitter, and LinkedIn [15, 16]. ResearchGate requires all users to register valid emails showing affiliations with academic institutions, and it provides metrics on publication downloads and citation counts, as well as opportunities for participation in discussion, question and answer, and job-searching services [16]. Similarly, Mendeley is designed to suit the activities of students, researchers, lecturers, educators, and librarians by facilitating the uploading of the document library, importing and exporting citations to other similar tools (i.e., EndNote and Zotero) [17], aiding online followership, updating knowledge, initiating collaboration and disseminating publications [18].

The increasing popularity of ASNTs invites the need for empirical investigations into its adoption, facilitators, and barriers among scholars [19]. Availability or easy access to ASNTs has been singled out as a significant factor related to the adoption of ASNTs [20]. However, this finding may not be easily extrapolated to sub-Saharan Africa where lack or limited access and weak research infrastructure are still pervasive [21, 22]. While studies have shown different patterns of ASNTs adoption in other developed climes [23, 24], however, there is an apparent dearth of information on its adoption among health professions academics in developing countries. To our knowledge, this is the first study to explore the use of ASNTs among physiotherapy educators/academics. Understanding the pattern of ASNTs usage among Nigerian physiotherapy educators may give insight into the undercurrents of its adoption, barriers, and facilitators. Thus, this study aimed to explore the knowledge and use of ASNTs among physiotherapy educators in Nigeria.

Methods

Twenty consenting physiotherapy educators from all five universities offering physiotherapy courses in South-west Nigeria participated in this cross-sectional study. The universities were Bowen University Iwo, Obafemi Awolowo University, Ile Ife, University of Ibadan, University of Lagos, and University of Medical Sciences, Ondo respectively. Respondents were drawn from a list of all lecturers gleaned from the websites of the different institutions ($N=35$). Based on the sample size calculator (<https://www.checkmarket.com/sample-size-calculator>), set at a margin error of 5% and confidence interval of 95%, a required sample size of 33 was obtained. The study’s survey was mailed to all the 35 physiotherapy educators identified; however, only 20 (14 male and 6 female) respondents returned the survey, thus yielding a response rate of 60.6%. A response rate of at least 44.1% is considered to provide a robust representativeness of an online survey and therefore acceptable [25].

A four-section self-administered questionnaire was used to assess knowledge, perception, barriers, and use of ASNTs. The questionnaire was modified from previous studies [26–28]. The socio-demographic information section (A) was adapted to be relevant to the study's context. Also, in Section B of the questionnaire, an expanded list of ASNTs, and items that sought information on opinions, use, and obstacles to the use of ASNTs were gleaned from these previous studies [26–28]. The questionnaire was tested for its face and content validity among experts (two physiotherapy educators who were not part of the main study and library staff) (Additional file 1). Ethical approval for this study was obtained from the Health Research and Ethics Committee of the Institute of Public Health Obafemi Awolowo University, Ile-Ife, Nigeria (HREC No: IPHOAU/12/1172). A full disclosure of the purpose of the study was provided. All respondents gave informed consent to participate in the study, and the questionnaires were administered thereafter. Descriptive statistics of numbers and percentages were used to summarize the data. Data analyses were carried out using SPSS 16.0 version software (SPSS Inc., Chicago, IL, USA).

Results

The majority (70%) of the respondents were 40 years and older, predominantly (80%) Christians and of the Yoruba tribe (70%). Eighty-five percent of these respondents had a PhD (Table 1). Most of the respondents had knowledge of and utilized Research Gate (80%), Google Scholar (80%), Google Plus (70%), LinkedIn (50%), and Academia.edu (50%). Mynetresearch (5%) and Lamersearch (5%) were not popular, while Llaslo.com, Quarzy, and Myscience.ch were not known (Table 2) (Fig. 1).

ASNTs were mostly used to raise personal profiles in the research community (100%), publicize research (95%), share authorized content (85%), attract funds (65%), and attract future employers (65%) (Table 3). The respondents found ASNTs useful in discovering peers in their field of research (95%), discovering recommended research papers (90%), sharing links to authored content (85%), commenting on research related to their field (85%), contacting peers in their field of research (85%), following other discussions on research related issues (75%), posting content related to their work (70%), and maintaining a profile in case someone wishes to contact them about their research (60%) (Table 4). However, only 45% of the respondents actively discuss their research and discover job opportunities using ASNTs. The obstacles to the use of ASNTs were majorly electricity failure (70%) lack of infrastructural facilities (70%) and unavailability of internet facilities (60%). Other factors include lack of technical know-how (45%), time constraints (45%) and personal factors (45%) (Table 5).

Table 1 Socio-demographic characteristics of the respondents

Variable	Frequency	Percentage
Age (years)		
20–29	1	5
30–39	5	25
40–49	7	35
50 and above	7	35
Sex		
Male	14	70
Female	6	30
Religion		
Christianity	16	80
Islam	4	20
Ethnicity		
Igbo	5	25
Yoruba	14	70
Other	1	5
Educational level		
MEd/MSc	3	15
PhD	17	85
Academic position		
Graduate Assistant	1	5
Lecturer II	5	25
Lecturer I	3	15
Senior Lecturer	7	35
Associate Professor	2	10
Professor	2	10

MEd Master of Education, *MSc* Master of Science, *PhD* Doctor of Philosophy

Discussion

This study aimed to assess knowledge, use, and perceptions of ASNTs among physiotherapy educators in Nigeria. The physiotherapy educators in this study were in the 40 years and older category. This age group is tagged Gen Xers (40–55 years old as of 2020) [29]. The respondents' age was within the age range of adopters of the Internet and technology [30, 31]. Though, not as avid internet users as the millennials [31], the Gen Xers represent a transitional age group between young and old adulthood (41–56 years old) [32], and about three-fourths or more of this age group (comparable with the millennials) utilize social networking sites [31]. Thus, being in this age category may account for the awareness of ASNTs among most of the respondents. From the result of this study, most Nigerian physiotherapy educators had knowledge of ResearchGate, Google Scholar, Google Plus, LinkedIn, and Academia.edu. Similarly, some earlier studies reported that ResearchGate, Google Scholar, and Academic.edu were the most well-known and used ASNTs in various academic institutions worldwide [23, 33–35]. It is possible that the popularity

Table 2 State of familiarity and source of familiarity with academic social networking tools among physiotherapy educators

State of familiarity	Source of familiarity							
	Academic social networking tools	I am aware and visit regularly n(%)	I am aware and do not visit regularly n(%)	I am not aware n(%)	Through colleagues n(%)	Through family and relations n(%)	Through the internet n(%)	Through reading n(%)
Researchgate	18(80)	3(15)	1(5)	3(15)	1(5)	9(45)	0(0)	1(5)
Academia.edu	10(50)	8(40)	2(10)	4(20)	0(0)	6(30)	0(0)	1(5)
Mendeley	5(25)	9(45)	4(20)	2(10)	0(0)	5(25)	1(5)	2(10)
Mynetresearch	1(5)	4(20)	13(65)	0(0)	0(0)	2(10)	0(0)	0(0)
Lameresearch	1(5)	4(20)	13(65)	0(0)	0(0)	1(5)	0(0)	0(0)
Academic.com	1(5)	13(65)	6(30)	1(5)	0(0)	5(25)	1(5)	0(0)
LLaslo.com	0(0)	3(15)	14(65)	0(0)	0(0)	0(0)	0(0)	0(0)
Zotero	3(15)	4(20)	10(50)	0(0)	0(0)	2(10)	0(0)	2(10)
Cite U like	1(5)	2(10)	15(75)	1(5)	0(0)	1(5)	0(0)	1(5)
my experiment	1(10)	3(15)	13(65)	0(0)	0(0)	2(10)	0(0)	2(10)
Scispace	3(15)	7(35)	8(40)	2(10)	0(0)	2(10)	1(5)	1(5)
Quartz	(10)	1(5)	13(65)	1(5)	0(0)	1(5)	0(0)	1(5)
Myscience.ch	0(0)	8(30)	8(40)	0(0)	0(0)	2(10)	0(0)	2(10)
Scholarstica	5(25)	7(35)	6(30)	0(0)	1(5)	4(20)	0(0)	0(0)
Google +	14(70)	6(30)	0(0)	2(10)	0(0)	12(60)	0(0)	0(0)
LinkedIn	11(55)	5(25)	0(0)	4(20)	1(5)	8(40)	0(0)	0(0)
Facebook	15(75)	5(25)	0(0)	3(15)	0(0)	11(55)	1(5)	0(0)
Twitter	14(70)	6(30)	0(0)	4(20)	1(5)	10(50)	0(0)	0(0)
Biomed experts	6(30)	6(30)	4(20)	0(0)	0(0)	7(35)	1(5)	2(10)
MLA Commons	0(0)	5(25)	12(60)	0(0)	0(0)	1(5)	0(0)	2(10)
Google scholar	16(80)	2(10)	2(10)	4(20)	0(0)	7(35)	2(10)	0(0)
Microsoft academic	8(40)	4(20)	8(40)	1(5)	0(0)	3(15)	1(5)	3(15)
ORCID	7(35)	5(25)	4(20)	2(10)	0(0)	6(30)	1(5)	2(10)
Frontier	2(10)	4(20)	12(60)	2(10)	0(0)	1(5)	3(15)	2(10)
Purchase	5(25)	6(30)	9(45)	3(15)	0(0)	4(20)	0(0)	3(15)

of these ASNTs in this study context is because of the bandwagon snob/effect. The bandwagon effect which is a psychological phenomenon phenomenon individuals to do something principally because others are doing it, has been associated with the utilization of social networking tools. Fu et al. [36] found that bandwagon effect drives internet users to participate in social network sites in ways conforming with real-world group proximity rather than making random or amorphous choices. Easily, the internet provides a platform for the bandwagon effect of ASNT adoption to fester. This is in tandem with the reports by Sheikh [37] that the majority of academics became familiar with ASNTs through the Internet. It is also plausible that the ASNTs commonly adopted in this study were based on the apparent value of the sites for academics. For example, most of the ASNTs that were utilized by academics in this study may have offered themselves as professionals, as well as accommodated usual social network fundamentals. Some of the

ASNTs have academic-related features such as uploading research abstracts and articles, providing publication links and alerts; tracking demands, requests, and inquiries on published articles, and opportunity to engage in professional interaction. In addition, these ASNTs have some bit of core social network sites that may have attracted academics to utilize them. However, Nigerian physiotherapy educators did not know Scholarstica, LLaslo.com, Cite U like, and Frontiers ASNTs.

Furthermore, the findings of this study corroborate the submission that drives to raise the personal profile, get noticed by colleagues, and promote professional content are the motive for use of ASNTs by academics [38]. In contrast to this submission, Dermentzi et al. [39] posit that self-promotion is not the main motive for using social networking tools/sites by academics. Nigerian physiotherapy educators found ASNTs helpful in discovering peers in their field of research, discovering recommended research papers, sharing links to authored

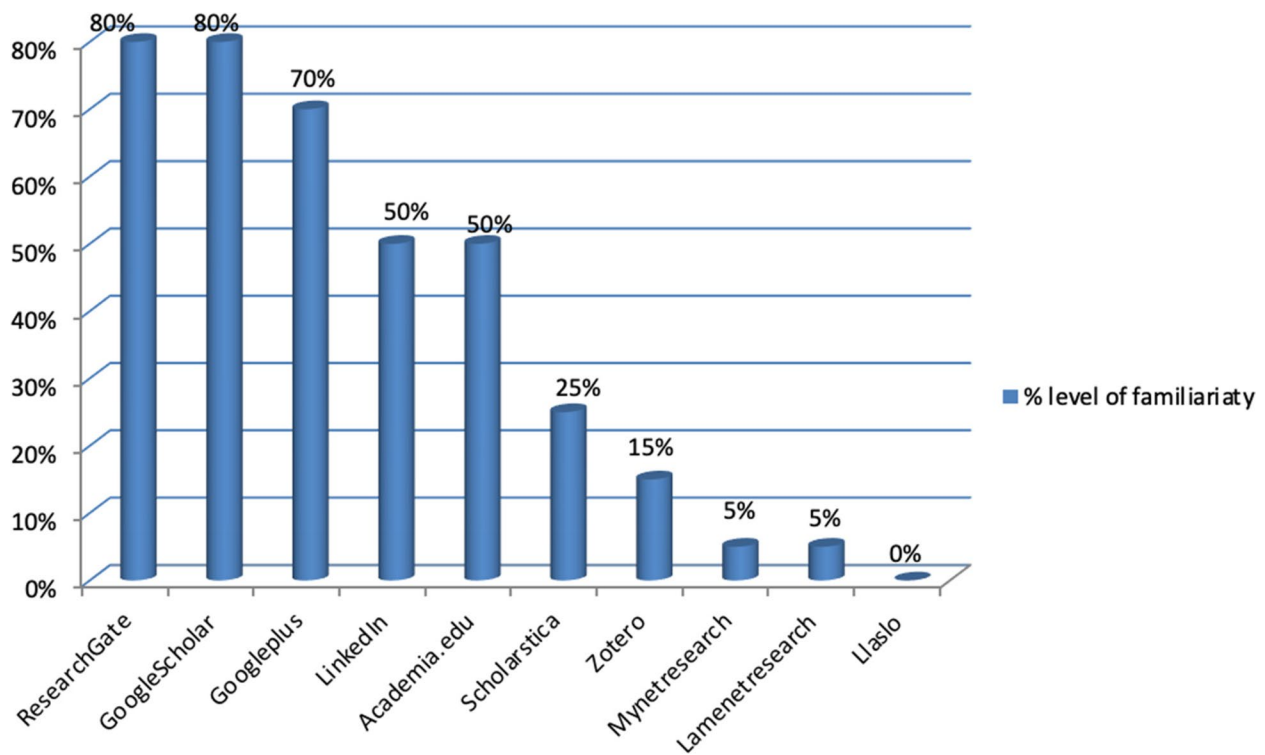


Fig. 1 State of familiarity with the use of academic social networking tools

Table 3 Purpose of use of academic social networking tools among physiotherapy educators

SN	Purpose of use of academic social networking tools	Not at all useful n(%)	Not very useful n(%)	Quite useful n(%)	Very useful n(%)	I don't know n(%)
1	Raising personal profile in research community	0(0)	0(0)	7(35)	12(65)	0(0)
2	Raising the profile of your work in research community	0(0)	0(0)	3(15)	16(80)	0(0)
3	Attracting funds	0(0)	4(20)	8(40)	5(25)	3(15)
4	Attracting future employers	0(0)	4(20)	8(40)	5(25)	3(15)
5	Sharing authorized content	0(0)	1(5)	4(20)	13(65)	1(5)
6	Attracting collaborators	0(0)	4(20)	6(30)	5(25)	5(25)
7	Viewing other researchers' professional profiles helps in determining what research I should be reading	2(10)	1(5)	4(20)	7(35)	6(30)
8	Helps to promote my research using online network	0(0)	0(0)	0(0)	7(35)	13(65)
9	Professional profile on an online network is very useful for a researcher	13(65)	4(20)	2(10)	0(0)	0(0)

n frequency, % percentage

content, commenting on studies related to their field, contacting peers in their field of research, and as well as following other discussions on research-related issues. They also found ASNTs helpful in posting content related to their works, maintaining a profile in case someone wishes to contact them about their research discussing their research, and discovering job opportunities. These findings resonate with a previous report indicating that

ASNTs are relevant in building professional profiles, sharing academic publications and journals, and communicating questions with peers [40]. Other studies also affirm that ASNTs are relevant in intra/inter-institutional relationships and collaboration on academic projects [41]. It should be stated, however, that more than half of the physiotherapy educators sampled in this study did not actively discuss their research findings and discover job

Table 4 Perceptions of physiotherapy educators about the usage of academic social networking tools

Use of academic social networking tool	Strongly disagree n(%)	Somewhat disagree n(%)	Neutral n(%)	Somewhat agree n(%)	Strongly agree n(%)
I don't use (the site) professionally	12(60)	5(25)	0(0)	2(10)	1(5)
I have a profile because I signed up out of curiosity, but I am not purposefully maintaining it	6(30)	7(35)	2(10)	3(15)	2(10)
I maintain a profile in case someone wishes to contact me about my research	1(5)	1(5)	4(20)	7(35)	5(25)
I post content related to my work	1(5)	2(10)	3(15)	6(30)	8(40)
Actively discussing my research	1(5)	3(15)	6(30)	6(30)	3(15)
Actively discussing issues related to my role (e.g., tenure, policy, training)	1(5)	3(15)	7(35)	8(40)	1(5)
Commenting on research related to my field	1(5)	0(0)	2(10)	10(50)	7(35)
Discovering job opportunities	1(5)	10(50)	9(45)	6(30)	3(15)
Discovering peers in my field of research	1(5)	0(0)	0(0)	11(55)	8(40)
Contacting peers in my field of research	1(5)	0(0)	2(10)	8(40)	9(45)
Discovering individuals outside of the field of research	1(5)	0(0)	5(25)	10(50)	4(20)
Discovering recommended research papers	1(5)	0(0)	1(5)	10(50)	8(40)
Sharing link to authored content (e.g., research papers, datasets)	1(5)	0(0)	1(5)	12(60)	6(30)
Following other discussions on research-related issues	1(5)	0(0)	4(20)	9(45)	6(30)
To track metrics relating to interest in my work	1(5)	1(5)	7(35)	4(20)	3(15)

n frequency, % percentage

Table 5 Perceived obstacles to using an academic social networking tool

SN	Perceived obstacles of using Academic Social Networking Tool	Strongly disagree n(%)	Somewhat disagree n(%)	Neutral n(%)	Somewhat agree n(%)	Strongly agree n(%)
1	Unavailability of internet facilities	4(20)	1(5)	3(15)	6(30)	6(30)
2	Lack of technical know how	4(20)	5(25)	2(10)	6(30)	3(15)
3	Time constraint	3(15)	1(5)	5(25)	6(30)	3(15)
4	Electricity failure	3(15)	1(5)	2(10)	9(45)	5(25)
5	Lack of infrastructure facilities	3(15)	2(10)	1(5)	12(60)	2(10)
6	Fear of cyber insecurity	3(15)	2(10)	3(15)	10(50)	1(5)
7	Personal factors	0(0)	3(15)	6(30)	7(35)	4(20)

n frequency, % percentage

opportunities using ASNTs. This may be related to a lack of or inadequate knowledge of ASNTs' usefulness, especially concerning the promotion of research interests and professional profiles. Specifically, 65% of these academics reported a lack of knowledge on the use of ASNTs in promoting research findings. In comparison, 65% and 20% reported that ASNTs are not at all helpful and not very helpful in fostering professional profiles. Thus, concerted efforts in education are still needed for Nigerian physiotherapy educators on the purpose of ASNTs.

Nigerian physiotherapy educators have a favorable view of ASNTs. While most academics would not be confident in the professional use of ASNTs, the majority of the academic physiotherapists in this study professionally made use of ASNTs in posting content related to their works,

actively using it in discussing research with peers, following other discussions on research-related issues, and using it to track metrics about interests in their work. In line with the foregoing, Sheikh affirms that the purpose of ASNTs among academics is entirely different from entertainment as they specifically target scholars [37]. Similarly, Nández and Borrego observed that ASNTs are important in disseminating research results as well as following other researchers' activities [42]. As earlier stated, Nigerian physiotherapy educators utilized ASNTs, despite having potential confidence issues in relation to privacy and confidentiality. The continuous use of ASNTs by these academics despite this misgiving may have resulted from robust data protection management offered by these ASNTs.

The most common barriers to using ASNTs by Nigerian physiotherapy educators include erratic power supply, lack of infrastructural facilities, and unavailability of internet facilities. These challenges have been reported as pervading in the study context [43], where particularly, the dearth of infrastructure due to poor/inadequate funding continues to plague educational development in Nigeria. In addition, Ohajianya et al. acknowledged that erratic power supply is the bane of growth in the country [44]. Therefore, pragmatic interventions to overcome these barriers may improve the uptake of ASNTs as a veritable platform to enhance academic and research activities among Nigerian physiotherapy educators. Some of these interventions may include training about the usefulness of ASNTs in academia, provision of dedicated electricity supply to the universities, appropriate funding of academic infrastructures, and provision of internet services in the academic area.

A potential limitation of this study is that the respondents were drawn from Southwestern Nigeria. Physiotherapy educators outside the study settings can have diverse education, exposure, confidence, and experience of ASNTs, and therefore present with a varying ASNTs adoption pattern. Nonetheless, anecdotal evidence suggests that Southwest Nigeria's metropolitan nature made it an attractive region for people from different parts of the country to live and work. Thus, the physiotherapy educators in this study were somewhat heterogeneous and may probably not be unrepresentative of their colleagues elsewhere. Another limitation of this study is its descriptive nature and small sample size of respondents in the younger age ranges. While this is the first study in physiotherapy to assess ASNT adoption patterns among physiotherapy educators, there is a need for future studies that will look into these shortcomings.

Conclusion

Nigerian physiotherapy educators were knowledgeable and adopted most ASNTs. Power failure, lack of technical know-how, infrastructural and internet facilities, and personal factors limit the utilization of ASNTs among Nigerian physiotherapy educators. The provision of training and infrastructural facilities that will promote digital adoption in learning, teaching, and research among Nigerian physiotherapy educators is proposed.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s43161-023-00162-7>.

Additional file 1.

Acknowledgements

Not applicable.

Authors' contributions

All authors read and approved the final manuscript.

Funding

The study was self-funded by the authors.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Ethical Review Committee, Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Nigeria.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details

¹Department of Health Professions, Faculty of Health and Education, Manchester Metropolitan University, Birley Fields Campus, Bonsall Street, Manchester M15 6GX, UK. ²Department of Medical Rehabilitation, Obafemi Awolowo University, Ile-Ife, Nigeria. ³Busha Digital Ltd, Lagos, Nigeria. ⁴Department of Physiotherapy, Osun State University Teaching Hospital, Osogbo, Nigeria. ⁵School of Digital Education, Faculty of Learning and Teaching, Arden University, Coventry, UK.

Received: 23 July 2023 Accepted: 31 October 2023

Published online: 21 November 2023

References

- Kietzmann JH, Hermkens K, McCarthy IP, Silvestre BS. Social media? Get serious! Understanding the functional building blocks of social media. *Bus Horiz*. 2011;54(3):241–51.
- Ganesh GS, Mishra M, Dalei NN, Khan S, Ranjan R, Dhiman S. Role of social media tools in online teaching: perception of physiotherapy students and knowledge translation. *Bull Fac Phys Ther*. 2022;27:7.
- Freire FC, Rogel DER, La Hidalgo CVR. presencia e impacto de las universidades de los países andinos en las redes sociales digitales. *Rev Lat Comun Social*. 2014;69:571–92.
- Ellison NB, Boyd d. Sociality through social network sites. Dutton, W. H. (Ed.), *The Oxford Handbook of Internet Studies*. Oxford: Oxford University Press, 2013. pp. 151–172.
- Aichner T, Grunfelder M, Maurer O, Jegeni D. Twenty-five years of social media: a review of social media applications and definitions from 1994 to 2019. *Cyberpsychol Behav Soc Netw*. 2020;24:215–24.
- Hogan B, Wellman B. The relational self portrait: selfies meet social networks. In: Graham M, Dutton WH, editors. *Society & the Internet: How networks of information and communication are changing our lives*. 2014. p. 53–66.
- Bell SJ. Building better academic libraries with Web 2.0 technology tools. *Libr Issues*. 2007;28(2):1–4.
- Hailu M, Jianhua Wu. The use of academic social networking sites in scholarly communication: Scoping Review. *Data Inf Manag*. 2021;5(2):277–98.
- Shrivastava R, Mahajan P. An altmetric analysis of researchgate profiles of physics researchers: a study of University of Delhi India. *Perform Meas Metr*. 2017;18(1):52–66.
- Maney. K. Next: an internet revolution in higher education. *Bloomberg Businessweek*. 2009. http://www.businessweek.com/technology/content/sep2009/tc20090914_969226.htm.

11. Jabr NH. Social networking as a tool for extending academic learning and communication. *Int J Bus Soc Sci*. 2011;2(12).
12. Aventurier P, Cocard S. Les réseaux sociaux pour les scientifiques. In *La science 2.0. séminaire des professionnels IST*. 2013-04-09/2013-04-11. <https://prodinra.inra.fr/record/196491>.
13. Mason S. Adoption and usage of academic social networks: a Japan case study. *Scientometrics*. 2020;122(3):1751–67.
14. Hausteijn S, Costas R, Larivière V. Characterizing social media metrics of scholarly papers: the effect of document properties and collaboration patterns. *PLoS One*. 2015;10(3):e0120495. <https://doi.org/10.1371/journal.pone.0120495>.
15. Lin T. Cracking open the scientific process. *New York: The New York Times*; 2012. Archived from the original on 2013-12-06. Retrieved 2014-06-26.
16. Alheyasat O. Examination expertise sharing in academic social networks using graphs: the case of research gate. *Contemp Eng Sci*. 2015;8(1-4):137–51.
17. Espinoza Vasquez FK, Caicedo Bastidas CE. Academic Social Network Sites: A Comparative Analysis of Their Services and Tools. In *iConference 2015 proceedings*.
18. MacMillan D. Mendeley: teaching scholarly communication and collaboration through social networking. *Libr Manag*. 2012;33(8/9):561–9.
19. Jeng W, DesAutels S, He D, Li L. Information exchange on an academic social networking site: a multidiscipline comparison on researchgate Q&A. *J Assoc Inf Sci Technol*. 2017;68(3):638–52.
20. Nnamdi OE. Information and communication technology facilities in conducting educational research and publishing. *Niger J Libr Ach Inf Sci*. 2008;1(6):7–12.
21. Rusakaniko S, Makanga M, Ota MO, et al. Strengthening national health research systems in the WHO African Region – progress towards universal health coverage. *Global Health*. 2019;15:50.
22. Joy Owango. Accessing Research Information in Africa. In: *Contextualizing Sustainable Development Research*. Digital Science. 2020. http://www.digitalcience.com/blog/2020/07/sdg-series-accessing-research_info-in-africa. Accessed 8 April 2023.
23. Thelwall M, Kousha K. Academia.edu: social network or academic network? *J Assoc Inf Sci Technol*. 2014;65(4):721–31.
24. Jeng W, He D, Jiang J. User participation in an academic social networking service: a survey of open group users on Mendeley. *J Assoc Inf Sci Technol*. 2015;66(5):890–904.
25. Meng-Jig Wu, Zhao K, Fils-Aime F. Response rates of online surveys in published research: A meta-analysis. *Comput Hum Behav Rep*. 2022;7:100206.
26. Nnaane B. Evaluation of the awareness and use of the social media among students in south-south, Nigeria.. Ph.D Thesis Submitted to the Department of Mass Communication, Faculty of Arts, University of Nigeria, Nsukka; 2013.
27. Gupta RK, Gautam JN, Khare VP. Awareness and use of social media applications among library staff of power sector organizations. *Ann Libr Inf Stud*. 2015;61(4):320–31.
28. El-Berry DK. Awareness and use of academic social networking sites by the academic staff at the South Valley University in Egypt. *J Libr Inf Sci*. 2015;3(2):115–32.
29. Rudolph CW, Rauvola RS, Costanza DP, Zacher H. Generations and generational differences: debunking myths in organizational science and practice and paving new paths forward. *J Bus Psychol*. 2021;36(6):945–67. <https://doi.org/10.1007/s10869-020-09715-2>. Epub 2020 Sep 4.
30. Olson KE, O'Brien MA, Rogers WA, Charness N. Diffusion of technology: frequency of use for younger and older adults. *Ageing Int*. 2011;36(1):123–45. <https://doi.org/10.1007/s12126-010-9077-9>.
31. Vogels EA. Millennials stand out for their technology use, but older generations also embrace digital life. *Pew Research Center*. 2019. [2023-01-10]. <https://www.pewresearch.org/fact-tank/2019/09/09/us-generations-technology-use/>.
32. Debczak M. Revised guidelines redefine birth years and classifications for Gen X, millennials, and generation Z. 2019. <https://www.mentalfloss.com/article/609811/age-ranges-millennials-and-generation-z>
33. Asmi NA, Margam M. Academic social networking sites for researchers in Central Universities of Delhi: a study of research gate and academia. *Glob Knowl Mem Commun*. 2018;67(12):91–108.
34. Manca S. ResearchGate and Academia. edu as networked socio-technical systems for scholarly communication: a literature review. *Res Learn Technol*. 2018;26:1–16.
35. Yan W, Zhang Y, Hu T, Kudva S. How does scholarly use of academic social networking sites differ by academic discipline? A case study using ResearchGate. *Inf Process Manag*. 2021;58(1):102430.
36. Fu WW, Teo J, Seng S. The bandwagon effect on participation in and use of a social networking site. *First Monday*. 2012;17(5).
37. Sheikh A. Awareness and use of academic social networking websites by the faculty of CIIT. *Qual Quant Methods Libr*. 2017;5(1):177–88.
38. Meishar-Tal H, Pieterse E. Why do academics use academic social networking sites? *Int Rev Res Open Dis*. 2017;18(1):1–22.
39. Dermentzi E, Papagiannidis S, Osorio Toro C, Yannopoulou N. Academic engagement: Differences between intention to adopt social networking sites and other online technologies. *Comput Hum Behav*. 2016;61:321–32.
40. Hoseth A. Google Scholar. *Charleston Advisor*. 2011;12(3):36–9.
41. Grose Thomas K. Meeting of the minds. *ASEE Prism*. 2012;21(8):14.
42. Nández G, Borrego Á. Use of social networks for academic purposes: a case study. *Electron Libr*. 2013;31(6):781–91.
43. Omagu FE. Infrastructural development in Nigeria: a panacea for transforming educational sector for sustainable national development. *Int J Capacit Build Educ*. 2021;3(1):13–9.
44. Ohajianya AC, Abumere OE, Owate IO, Osarolube E. Erratic power supply in Nigeria: causes and solutions. *Int J Eng Sci*. 2014;3(7):51–5.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submit your manuscript to a SpringerOpen® journal and benefit from:

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)