



Vidyodaya Journal of Humanities and Social Sciences



VJHSS (2023), Vol. 08 (02)

Accessibility and Usage of Digital Technologies among Academics for Research: A Case of Selected Humanities and Social Sciences Faculties in Sri Lankan Universities

Premakumara de Silva, U. N. K. Rathnayake, G. P. S. Nalaka*, S. U. B. Hewage, P. D.
Wijesekara

International Center for Multidisciplinary Studies, University of Sri Jayewardenepura, Sri Lanka

Article Info

Article History:

Received 28 Feb 2023

Accepted 15 June 2023

Issue Published Online

01 July 2023

Key Words:

Academic

Digital Research

Humanities

Social Sciences

*Corresponding author

E-mail address:

gpsnalaka@sjp.ac.lk



<https://orcid.org/0000-0001-9873-267X>

Journal homepage:

<http://journals.sjp.ac.lk/index.php/vjhss>

<http://doi.org/10.31357/fhss/vjhss.v08i02.08>

VJHSS (2023), Vol. 08 (02),
pp. 89-110

ISSN 1391-1937/ISSN
2651-0367 (Online)



Faculty of Humanities and
Social Sciences 2023

ABSTRACT

The Humanities and Social Sciences (HSS) involve understanding the human experience and the relationships between individuals and groups in society. The adoption of digital technologies has challenged the discipline of HSS, creating an entirely new environment for the study of human activities. This research aims to explore the employment of digital tools, resources and services in HSS research. Further, the use of digital methods (DM) throughout the research process; the impact of COVID-19 on the use of DM in research; the constraints of using DM in research were tested. Both quantitative and qualitative data were collected from Colombo, Kelaniya and Sri Jayewardenepura universities targeting academics in Economics, English, English Language Teaching, Geography, History and Archeology, Buddhist Studies, Political Science, Sinhala, and Sociology. Considering the digital infrastructure facilities, most of the academics rated email (45.6%) and LMS services (46.7%) as excellent but maintenance provided by the institute was not adequate. Most academics rated good on access to data storage (37.9%); reference management software (27.5%); plagiarism detection software (29.1%); institutional repository (35.2%); and support to online publications (39.6%) provided by their institutes. 55.7% of surveyed academics in SS often use digital data collection methods while in the Humanities it was 43.4%. Online publishing was most often used by SS (50.9%) and only 39.5% by the Humanities. 53.8% of SS academics and 43.4% of humanities academics often use cloud storage. Findings confirmed the expansion of using digital research methods during the pandemic compared to the early pandemic situation. Collaborative research works, virtual conferences, citation databases and digital indexing were identified as popular trends.

1. Introduction

Reforms in education are primarily motivated by the emergence of information technology as a tool for the dissemination of knowledge. With the goal of better utilizing digital technologies for teaching and learning, the European Commission (EC) unveiled its strategy for digitizing education in 2018 (EC, 2018). The instantaneous learning environment, quick evaluations, and more engagement that cannot be provided by traditional classroom training are always achieved through technological innovations. Education in schools and institutions has evolved as a consequence of the introduction of new technology-assisted learning tools like mobile devices, smartboards, Massive Open Online Courses (MOOCs), tablets, laptops, simulations, dynamic visualizations, and virtual laboratories (Haleem et al, 2022). The emergence of a pandemic has substantially speeded up the process of digitalizing the higher education sector. When all educational institutions were forced to close in March 2020 owing to the COVID-19 epidemic, Sri Lanka also made a spectacular, quick transition to online tertiary education (Hayashi et al, 2020).

The advent of digital technology has not only revolutionized learning and teaching but also transformed research and administrative work in academia. University academics, who are traditionally responsible for teaching, research, and disseminating knowledge to the community (HETC & UGC, 2012), have embraced the shift to the digital dimension. However, this transition has not been without its challenges. Academics have faced the barriers of social isolation, as physical interactions and collaborations were limited. Despite these challenges, academics have persevered in their commitment to ongoing teaching and research activities. On the other hand, the digital culture has enabled academics to explore innovative approaches to teaching, leveraging online platforms, interactive tools, and multimedia resources to engage students in virtual classrooms.

Additionally, the use of digital tools and platforms has expanded the scope of research, allowing academics to access vast amounts of information, collaborate with colleagues remotely, and employ sophisticated data analysis techniques.

Furthermore, academics have recognized the importance of disseminating knowledge to the wider community. Through digital channels such as open-access journals, online conferences, and social media platforms, they have been able to share their research findings and engage with a broader audience. The responsibilities of university academics encompassing teaching, research, and knowledge dissemination have seamlessly transitioned into the new digital culture. Despite the challenges posed by social isolation, academics have adapted and leveraged digital tools to continue their vital work in teaching and research while embracing innovative approaches to engage with students and the wider community.

Digital research is a rapidly growing field that is generating significant discussions and prompting reflections among researchers. The advent of digital technologies has opened up new possibilities and methodologies for conducting research across various disciplines. Although not synonymous, the terms digital research, internet research, online research, e-research, and e-science all refer to the rapidly evolving and highly influential role that information, communication, and networking technologies play in the conduct of scientific study and research. From this, it can be asserted that digital research, more generally, entails the use of digital technologies, tools, and services as research subjects (such as research into blogs, social networking sites, virtual worlds, virtual communities, and instant messaging spaces), as tools for developing novel methodological practices (such as hardware or software for developing, designing, and executing methods of research), and as the actual

environment in which research takes place (e.g., online datasets and repositories, search engines, data aggregators and automated means of data scraping) (Tsatsou, 2016).

The adoption of digital technologies has challenged the discipline of Humanities and Social Sciences (HSS), creating an entirely new environment for the study of human activity. By nature, Humanities and Social Sciences are wide ranged areas where they can be studied in multidisciplinary approaches. Due to its complexity, adopting digital technologies necessitates a long-term dedication to professional growth in order to stay up with continually evolving tools and resources. Teachers in higher education need robust and enduring research programs that combine a robust methodology with appropriate modern technology.

According to university statistics (2020) published by UGC (University Grants Commission), there are 6,525 permanent academic staff in state universities, out of which 2,510 (39%) are employed in the Humanities, Social Sciences and Administration departments. The latest UGC statistics show that Humanities and Social Sciences are still the most important area of university education in the country, although some argue that arts education in our universities has declined sharply (de Silva et al., 2021).

The rapid advancement of digital technologies has opened up new possibilities for research in the field of Humanities and Social Sciences (HSS). However, the following questions were raised when comprehensively understanding the employment of digital tools, resources, and services in HSS research.

- How are digital tools, resources, and services employed in the field of Humanities and Social Sciences (HSS), considering the complexities and

multiplicities of both the technology and usage parameters?

- What are the different ways in which digital methods are utilized throughout the research process in HSS?
- How has the COVID-19 pandemic affected the adoption and implementation of digital research methods in the field of HSS?
- What are the attitudes, motivational factors and constraints to use digital research methods?

The main objective of this paper is to explore the employment of digital tools, resources and services in HSS research, with an emphasis on complexity and multiplicity for both the 'technology' and 'usage' parameters. Further, the use of Digital Methods throughout the research process, the impact of COVID-19 on the use of digital research methods, attitudes, and motivational factors of using digital methods in research and constraints to use digital research methods are also tested as sub-objectives.

2. Materials and Methods

2.1. Study Design and Sample Selection

This study primarily used a mixed-methods strategy, which involved developing both quantitative and qualitative data analysis. A cross-sectional survey that included semi-structured interviews and a structured questionnaire was used to gather information and to evaluate the academic staff at the selected universities. To make the data analysis and the presentation meaningful, the information gathered through a questionnaire survey was compiled in the form of tables, graphs, and figures. To analyze specific concerns, information obtained from the interviews was transformed into quotations, and organized into themes. The University of Colombo (UoC), University of Kelaniya (UoK), and University of Sri Jayewardenepura (USJ) were the three public universities in Sri Lanka that were selected for the data collection. These three

universities are leading in HSS studies and are located close to the capital of Sri Lanka. Convenience sampling technique was employed and the selected HSS fields were Economics, English, English Language Teaching, Geography, History and Archeology, Buddhist Studies, Political Science, Sinhala, and Sociology which are commonly offered at the selected three public universities at the time of the study. The target population comprised academics in both the Humanities and Social Sciences across these ten disciplines.

2.2. Data Collection and Analysis

A questionnaire was developed to capture information on background data, access and use of digital tools, using digital technology for teaching and learning, use of digital tools for research and perceptions towards using digital technologies in research. The questionnaire (converted to a Google form) was circulated via emails and followed by telephone conversations. Table 1 presents the responded and the target population and the response rate for the questionnaire survey from three universities.

Table 1. Responded and target population for the questionnaire survey

Description	Responses Targeted	Responses Received	Response Rate %
Colombo	137	47	34.3
Kelaniya	112	52	46.4
Sri Jayewardenepura	105	83	79.1
Total	354	182	51.4

While the questionnaire technique was employed to collect information from a large number of respondents, a total of 24 structured interviews were conducted to gather more information. The overall

purpose and central premise of adopting mixed methods in this study is that quantitative and qualitative approaches in combination provide a better understanding of research problems and complex phenomena than either approach alone (Creswell & Plano Clark, 2007).

The interviews were translated/ transcribed, and contextually analyzed. Referring to Sandelowski (1995), 8 academics representing all the academic positions in both the Humanities and Social Sciences fields were selected from each university for the interviews as shown in table 2.

Table 2. Structure of the Interviews

Academic Position	University		
	UoC	UoK	USJ
Senior Professor	01	01	01
Professor	02	02	02
Senior Lecturer	03	03	03
Lecturer	02	02	02
Total	08	08	08

The voice recordings obtained by conducting the structured interviews were initially translated and transcribed in Microsoft Word documents before being processed in NVivo for qualitative data. Thematic analysis was primarily used to pinpoint recurring themes, subjects, concepts, and patterns of meaning in interview transcripts. Microsoft Excel was used to clean up the quantitative data that had been acquired from the Google form, which made it possible to use the Statistical Package for Social Sciences (SPSS) to evaluate the information. Statistical generalizations were done at a 5% significance level. NVivo was used to build up the word cloud.

3. Results and Discussion

The questionnaire survey could reach a response rate of 51.4% out of 354 academics in all three targeted universities. First, the demographic profile of the respondents was taken into consideration to provide a broader

understanding of the study group. Table 3 brings the demographic profile of the respondents. Accordingly, most of the respondents were recorded from the

University of Sri Jayewardenepura (45.6%) followed by University of Kelaniya (28.6%) and University of Colombo (25.8%).

Table 3. Demographic Profile of the Respondents

Description		Responses Received	Percentage
University			
Colombo		47	25.8
Kelaniya		52	28.6
Sri Jayewardenepura		83	45.6
Disciplines			
Social Sciences	Economics	27	54.0
	Geography	27	65.9
	History and Archelogy	19	38.8
	Political Science	10	50.0
	Sociology	28	50.9
Humanities	English	07	29.2
	English Language Teaching	23	57.5
	Pali and Buddhist Studies	18	58.1
	Sinhala	23	52.3
Gender			
Male		96	52.7
Female		86	47.3
Age Group			
Below 36 years		41	22.5
36 years - 45 years		42	23.1
46 years - 55 years		57	31.3
Above 55 years		42	23.1
Current Position			
Lecturer		40	22
Senior Lecturer		87	47.8
Professor		40	22
Senior Professor		15	8.2
Highest Qualification			
Bachelor's		14	7.7
Master's		38	20.9
MPhil		29	15.9
PhD		100	54.9
Academic Experience			
Below 11 years		57	31.3
11 years - 20 years		52	28.6
21 years - 30 years		51	28.0
Above 30 years		22	12.1
Total		182	51.4

61.0% of the respondents were from the field of Social Sciences and 39% from the field of Humanities. Males made up 52.7% of the sampled population while females made up 47.3%. The age group 46–55 (31.3%) made up the majority of the sample under survey. Additionally, the age groups between 36 and 45 and those over 55 made up 23.1% of each group. Senior professors were the least represented and the senior lecturers were the dominant group considering the current position they hold. These percentage contributions are a reflective representation of Sri Lanka's current academic position composition in the Humanities and Social Sciences. Only 7.7% are bachelor's degree holders while the majority of the academics

were qualified with PhD degrees (54.9%). As well the majority of the academics have less than 11 years of academic experience (31.3%). Whereas 28.6% have 11-20 years of academic experience similar to the 21-30 years group.

3.1 Accessibility of Digital Technologies

Ensuring accessibility is crucial for promoting inclusivity, equal opportunities, and equitable participation in the digital age. The accessibility to digital tools was tested using the gathered data. Figure 1 depicts the observed information on respondents' availability and usage of digital devices.

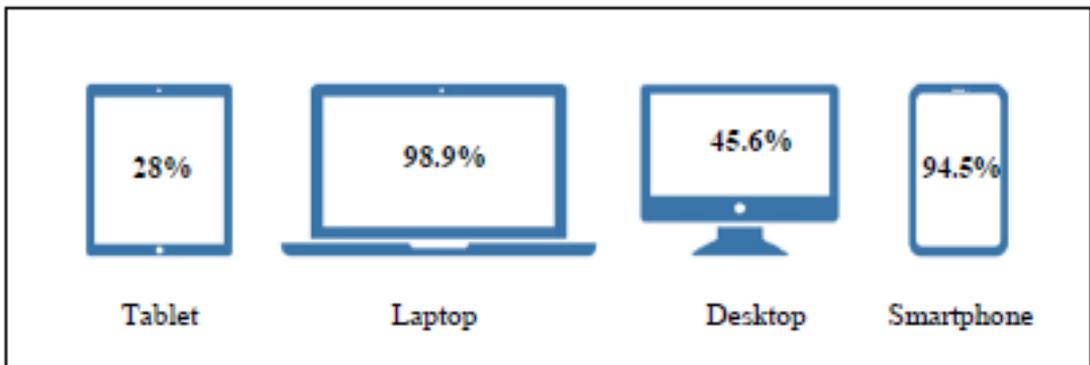


Figure 1. Respondents' use of IT Devices

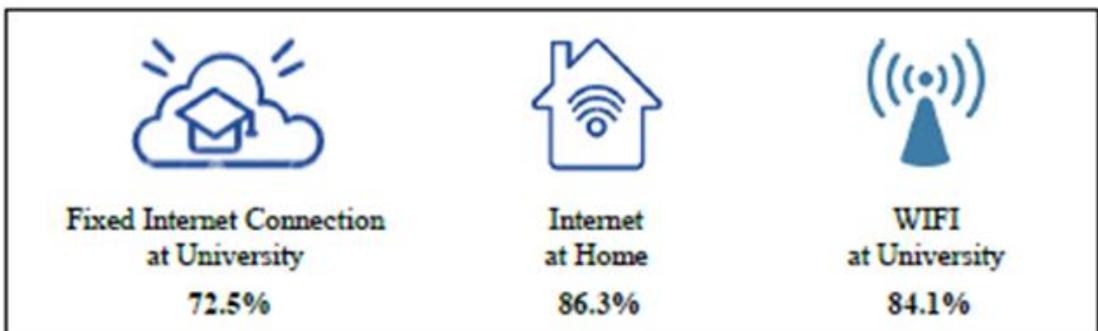


Figure 2. Respondents' Availability of Internet Connection at Different Locations

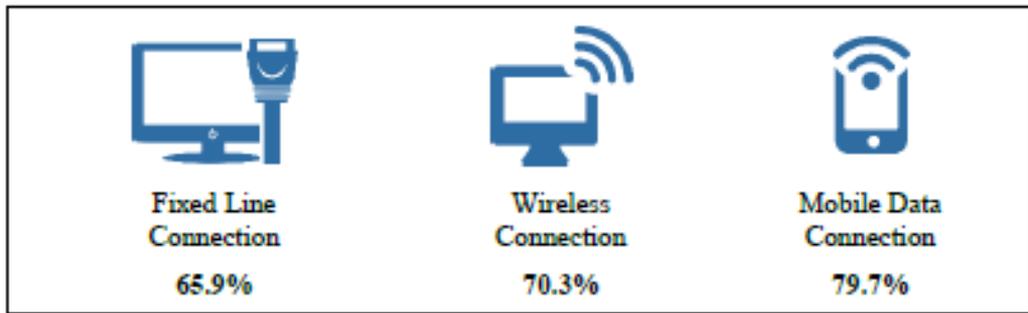


Figure 3. Respondents' Available Type of Internet Connection

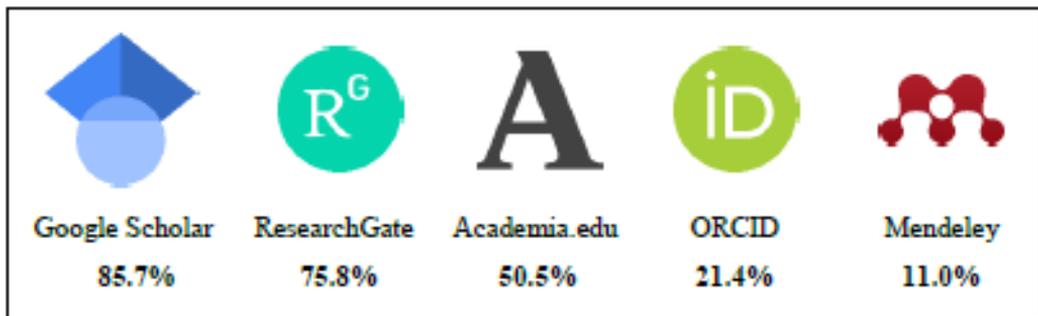


Figure 4. Respondents' Ownership of Digital Research Profiles

To lay the groundwork for digital operations, digital infrastructure integrates and combines physical and virtual technology like computing, storage, networks, and application platforms which are identified as essential in integrated digital activities. The majority of the respondents were equipped with laptops (98.9%) and smartphones (94.5%). Tablets are the least used tool by academics.

Internet has become a main necessity of online learning and teaching as access to web portals, learning management systems were famous during the pandemic. The majority of the participants confirmed that internet connectivity through fixed lines was available at university (72.5%) as well as at home (86.3%) in addition to WIFI connectivity at university (84.1%).

For most of the participants, mobile data connections (79.7%) were the major type of internet broadband facility. As well, participants adopted both fixed-line (65.9%) and wireless (70.3%) broadband internet facilities.

3.2 Ownership of Digital Research Profiles

The ownership of digital research profiles refers to the rights, control, and management of the online identities and profiles that researchers create and maintain to showcase their scholarly work and professional activities.

A professional profile includes information about their publications, conferences, collaborative projects, teaching commitments, fieldwork, and data collection, and other research-related activities. This profile will make research work discoverable

by others and as well distinguish researchers from other researchers with similar names. Maintaining a consistently updated research profile is crucial in the academic environment as it has an impact on sharing knowledge and up-to-date access to new research works. Thus, in the research, the ownership of different digital research profiles was tested: Google Scholar (85.7%) and ResearchGate (75.8) take a dominant role since most of the participants have a profile on those social networking sites. In addition, 50.5% of the participants owned a profile at Academia.edu while 21.4% and 11.0% of respondents owned profiles at ORCID and Mendeley which also provide a digital identifier for researchers.

IT devices such as laptops and smartphones are available to most academics, and there is adequate access to the internet in their workplaces as well as their houses. Although Academics are more familiar to use mobile data. The majority of academics own a Google Scholar profile while the second most used platform is ResearchGate. Haleem and others

(2022) proved that social media is widely used by both instructors and students as a crucial component of the whole e-learning experience.

3.3 Ownership of social media

Social media is known as a great platform to disperse knowledge to the general public. Social media algorithms are defined as it has access to youngsters, middle-aged and elderly groups in several aspects so it has the general behavior of spreading news and updates. Academics are encouraged to use social media profiles to promote their academic finding to the general public, specially to deliver new findings to the non-academic community who are not using any digital research profiles such as Academia, Google scholar, etc (Jordan & Carrigan, 2018). Increased readership also promotes the impact of the research publications as well (Jordan, 2020). In this sense, the ownership of social media profiles among academics in HSS was tested.

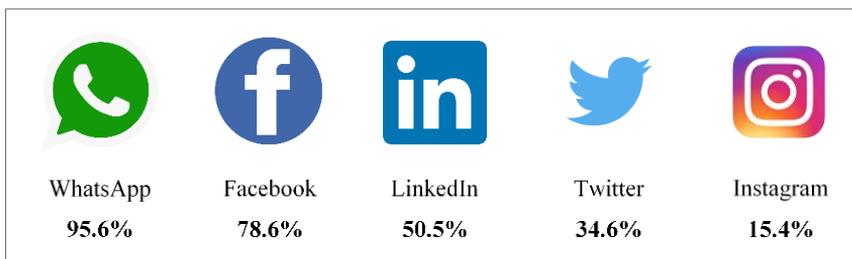


Figure 5. Respondents' Ownership of Social Media Profiles

The majority of the academics surveyed used WhatsApp (95.6%) and Facebook (78.6%) while around 50% of academics surveyed used LinkedIn as a social media platform. Both Twitter (34.6%) and Instagram (15.4%) were not very popular among study groups. A study by Jordan (2020) also found that Facebook is a good platform for transferring knowledge, developing self and amplifying the dissemination of knowledge though academics consider Facebook as a personal platform rather than a professional platform.

Further, in this study, Jordan identified LinkedIn as a source for developing self and amplified dissemination while Twitter is more advantageous in developing self. In our case, WhatsApp became very popular for communication.

3.4 Awareness and Training on Using Digital Tools

Information Technology is frequently viewed as the most effective way to use

computers and the internet to increase the efficacy and efficiency of the teaching and learning process in the field of education (Guha, 2003). Digital tools have the potential to be a powerful tool for expanding educational opportunities and considerably facilitating the acquisition and absorption of knowledge, which can have a transformative impact on educational institutions. The awareness and practice on digital tools were tested in terms of several aspects as depicted in Table 4.

Table 4. Awareness and Training on Digital Tools

Description	Percentage (%)
Awareness on Open Educational Resources (OER)	78.6
Training on the use of IT tools	83
Organizing regular training programs by institutes on digital tools	83.5
Training through online modes	84.1

A major section of the participants (78.6%) was aware of Open Education Resources (OER) which are related to their discipline and are readily available online. A larger portion of the participants confirmed that they have participated in training programs on IT tools (83%); agreed that their institutes conduct training programs regularly on IT tools (83.5%); and have participated in different training programs through online modes (84.1%).

3.5 Computer-related Skills for Adopting Digital Research Methods

The findings (Yazon et al, 2019) revealed that there is a strong and significant relationship between digital literacy and research productivity. Further, they elaborate increase in understanding, finding, using, and creating information using digital technologies is

positively related to the ability to conduct, complete, present and publish a research article by the academics. The literature highlights that fundamental computer-related skills, often referred to as basic notions of computer manipulation, play a vital role as initial steps in the adoption of digital methods in research (Bawden, 2001). So we decided to test the computer-related skills of the academics. These skills encompass tasks such as file management, database and spreadsheet management, and presentation development. Recognizing the significance of these determinants, this study aimed to investigate their impact on researchers' ability to effectively embrace and utilize digital methods in their research endeavors.

A larger part of the surveyed group of academics self-rated that they are at an expert user level of using Word Processors (43.4%); Presentation (45.1%); Email (54.9%); and Search Engines (40.7%). In terms of using Spreadsheets (31.3%); Databases (33.5%); Learning Management Systems (41.8%); Web 2.0 Tools like social media (30.2%), at most, academics self-rated that they are at an advanced user level. Most of the surveyed academics self-rated that they are at an intermediate user level of using Digital Audio tools. Respectively, 29.7%; 37.4%; and 57.7% of responded academics are in a non-user level category in terms of Graphic Editing, Video Editing and Web Page Design. It is obvious that most of the academics are very familiar with using Word, PowerPoint, email, Search Engines, Excel, LMS, Database, Video Conferencing, and Social Media platforms.

3.6 Availability of Institutional-level Digital Infrastructure Facilities

Digital infrastructure supports various aspects of information access, storage, sharing, and collaboration in the context of information management, communication, and learning.

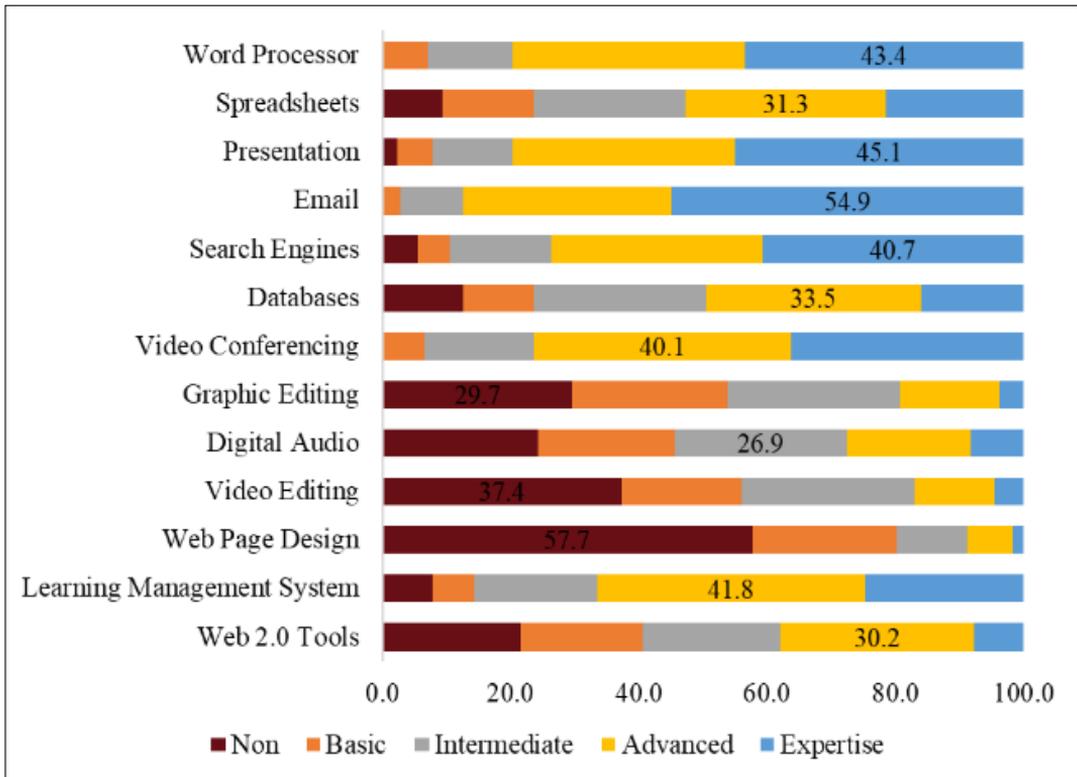


Figure 6. Items of Computer-related Skills

As presented in figure 7, eleven areas were considered under available institutional-level ICT infrastructure facilities. The majority of the surveyed academics rated the email service provided by the institute (45.6%) and faculty-level of Learning Management System (46.7%) as excellent. Availability of e-classroom facilities such as computers, projectors and Smartboards (41.2%) depicting these facilities are considerably good. Specially LMS and email services are the most well-maintained digital facility within the respondents' institutions.

Computer labs with internet access for practical (46.2%); e-Portfolio (25.8%); Network bandwidth (36.3%); Wi-Fi access (36.8%); Online or Virtual technologies such as cloud-based file storage system, web portal (38.5%); Access to software such as MATLAB, GIS applications, statistical software, qualitative data analysis, etc., (26.9%);

Facility to freely download and use of open-source software (32.4%); and Support for maintenance and repair of ICTs (28%) were reported as a good level by most of the respondents. However, among those, e-Portfolio, Access to software and IT maintenance and repair were given neutral and negative comments by a larger part (more than 50%) of respondents depicting that institutional-level intermediation in these areas needed to be developed.

The integration of technology in higher education institutions demands a thorough reassessment, restructuring, and innovation due to its multifaceted nature (Alenezi, 2023). On the other hand, Rodríguez-Abitia & Bribiesca-Correa (2021) have put forth the argument that universities have lagged behind other sectors when it comes to digitalization.

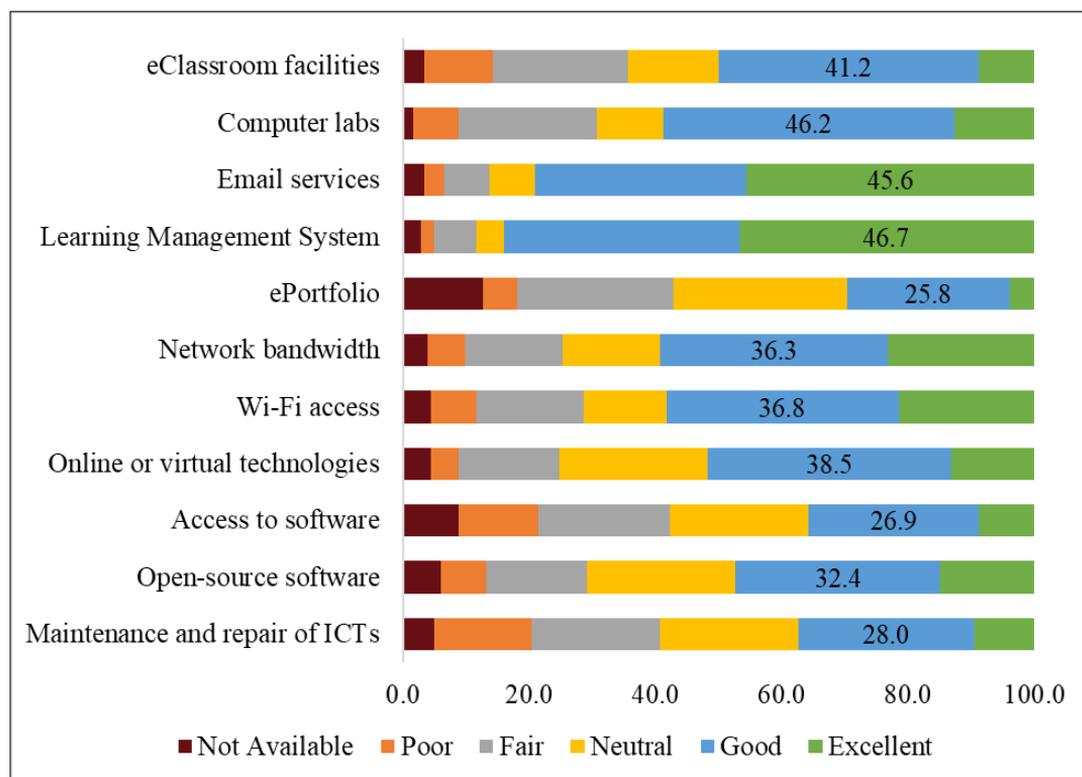


Figure 7. Availability of Digital Infrastructure Facilities

3.7 Adopting Digital Research Methods and Institutional Support

Figure 8 presents a summary of academics' perceptions of six criteria with respect to institutional support for adopting digital research methods. In general, the majority of respondents believed that they have good support from the faculty and university for using digital research methods. The academics rated good on access to data storage (37.9%); reference management software (27.5%); plagiarism detection software (29.1%); institutional repository (35.2%); and support to online publications (39.6%).

At most, 29.1% and 27.5% of the surveyed academics were neutral on faculty support for data analysis software and reference management software. Most of universities make their digital repositories freely

available with internet sources. Through the Internet, researchers can access existing scholarly works done locally and internationally over boundaries. On the other hand, reference management software like EndNote and Mendeley are available freely for managing research papers (Bhatti, 2013).

3.8 Adopting Digital Research Methods and Library Support

Bundy (1999) emphasizes that university libraries are expected to provide support in teaching/ learning and further enhance the research output. In this sense, the adoption of library support was tested among the academics in HSS.

Most of the academics in the sample always ask for library support to find e-journals (38.5%) and e-books (29.7%). 25.3% and 25.8% of the surveyed academics often ask

for library support for referring to citation databases and e-theses and dissertations. 26.9% of the academics who participated in the survey sometimes ask for support from libraries to find e-newspapers. For finding bibliographic databases (25.8%), patent databases (50.5%), e-proceedings of conferences (26.9%) and statistical databases (37.4%), the use of library support

is at a minimal level since most of the respondents never asked for support. In terms of referring to patent databases, it is obvious that both Humanities and Social Sciences researchers do not rely on that area. However, the lack of using statistical databases shows that there is less attention on secondary data in Humanities and Social Sciences research.

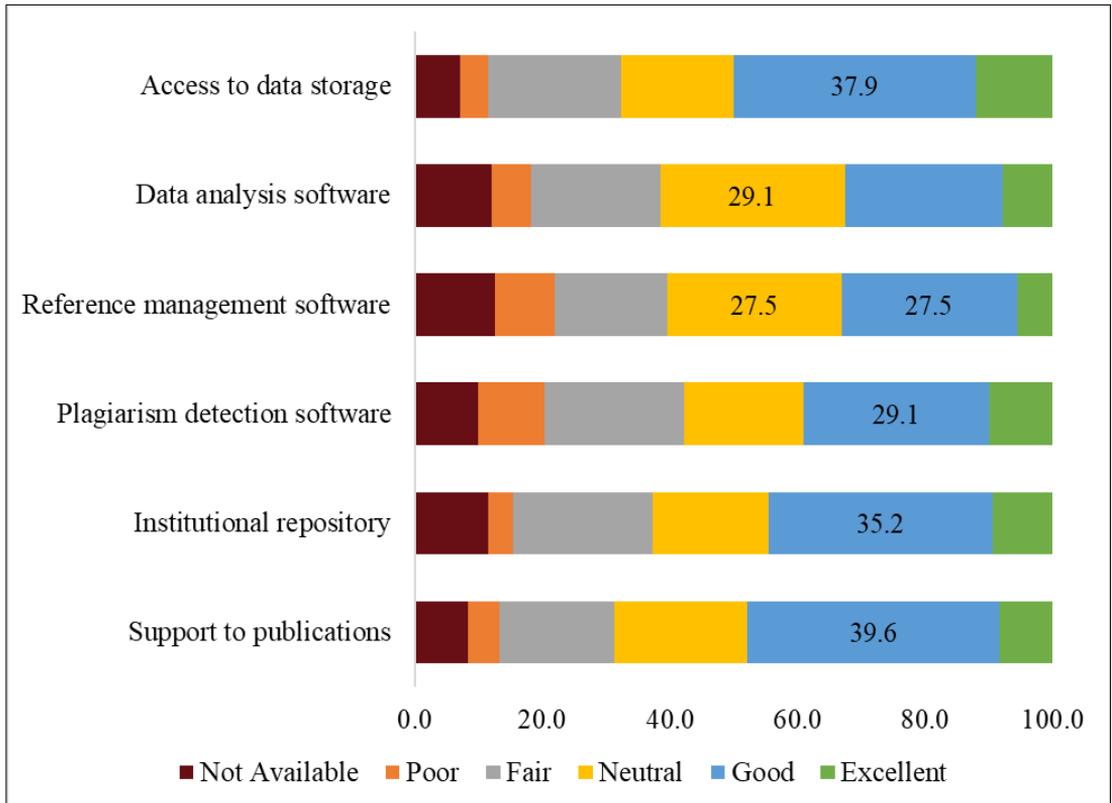


Figure 8. Items of Institutional Support on Digital Research

Nevertheless, academics who participated in the interviews further emphasized the importance of the library’s role in promoting digital research among the academic community. E-journals and e-books were recorded as the most popular source of information. The role of a library is crucial in teaching, learning, and assessment for any higher educational institute.

The first automation of university library facilities was met in 1986 in Sri Lanka and

then during the period of 1992-2002, the subscription of online databases with the support of the Swedish International Development Cooperation Agenda (SIDA) provided access to Sri Lankan academics to international journals and e-resources (Hindagolla, 2012). HSS, Medicine, Sciences and Technology were the main fields that got access to over 5000 full-text online databases in 2005 with the collaboration of the International Network for the Availability of Scientific Publications (INASP) and SLIDA

(Hindagolla, 2012). Since then, university library facilities have gone through different stages and have reached their peak during the Covid pandemic (Vithana, 2021). The ongoing development and utilization of Information and Communication Technology (ICT) have brought about significant transformations in

libraries worldwide (Masrek et al., 2016). As such, teaching and learning moved fast with social isolation, and these changes encompass various aspects of library operations, services, and user experiences which increased the use of digital libraries during this decade.

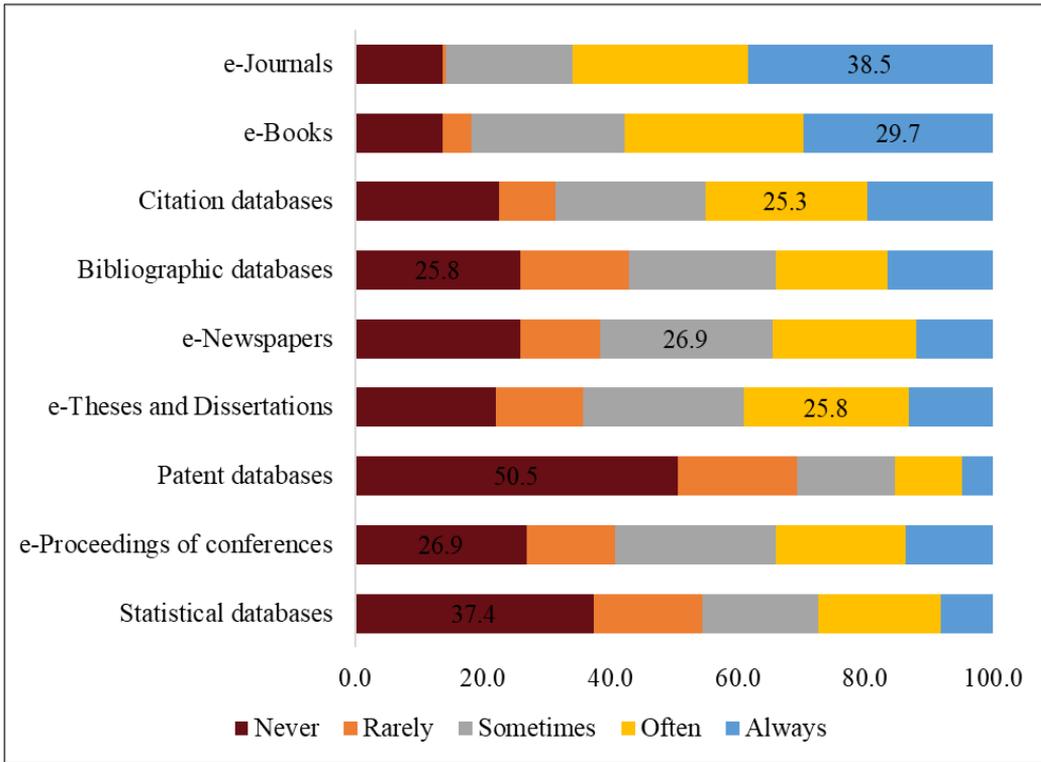


Figure 9. Items of Library Support on Digital Research

3.9 Adoption to use Digital Research Methods Throughout Research Process

The stages of conducting research were identified by referring to the literature. Accordingly, 5 stages of conducting research were identified as Research Problem Formulation, Literature Review, Data Collection, Data Analysis and Publishing Research. The adoption levels of digital tools were tested in each stage. Figure 10 represents a comparison between

Humanities and Social Sciences respondents for the use of digital tools in terms of stages in conducting research.

Most of the surveyed academics in both Humanities (71.1%) and Social Sciences (70.8%) disciplines reported that they use video conferencing tools like Zoom for conducting interviews. It is obvious that academics heavily rely on digital tools while analyzing data. Academics surveyed in both disciplines have mostly participated in virtual research conferences (Humanities: 61.8%, Social Sciences: 62.3%).

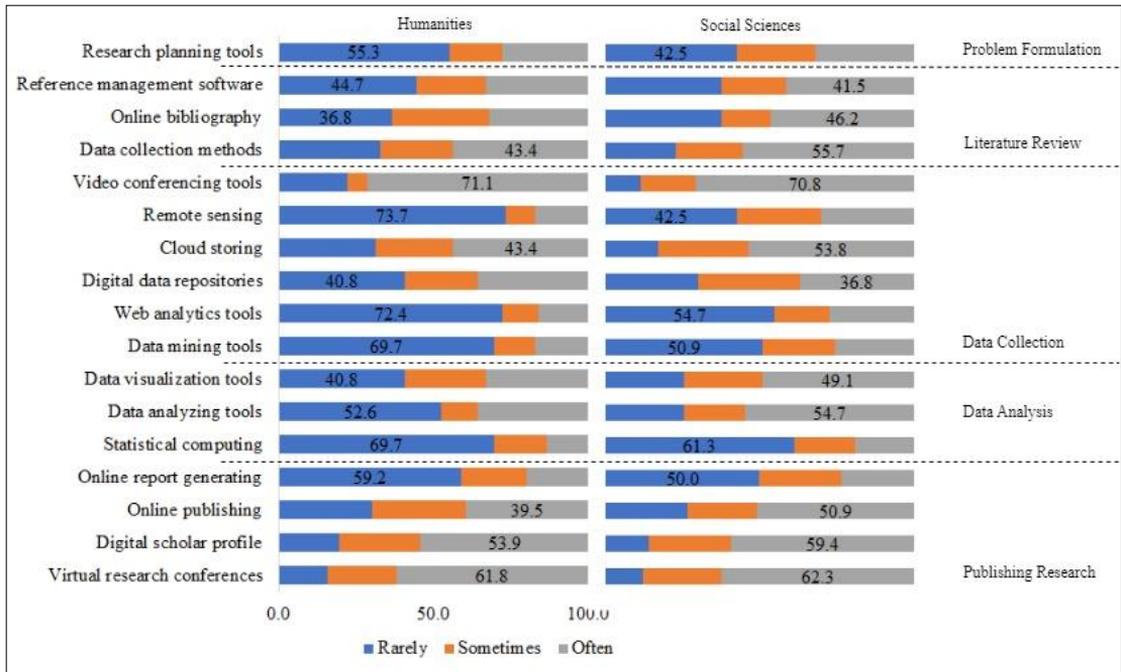


Figure 10. Items of Adoption to use Digital Research Methods

In the surveyed group, 53.9% of academics in the Humanities owned a digital scholar profile while 59.4% of academics in Social Sciences owned a digital scholar profile. The percentage (55.7%) of surveyed academics in Social Sciences who used digital data collection methods like Google Form was higher than the percentage (43.4%) of surveyed academics who used digital data collection methods like Google Forms. The percentages of online publishing (50.9%) and cloud storing (53.8) by surveyed academics in Social Sciences are also over the percentages of online publishing (39.5%) and cloud storing (43.4) by surveyed academics in Humanities.

Even surveyed academics in Social Sciences reported that they often use reference management software (41.5%), online bibliography (46.2%), digital data repositories (36.8%), data visualization tools (49.1%), and data analyzing tools (54.7%). Even with traditional research projects, the data analysis stage mostly depends on

statistical software programs like SPSS, EViews, STATA, and SAS. Software like NVivo, is available for both qualitative and quantitative data analysis. Surveyed academics in Humanities reported that they rarely use those digital research methods. In terms of remote sensing, web analytics tools, data mining tools, statistical computing, research planning, and online report generation, the majority of surveyed academics in both disciplines reported that they rarely use those digital methods.

Participants of semi-structured interviews also presented different digital methods that can be used for collecting data. The word cloud in Figure 11 depicts the importance of each code according to the participants. According to the word cloud, Google Forms, Zoom Meetings for interviews, Padlet, web-based survey, databases, and emails are some of the highlighted digital tools for research among scholars.

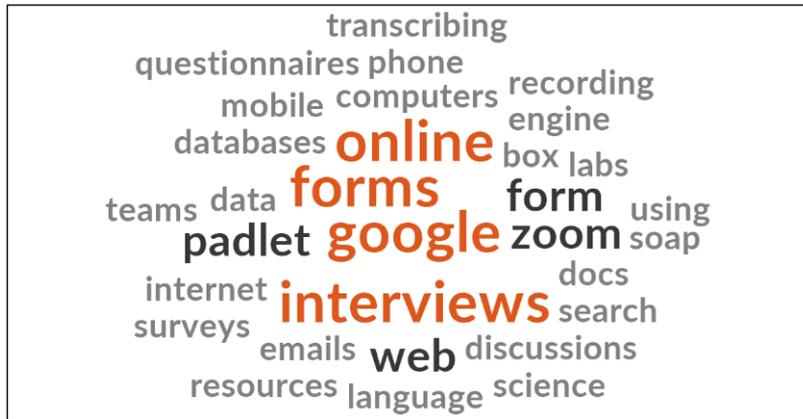


Figure 11. The Word Cloud

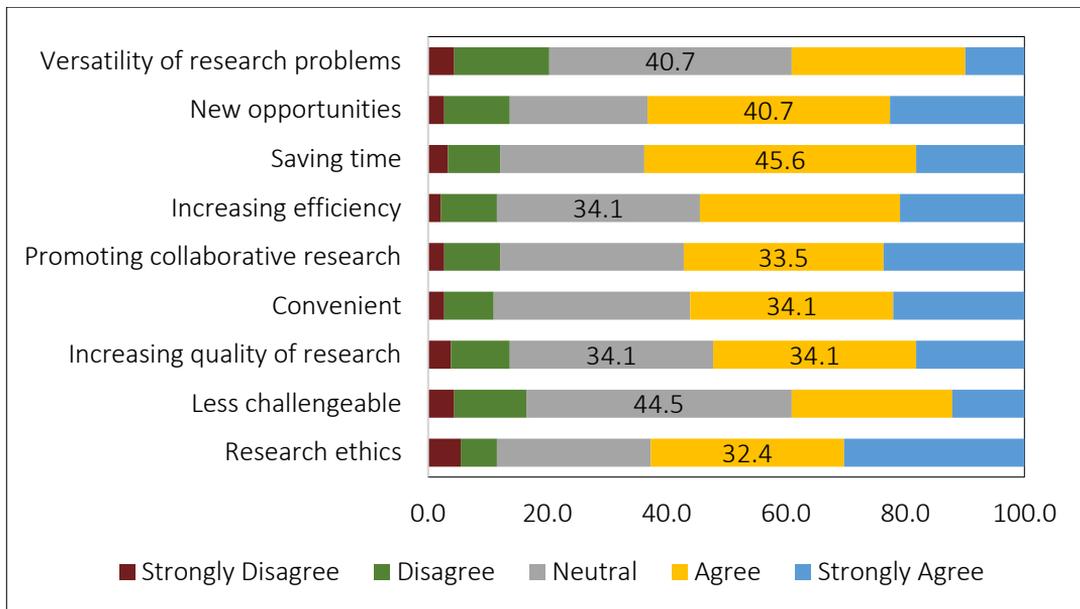


Figure 12. Items of Attitudes towards Digital Research Methods

Deakin University library page provides a strong toolset for digital research in the fields of HSS. For text analysis and data mining, they suggest a set of new tools such as Distant Reader, Mallet, Voyant tools, WordSmith, TAPoR, Natural Language Toolkit, General Architecture for Text Engineering (GATE) and Python. For Geographical data visualization and analysis, they suggest Google Earth, QGIS, My Google Maps, StoryMap JS and Time Layered Culture Map

options. Further, Gelphi, Canva, Timeline JS, Tableau are also known for data visualization. Omeka, Drupal, WordPress, Scalar and Text Encoding Initiative are known for publishing the resources (Deakin University, 2023).

3.10 Attitudes towards Adopting Digital Research Methods

Through the structured questionnaire, attitudes were measured in terms of different

items extracted from the existing literature review and the results of qualitative analysis. Figure 12 illustrates respondents' attitudes on using digital research methods.

The attitudes towards digital research methods were assessed through nine dimensions which ranged from strongly disagree to strongly agree. The majority of the academics in the sample agreed or strongly agreed that digital research methods open up new opportunities in the research field (63.2%); digital research methods are helpful to save time and cost (63.7%); digital research methods promote collaborative research (57.1%); digital research methods are convenient to researchers in the fields of Humanities and Social Sciences (56.1%); digital research methods are helpful to increase the quality of research (52.2%); research ethics are highly important when using digital research methods (62.6%). However, the surveyed academics were neutral on the ability of digital research methods for addressing versatile research problems (40.7%); digital research methods increase the efficiency of the research process (34.1%); and adopting digital research methods is less challenging (44.5%).

Overall, academics in the Humanities and Social Sciences who participated in the survey displayed positive attitudes toward adopting digital research methods in the fields of Humanities and Social Sciences. Digital platforms are becoming increasingly prominent for reaching out to individuals in research endeavors.

The majority are attracted to digital research due to its nature of time-saving, collaboration friendliness, convenience and new opportunities that it enables. Digital tools provide valuable opportunities to leverage community and collaboration, enhance search and retrieval of information, explore data in innovative ways, and capture various forms of cultural artifacts such as paintings,

ancient texts, manuscripts, and other objects in digital form (Emerald Publishing, 2023).

3.11 Motivators to Adopt Digital Research Methods

The category "Motivators" is a vital measure of adopting to use anything. Likewise, both internal rewards and external rewards were highlighted by participants in the semi-structured interviews as individuals' motivators to use digital methods. In this research, 13 different items were considered which were extracted from the existing literature and the results of the qualitative analysis as in figure 13.

Among motivators to use digital research methods, personal interest, self-gratification, relevance with the research field, local and international recognition, access to updated data resources and ability to use digital technologies were identified as strong motivators according to the majority (more than 50%) of the respondents. To most of the surveyed academics, intellectual challenge, training received on digital research, incentives for using digital research, technical support, reduction in existing workload, being a trendsetter and cost-effectiveness were averagely motivated factors to use digital research methods.

3.12 Impact of COVID-19 on the Use of Digital Research Methods

Due to the COVID-19 pandemic, a paradigm shift can be noticed in terms of the integration of IT in academia. The health crisis has accelerated the process of digital transformation, according to the Digital Government Index (DGI) 2019 (OECD, 2019). Social isolation and the spread of the disease all over the world encouraged workers of each and every field to work remotely. This situation was a challenge for universities to evolve toward models of organization based on continuous innovation, where it is necessary to redefine both the services aimed at students in the academic field and

companies and organizations in the area of transfer (OECD, 2019). Thus, the impact of the pandemic was tested in order to identify

the use of digital research methods during the pandemic.

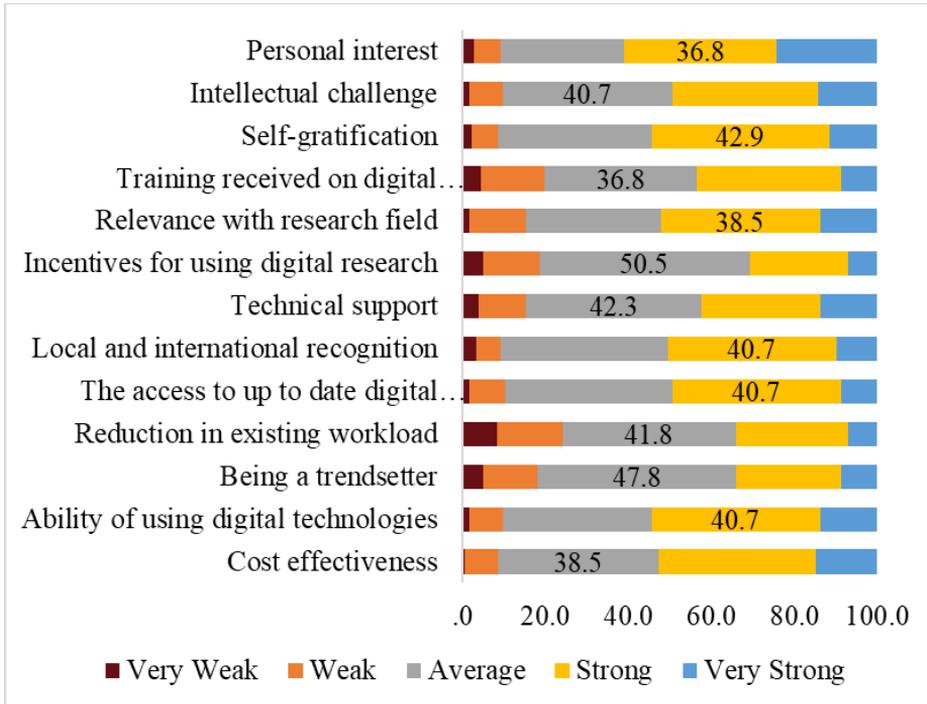


Figure 13. Motivators to use Digital Research Methods

A comparative analysis using paired T-test was done before and after the pandemic to find whether any increment was there for the usage of digital methods for research by academics.

Table 5. Results of Paired T-test

Hypothesis	T-Value	P-Value
There is no change in usage of digital research methods during COVID-19 compared to before the pandemic.	-8.67	0.000

A significant increment of using digital methods by academics was found during the pandemic compared to before the pandemic

situation. Therefore, the COVID-19 pandemic has impacted the usage of digital methods in research. It is true that during the pandemic, the conventional practices among academics have changed dramatically. As one of the arms of an academic career, research was also influenced by the pandemic. A study (Bygstad et al, 2022) conducted at the University of Oslo, also suggest that the COVID-19 crisis has expedited the process of digital transformation in higher education.

3.13 Constraints of Using Digital Research Methods

The constraints of using digital methods in the research were identified referring to the frequencies of codes collected from the interviews. Lack of technical knowledge was also a highly crucial limitation according to participants of semi-structured interviews.

To some of the participants, digital methods are not complete to use in research. It implies that digital methods do not completely facilitate the research process. Another significant limitation of using digital methods in research was its limited capability to use for collecting qualitative data.

As per the participants, the usage of digital methods eventually impacts on several reliability issues which was also then identified as a limitation. As digital methods are limited in collecting qualitative data, the usability of those digital methods is also limited in the field of Humanities. Not only that, although digital methods are suitable with secondary data, they are limited in collecting primary data. Contacting participants physically rather than virtually, and observing human behaviors are always preferred research strategies under the fields of Social Sciences and Humanities.

The influence of the medium of communication should be taken into account, as it may not provide researchers with the same level of insight into the characteristics of the subjects compared to face-to-face observation (Masullo & Coppola, 2023). Hampton (2017) also supports that the reduced level of control exerted by the researcher over the research environment, which may involve distractions and access to external information are challenging (such as verifying participant characteristics, age and gender) in digital research settings.

Even though digital methods can be used to collect data from secondary sources, a major limitation regarding that is the difficulty of cleaning those data. It requires a big effort to clean and organize those secondary data. Insufficient access to e-resources was also identified as a limitation of using digital methods in research. Though there are thousands of e-resources, due to several factors, there are constraints to access those resources electronically.

4. Conclusion and Recommendation

Universities all around the world have recently gone through rapid, significant changes that are affected by technical development and social e-trends toward digitization. The digital transition requires extensive adjustment and re-adjustment, like all other dramatic transformations (Hashim et al, 2022).

Most HSS academics have digital devices and access to the internet adequately. Most HSS academics maintain digital research profiles such as Google Scholar and ResearchGate. Most HSS academics use social media platforms such as WhatsApp and Facebook where Facebook is defined as a good source for accessing the general public. Considering the digital infrastructure facilities provided by the institutional level, most of the academics rated email and LMS services as excellent. Overall, the facilities of maintenance and repairs provided by the institute were not adequate to the perceptions of academics who were surveyed. However, the lack of using statistical databases shows that there is less attention on secondary data in Humanities and Social Sciences research. Patent databases and statistical databases seemed less popular among academics in HSS. The IT infrastructure facilities and support by libraries and institutes are identified as helpful factors to adopt digital methods in research. In general, the majority of respondents believed that they have good support from the faculty and university for using digital research methods. Word processor, presentation, email and search engines are the most familiar applications. Graphic editing, video editing and web page designing are the least skilled area by the HSS academics. The HSS academics prefer to participate in virtual conferences and in publishing research papers online. Further, the HSS academics' computer and digital literacy can be considered as a determinant of adopting digital research methods.

One of the major concerns of adopting digital research methods is the versatility of the field of Humanities and Social Sciences. Findings depict that, academics in the subject of HSS frequently use different digital technologies when gathering data. However, the majority of research studies use Google Forms to gather primary data, which has become more common since the pandemic for the gathering of primary data. In addition to Google Forms, Zoom video conferencing solutions are also gaining popularity for use in interviewing candidates. Further, digital research methods are used for literature reviews, data analysis and publishing stages too. Mostly, the Internet is used to find research articles for their literature reviews. The research findings also exhibit that the adaptability of digital methods in Humanities research is lower than that in Social Sciences research. Both internal and external motivators are also helpful for enhancing the adoption of digital research methods. The motivators strongly perceived by academics are personal interest, self-gratification, relevance to the research field, local and international recognition, accessibility to resources, and the ability to use digital methods. The digital infrastructure facilities, supported by libraries and institutes are helpful to adopt digital methods in research. The positive attitudes towards using digital research methods contribute to adopting digital research methods among HSS academics.

During the COVID-19 pandemic, academics had to rely largely on digital methods not only for teaching but also for conducting research. The current research findings further confirmed that there was an expansion of using digital research methods during the pandemic compared to the early pandemic situation. Therefore, the COVID-19 pandemic influenced HSS researchers to adopt more digital research methods. The COVID-19 pandemic did not only impact on teaching but also impacted on research while expanding the use of digital research methods. Insufficiency of internet connectivity, lack of

physical interaction were mostly cited as limitations of using the digital research methods.

During recent years, collaborative research works, virtual conferences, using the internet as a widely-used source of data, citations and databases, and digital indexing were the popular trends that emerged in relation to the research domain due to the popularity of digital technologies. Organizing training and awareness programs continuously on digital research tools, providing an increased access to academics to find digital literature through e-databases and e-sources, providing access to closed-source qualitative and quantitative data analysis software such as NVivo, Stata, Minitab etc., conducting training programs on the use of research-related software, and promoting the use of digital research methods through research workshops should be implemented. Further, the scholar community should be encouraged to use new innovative research tools such as Distant Reader, Mallet, Voyant tools, WordSmith, TAPoR, Natural Language Toolkit, General Architecture for Text Engineering (GATE), Gelphi, Canva, Timeline JS, Tableau and Biblioshiny.

Improving digital infrastructure facilities such as computer labs within universities and making strategies to overcome the constraints of adopting digital research methods are also good implications at the institutional level. Academics in HSS need to be trained on increasing the impact of research activities both academically and socially. Academics must be encouraged to use social media for dispersing knowledge of their research output. Promoting collaborative and multi-disciplinary research through peer research groups with academics from different disciplines, funding digital research activities and encouraging academics to publish online or digitally driven indexed journals, promoting combining digital research methods with existing conventional research practices are

suggested to improve the digital research culture in HSS fields.

Lack of timely updated websites in the particular universities and publishing invalid email addresses of the academics were the major drawbacks for the study. Further, in future studies, we suggest to investigate the integration of digital technologies in Science, Technology, Engineering, and Mathematics (STEM) education streams and as well to observe the Business and Digital Transformation; Health Sciences and Digital Technologies; Education and Digital Pedagogies in interdisciplinary and interdisciplinary aspect to identify the use of digital dimensions in research.

Acknowledgments: This work is a part of the Research study on “Use of Digital Research Methods among Academics in the Field of Humanities and Social Sciences at Sri Lankan Universities” which is funded by the International Center for Multidisciplinary Studies of the Faculty of Humanities and Social Sciences, University of Sri Jayewardenepura. The authors thank all the academics of the HSS fields in targeted universities and temporary/academic supportive staff who supported successful completion of the data collection.

5. References

- Alenezi, M. (2023). Digital Learning and Digital Institution in Higher Education. *Education Sciences*, 13 (1). Retrieved from: <https://doi.org/10.3390/educsci13010088>
- Bhatti, R. (2013). Impact of ICT on social science faculty members- Information usage pattern at Bahauddin Zakariya University, Multan. *Library Philosophy and Practice (e-journal)*. 928. Retrieved from: <https://digitalcommons.unl.edu/libphilprac/928>
- Bawden, D. (2001). Information and digital literacies: a review of concepts. *Journal of Documentation*. 57, 218-259. Retrieved from: [10.1108/EUM0000000007083](https://doi.org/10.1108/EUM0000000007083).
- Bundy, A. (1999). Challenging technolust: The educational responsibility of librarians. Proceedings of the International Association of Scientific and Technological University Libraries Conferences. Crete, Greece. Retrieved from: <https://docs.lib.purdue.edu/iatul/1999/papers/7>
- Bygstad, B., Øvrelid, E., Ludvigsen, S. & Dæhlen, M. (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education, *Computers & Education*, 182. Retrieved from: <https://doi.org/10.1016/j.compedu.2022.104463>
- Creswell, J. W., & Plano Clark, V. (2017). Designing and Conducting Mixed Methods Research. *SAGE Publications*.
- Deakin University. (2023). *Digital Research in Humanities and Social Sciences*. Retrieved from: <https://deakin.libguides.com/digitalresearch>
- De Silva, P., Dharmadasa, K. N. O, Tilakaratne, A., Nahallage, C., & Hewamanage, W. (Eds.). (2021). *Beyond the Boundaries: One Hundred Years of Humanities and Social Sciences in Sri Lankan Universities - Humanities Vol: I*. Published by University Grants Commission.
- European Commission. (2018). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan*. Retrieved from <https://eur->

- lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN
- Emerald Publishing (2023). *How to Use digital tools for research*. Retrieved from: <https://www.emeraldgrouppublishing.com/how-to/research-methods/use-digital-tools-research>
- Guha, S. (2003). Are we all technically prepared? Teachers' perspective on the causes of comfort or discomfort in using computers at elementary grade teaching, *Information Technology in Childhood Education Annual, 2003*(1), 317-349.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R., (2022). Understanding the role of digital technologies in education: A review, *Sustainable Operations and Computers, 3*, 275-285. Retrieved from: <https://doi.org/10.1016/j.susoc.2022.05.004>.
- Hashim, M., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation, *Education and Information Technologies, 27*, 3171-3195. Retrieved from: <https://doi.org/10.1007/s10639-021-10739-1>
- Hayashi, R., Maddawin, A., Garcia, M., & Hewagamage, K. P., (2020). Online learning in Sri Lanka's higher education institutions during the COVID-19 pandemic, *ADB Briefs*. Retrieved from: <http://dx.doi.org/10.22617/BRF200260-2>
- Hampton K. N. (2017). Studying the digital: Directions and challenges for digital methods, *Annual Review of Sociology, 43*, 167-88.
- Hindagolla, B. M. M. C. B. (2012). Restructuring of user education programmes in university libraries from user perspectives: a case study, *Journal of the University Librarians Association, 16*(1), 19-33. Retrieved from: <http://dx.doi.org/10.4038/jula.v16i1.5194>
- Jordan, K. (2020). Imagined audiences, acceptable identity fragments and merging the personal and professional: how academic online identity is expressed through different social media platforms. *Learning, Media and Technology, 45*(2), 165-178. Retrieved from: 10.1080/17439884.2020.1707222
- Jordan, K., (2022). Academics' perceptions of research impact and engagement through interactions on social media platforms. *Learning, Media and Technology*. Retrieved from: <https://doi.org/10.1080/17439884.2022.2065298>
- Jordan, K., & Carrigan, M. (2018). The impact agenda has led to social media being used in a role it may not be equipped to perform (Blog post). Retrieved from: <https://blogs.lse.ac.uk/impactofsocialsciences/2018/05/31/the-impact-agenda-has-led-to-social-media-being-used-in-a-role-it-may-not-be-equipped-to-perform/>.
- Masrek, M. N., & Gaskin, J. E. (2016). Assessing users' satisfaction with web digital library: the case of university technology MARA. *The International Journal of Information and Learning Technology, 33* (1), pp. 36-56.
- Masullo G., & Coppola M. (2023). Potential and limitations of digital ethnographic research: A case study on a web community. *Frontiers in Sociology, 4*(7). Retrieved from: 10.3389/fsoc.2022.1092181. PMID: 36687011; PMCID: PMC9846540.
- OECD (2019). *OECD public governance policy papers No. 03 digital government index*:

- 2019 results. OECD Digital Government Studies, OECD Publishing, Paris. Retrieved from: <https://dx.doi.org/10.1787/4de9f5bb-en>
- Organization for Economic Co-operation and Development. (2019). *Digital government index; Results and key messages*. Retrieved from: <http://www.oecd.org/gov/digital-government/digital-government-index-2019-highlights-es.pdf>
- Rodríguez-Abitia, G., & Bribiesca-Correa, G. (2021). Assessing digital transformation in universities. *Future Internet*, 13(2), 52. Retrieved from: <http://dx.doi.org/10.3390/fi13020052>
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing Health*, 18, 179-183. Retrieved from: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/nur.4770180211>
- Tsatsou, P., (2016). Digital technologies in the research process: Lessons from the digital research community in the UK. *Computers in Human Behavior*, 61, 597-608. Retrieved from: [10.1016/j.chb.2016.03.053](https://doi.org/10.1016/j.chb.2016.03.053).
- Vithana, D. P. C., Kulatunga, K. M. R. K., & Dilhani, H. G. P. S. C. (2021). *Sri Lankan library step forward through COVID-19 crisis; Lessons from global context and practice-based learning*, Paper presented at International Conference on Library and Information Management, Kelaniya, Sri Lanka. Retrieved from: <http://repository.kln.ac.lk/bitstream/handle/123456789/24473/ICLIM%202021%2057.pdf?sequence=1&isAllowed=y>
- World Bank & University Grants Commission. (2012). *Induction program for academic staff of Sri Lankan universities—Training Manual*. University Grants Commission Sri Lanka. Retrieved from: <https://www.ugc.ac.lk/attachments/Trai>ning%20manual%20on%20induction%20programme%20for%20academic%20staff%20of%20Sri%20Lankan%20Universities.pdf
- Yazon , A. D., Ang-Manaig, K., Buama, C.A.C , & Tesoro, J. F. B. (2019). Digital literacy, digital competence and research productivity of educators. *Universal Journal of Educational Research*, 7(8), 1734-1743. Retrieved from: [10.13189/ujer.2019.070812](https://doi.org/10.13189/ujer.2019.070812)