



International Center for Multidisciplinary Studies  
Faculty of Humanities and Social Sciences  
University of Sri Jayawardenepura  
Sri Lanka

# Use of Digital Research Methods among Academics in Humanities and Social Sciences at Sri Lankan Universities



## RESEARCH REPORT

By  
Premakumara de Silva

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Principal Researcher

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## List of Abbreviations

ANOVA	Analysis of Variance
COVID-19	Coronavirus Disease of 2019
GIS	Geographic Information System
HSS	Humanities and Social Sciences
IT	Information Technology
ICT	Information and Communication Technology
ICMS	International Center for Multidisciplinary Studies
KMO	Kaiser-Meyer-Olkin
LMS	Learning Management System
MATLAB	Matrix Laboratory
MPhil	Master of Philosophy
MS	Microsoft
OER	Open Educational Resources
PCA	Principal Component Analysis
PhD	Doctor of Philosophy
SAS	Statistical Analysis System
SPSS	Statistical Package for Social Sciences
STATA	Statistics and Data
UGC	University Grant Commission
UoC	University of Colombo
UoK	University of Kelaniya
USJ	University of Sri Jayewardenepura
WIFI	Wireless Fidelity

## **Executive Summary**

The demand for digital technologies in research has experienced remarkable growth in recent years. The availability of various digital methods and large volumes of data has opened up new avenues for conducting research. However, there is a challenge in ensuring that researchers are well-informed and equipped to utilize digital methods effectively in their specific areas of research. Additionally, the adoption of digital methods in research poses a versatile challenge across different disciplines. In Humanities and Social Sciences, there has been a notable shift away from the traditional defensive stance when addressing the issue of impact. Globally, these fields have embraced digital technology to facilitate computer-driven research as a foundation for studying society, politics, culture, psychology, economics, as well as humanities and fine arts.

In this context, this report presents the findings of a research study conducted to examine the utilization of digital research methods among academics in Humanities and Social Sciences (HSS) at Sri Lankan universities. The research aimed to achieve several objectives, including identifying the availability and use of technology, exploring the application of digital methods in the research process, assessing the proficiency levels in digital research methods, examining the factors influencing the adoption of digital research methods, and evaluating the institutional role in promoting digital research methods.

The introduction provides a justification for the current research work while elaborating on the research objectives. A comprehensive literature review, encompassing theoretical foundations and empirical research, is included in the second chapter. The research approach predominantly adopted a mixed-methods approach, combining both quantitative and qualitative data. Surveys

and interviews were conducted with academics from selected disciplines within the fields of Humanities and Social Sciences. The methodology chapter presents the methods and materials utilized in the current study. Quantitative data were primarily analyzed using SPSS, while NVivo was employed for the analysis of qualitative data. Thematic analysis was conducted to validate the conceptual framework of the study. The data analysis chapter comprehensively presents all the findings derived from the analysis.

The study's significant findings indicate that half of the academics are not very familiar with digital research methods. This highlights the need for increased attention to promote the utilization of digital methods in research within the field of Humanities and Social Sciences. The adoption of digital methods is influenced by various factors, including computer and digital literacy, availability of infrastructure facilities, institutional and library support, as well as positive attitudes and motivators. Consequently, there is a necessity to foster a culture that encourages the use of digital research methods in addition to traditional research practices.

# Introduction

## 1.1 Introduction

Digital research is an expanding field that encompasses growth, discussion, and reflection. Although not interchangeable, the terms digital research, internet research, online research, e-research, and e-science all refer to the rapidly evolving and highly disruptive role of information, communication, and networking technologies in scientific study and research. The proliferation of digital research has presented challenges to the field of Humanities and Social Sciences (HSS), creating an entirely new landscape for investigating human activity. Given the intricacies of digital research, a sustained commitment to professional development is necessary to keep up with rapidly changing resources and technologies. Teachers, staff, and students require robust and enduring learning programs that blend sound methodology with appropriate modern technology.

In the past, humanists primarily relied on library and archival materials, while social scientists incorporated analog resources and conducted limited computational analysis of field-generated data, up until just 20 years ago. However, the Digging into Data Challenge has introduced a new paradigm—an interconnected digital ecosystem consisting of data, algorithms, metadata, analysis and visualization tools, and novel forms of scholarly expression emerging from this type of research.

The implications of these projects and their digital environments extend far beyond the realm of research itself. They have profound implications for the economics and governance of higher education, as well as for research, teaching, and learning practices. These effects are not limited to researchers engaged in computationally intensive work; they also impact university administrations,

learned societies, funding agencies, research libraries, academic publishers, and students.

## **1.2 Background of the Study**

The fields of Humanities and Social Sciences encompass a wide range of disciplines. While the 'Humanities' focus on understanding the human condition, the 'Social Sciences' are more concerned with studying human behavior and its societal implications. These fields involve a deep exploration of the human experience and the intricate relationships between individuals and groups within society.

In Sri Lanka, formerly known as Ceylon, university education in the Humanities, Social Sciences, and Natural Sciences celebrated its centenary in 2021. The establishment of the University College of Ceylon in Colombo on January 21, 1921 marked the beginning of university education in the Social Sciences and Humanities. Subjects such as History, Geography, Philosophy, English, Western Classical Culture, and "Eastern" subjects like Sanskrit, Pali, Sinhala, and Tamil were taught at this institution, which is now the central administrative building of the University of Ceylon, known as College House.

Today, the Humanities and Social Sciences are represented by 34 out of 110 faculties at public universities in Sri Lanka. These faculties encompass various disciplines, including Administration, Law, Education, Fine and Performing Arts, and more (UGC, 2020). The primary subjects within the Social Sciences include Economics, History, Geography, Sociology, Political Science, Archaeology, and Philosophy. The Humanities and Social Sciences also include Administrative Sciences, Law, Education, Library Sciences, Fine Arts, and Performing Arts (Sangtani et al., 2021).



According to university statistics published by the University Grants Commission (UGC) in 2020, there are 6,525 permanent academic staff in state universities, with 39% (2,510) employed in Humanities, Social Sciences, and Administration departments. In terms of student enrollment, 54,411 students are enrolled in Humanities and Social Sciences, including Administration and Business Management, accounting for 49.6% of the total 109,660 students (UGC, 2020). In the 2019/20 intake alone, 18,849 students were enrolled in the broader category of Humanities and Social Sciences, constituting 41,669 students out of a total student population, representing 45%. In terms of enrollment figures for external degrees, 74% are in the arts, except for the second-highest figure in Business and Management. The total number of postgraduate students is 35,250, with Administration (19.87%), Arts (19.08%), Education (16.92%), and Law (1.06%) comprising 56.93% of the total. Additionally, there are 694 international postgraduate students, with 618 of them pursuing arts-related disciplines (UGC, 2020). According to the latest UGC statistics, Humanities and Social Sciences remain the most prominent area of university education in the country, although some argue that arts education in Sri Lankan universities has declined significantly (de Silva et al., 2021).

### **1.3 Research Problem**

The research study focused on examining how the Humanities and Social Sciences (HSS) research community in Sri Lankan universities utilizes digital tools, resources, and services throughout the research process, from planning to data collection and dissemination. It aimed to investigate the current and future patterns of digital technology usage in research contexts, considering factors such as complexity, multiplicity, duration, research schedules, and other relevant aspects. Additionally, the study explored the skills and capacity constraints associated with the adoption of digital technologies.

The primary objective was to map out the actual, claimed, and potential roles of digital technologies in HSS research, with a critical assessment of existing and potential pathways for innovation facilitated by the use of digital technologies in social research. A specific focus was placed on examining the development of a digital research culture, departing from techno-deterministic approaches.

To gather data for analysis, quantitative and qualitative data were collected from three selected state universities: Colombo, Kelaniya, and Sri Jayewardenepura. The study primarily targeted academics in disciplines such as Economics, English, English Language Teaching, Geography, History and Archaeology, Pali and Buddhist Studies, Political Science, Sinhala, and Sociology. The aim was to investigate how researchers in these diverse disciplines within the Humanities and Social Sciences utilize digital tools, resources, and services to facilitate their research or conduct research using digital means.

Ultimately, the research seeks to draw preliminary conclusions regarding the potential emergence of a digital research community within the HSS research community specifically in Sri Lankan universities.

## **1.4 Aims and Objectives**

The integration of digital technologies into research culture has experienced rapid growth in the domains of development, deliberation, and reflection. Researchers in the fields of Humanities and Social Sciences have proposed utilizing Internet technologies, tools, and services as subjects of research, expanding existing studies and generating new themes and research questions. Notably, website analysis has emerged as a result of websites and web content (Cai and Zhao, 2013; Das and Turkoglu, 2009; Kingston and Stam, 2013; McCluskey, 2013; Ortega, Aguillo, and Prieto, 2006; Schweitzer, 2008), and search engines have become

the focus of investigations into search engine results and their politics (Granka, 2010; Introna and Nissenbaum, 2000; Mager, 2012; Muddiman, 2013; Van Couvering, 2008).

Researchers have reevaluated traditional methods and addressed the limitations of offline research by embracing virtual and online tools (Roberts et al., 2013; Salmons, 2017; Sappleton, 2013). Many researchers have emphasized the importance of incorporating digital technologies in modern research, advocating for collaborations between social and computer researchers to combine knowledge from various disciplines and create new research spaces, such as the field of artificial intelligence. Consequently, large-scale interdisciplinary research endeavors have emerged, involving technology experts, funders, creative practitioners, industry actors, and ordinary technology users. As such, this research study explores the utilization of digital tools, resources, and services in the field of Humanities and Social Sciences within the research community at Sri Lankan universities.

Research objectives of the study are as follows:

1. To examine the usage of digital tools, techniques, and services in research within the field of Humanities and Social Sciences (HSS).
2. To assess the extent to which digital methods are employed in different stages of the research process, including research design, data collection, and data analysis.
3. To evaluate the skills and expertise levels of researchers, ranging from junior to senior academics, and identify any potential training needs or capacity-building requirements for the effective utilization and comprehensive integration of digital technologies.

4. To investigate the availability of resources and facilities necessary for fostering a digital research culture within the HSS community.

To achieve these objectives, a research study was conducted encompassing various disciplines within the Social Sciences, including Economics, Geography, History and Archaeology, Political Science, and Sociology. Additionally, Humanities disciplines such as English, English Language Teaching, Pali and Buddhist Studies, and Sinhala were included. The purpose of this study was to gain insights into how researchers within these diverse disciplines of Humanities and Social Sciences utilize digital tools, resources, and services in conducting and facilitating their research-related activities.

## **1.5 Significance of the Study**

The findings of this study will be disseminated through various means and activities to inform the broader Humanities and Social Sciences (HSS) community in Sri Lankan universities. Additionally, they will foster knowledge exchange among researchers, research funders, and technology experts, shedding light on the current patterns of digital technology usage in research and highlighting associated opportunities and challenges for the future.

In essence, this study provides significant findings and insights that can pave the way for a more comprehensive examination of the utilization of digital technologies and tools in social research in Sri Lanka. It not only reveals past "failures" and existing limitations but also offers valuable lessons for researchers. For instance, it emphasizes the importance of engaging with fellow researchers and the broader research community within and beyond strict disciplinary boundaries, facilitating the sharing of experiences and the learning from one another.

## **1.6 Limitations**

The findings of the research indicate the need for additional studies to be conducted, further developed, and tested. There is a requirement for more extensive and comprehensive investigations into social researchers' experiences with digital technologies, including an assessment of the factors that influence the adoption of digital technologies throughout the research process. These studies should also consider the multifaceted nature and complexity of digital technologies.

Furthermore, there is a necessity for broader studies that encompass a wide range of disciplines and focus on various levels, such as individual researchers, research cases or projects, and entire disciplines. These studies should aim to capture and analyze trends in the use of digital technologies, tools, and services across disciplines, with particular emphasis on the field of Humanities and Social Sciences.

# Literature Review

## 2.1 Introduction

This research study primarily examines the utilization of digital tools, resources, and services within the Humanities and Social Sciences research community of Sri Lankan universities. The study delves into the entire research process, encompassing aspects from initial data collection and planning to eventual dissemination. It investigates the present and future-oriented techniques of integrating digital technology within research contexts.

This research centers around the analysis of twenty distinct research projects spanning various disciplines such as Economics, English, English Language Teaching, Geography, History and Archaeology, Pali and Buddhist Studies, Political Science, Sinhala, and Sociology. The overarching goal is to understand how scholars and researchers across these nine diverse fields leverage digital tools, resources, and services to facilitate and advance their research endeavors. The study's scope encompasses three prominent universities in Sri Lanka, selected as focal points for this investigation. The research study is basically weighed on how the research community of Humanities and Social Sciences of Sri Lankan universities applies digital tools, resources, and services throughout the research process, from planning data collection and dissemination. It looked at the use of current and future methods of digital technology in research settings. This research focuses on twenty different research projects in the fields of Economics, English, English Language Teaching, Geography, History and Archeology, Pali and Buddhist Studies, Political Science, Sinhala, and Sociology to study how researchers in nine different disciplines use digital tools, resources, and services to conduct or facilitate the research at three selected universities in Sri Lanka.

## **2.2 Theoretical Framework**

### **2.2.1 Digital Technology**

The emergence of the Internet stands as a pivotal achievement by researchers, facilitating the sharing of computing resources. Similarly, Tim Berners-Lee and his associates at CERN (European Laboratory for Particle Physics) conceived the Web as a means to exchange pertinent documents for their collective research pursuits. The advancements in Grid and Cloud computing have ushered in novel concepts in the realm of information technologies, contributing significantly to the augmentation of networking and processing capabilities crucial for researchers during the initial decade of the twenty-first century.

These visionary developments have catalyzed a diverse array of initiatives aimed at refining technologies for research support, encompassing collaborative efforts, e-Science, e-Social Science, Computational Social Science, e-Humanities, e-Research, and 'digital scholarship.' A substantial, well-funded E-Science research undertaking initiated in 2000 has fostered the growth of a substantial academic community dedicated to investigating the 'social shaping' of digital research (Dutton & Jeffreys, 2010; Nentwich, 2003).

As asserted by Wiles, Crow, & Pain in 2011, innovation in Social Science methodologies remains a subject of extensive discourse and contention. Our case presents two key arguments underscoring the relevance of the digital realm in exploring methodological innovation within the social sciences. Firstly, it serves as a platform to examine fresh methodological requisites in the domain of social science. Secondly, it occupies a significant intersection between the social sciences and the arts. The digital sphere serves as a focal point for scrutinizing how innovative practices within the social sciences can be illuminated through

engagement with the arts, specifically how the arts interact with the digital realm, offering novel interpretations of social science concepts.

We firmly believe that the interaction between the social sciences and the arts within the uncharted terrain of the digital sphere holds the potential to unlock unexplored dimensions, pose new inquiries, and introduce methodologies that can profoundly influence the advancement of social science methodologies.

### **2.2.2 The Digital as a Research Object**

The realm of digital research is experiencing rapid and dynamic growth. Researchers are revisiting existing research inquiries while also posing fresh and often innovative questions. Their aim is to comprehend the swift evolution of complex phenomena, both established and emerging, within digital contexts.

One common method employed for comprehensive analysis is the evaluation of websites, which encompasses an assessment of content as well as aesthetics (Das and Turkoglu, 2009; McCluskey, 2013; Ortega, Aguillo, and Prieto, 2006). Moreover, website analysis proves invaluable for scholars seeking a deeper understanding of online scenarios such as e-democracy, online advertising, and activism, among other domains (Cai and Zhao, 2013; Kingston and Stam, 2013; Schweitzer, 2008).

Website analysis often involves the utilization of web scraping and web mining tools, along with the inclusion of 'web archive' research methods. The exploration of social media and its content represents a burgeoning field of investigation. Kwon, Park, and Kim (2014) examined variables influencing the usage of social networking services like Facebook and Twitter. Researchers have also delved into the post-demographic aspects of social networking sites, including user profiling. This profiling enables a more profound comprehension of individuals' selves,



preferences, interests, 'likes,' and other profile attributes (Hagger-Johnson, Egan, and Stillwell, 2011).

### **2.2.3 The Digital Methods of Research**

It can be found that Researchers have been directed to examine not just their subjects and questions, but also their research procedures, leading to the development of fresh research methods (Tinati et al., 2014). Rogers (2015) pointed out the relationship between digital and virtual techniques more recently. He characterized virtual methods as those that have been imported and transferred from offline research, as well as those that have been altered to the online setting in which they are used (e.g., online surveys, e-interviews). According to Rogers, Digital methods sound "native" to the medium such as hyperlink analysis, web engine diagnostics, web archives research, web content analysis, and social media research. Rogers distinguishes digital methods from digitized or virtual methods for the analysis of digital data by drawing researchers' attention to the 'medium' thus 'reorienting Internet research and the Internet as a source of data, method, and technique'.

### **2.2.4 Using Digital Data in Research**

Research methods are strongly linked with the types, traits and analysis of data. In digital research, such a link makes researchers employ digital or virtual methods. "digital data", "social data" and "big data" are the terms used by Digital researchers interchangeably, without clear lines of distinction between them. Some speak about social data formed through people's multi-formatted and wide-ranging interactions referring to social media and in other user-based spaces online (Kennedy et al., 2015, p. 172). Others speak about online-retrieved and

web-data as “big data” (Boyd and Crawford, 2012; Coté, 2014; Halavais, 2013; Helles, 2013). A similar variety of approaches are seen in evaluations of the role and importance of digital data. It is suggested that digital technologies have increasingly facilitated the rapid generation and availability of such data (Floridi, 2012; Ruppert, Law and Savage, 2013). However, a growing number of scholars are raising questions with regard to difficulties encountered in uncovering the qualitative traits of such data, the “small patterns” of big data, and spotting where new patterns with real added value lie in the immense databases and messy data spaces available online (Floridi, 2012).

### **2.3 Empirical Review**

Networked learning is said to be an educational process which is closely associated with the development and use of computer networks and the increase of a networked society (Steeple & Jones, 2002). Improvements in Internet technology and the Web in higher education has assured that education can enable a learning environment through instant communication as well as research and retrieval capabilities (Jones, Asensio and Goodyear, 2000). Information and communication technology (ICT) has greatly affected the collecting, arranging and dissemination of information in higher education institutions of both developed and developing countries. This development has played a major role in making research more productive, in disseminating information and in establishing a strong network system among university libraries. Equally, through the discovery of a diversity of data from computer usage, the social sciences have been able to deal with far-reaching aspects of human behavior in numerous ways. The Web has provided a platform that developed innovative approaches to social science research to address its relevance to a vast range of disciplines, while the

web content (described as a cultural artifact and of great interest) offers contemporary confirmation of events in society generally (Aya, 2000).

This study draws on Popoola's (2008) study in which different ways of Internet usage by social scientists have been highlighted. This is presented from his review of literature on Aya's (2000) investigation on the utilization of the Internet by social scientists and academics in Abuja, Nigeria, which found that the Internet was used to obtain information; Alasa and Kalechukwu's (1999) finding on the Internet provision of access to archives, expertise, convenient and updated information; A study by Bright (1999) which also reported how Mexican social scientists derive their sources of information from the Internet; while a much earlier study (White, 1973), had identified journals as the most frequently used source of information by social science researchers. It is also observed by Popoola (2008) that social science researchers in Nigeria obtain data from a number of official sources which include the national statistical information system, feasibility reports, as well as documents emanating from the government. He however attributed that researcher 'resort to usage and preference of their personal collections during searches', and that university libraries have a 'possible inability to meet their information needs.

Popoola (2008) underscores the value of information sources and services and their roles in shaping the quality of teaching, research and community service of social scientists in the university system. This is because information availability, accessibility, and use are essential to teaching endeavors of the Nigerian social science researcher. There is equally emphasis on the importance of research output as one of the critical factors used in determining productivity of social science scholars (Popoola, 2008). A study conducted by Ani et al. (2015) that explores the perceived effect of accessibility and utilization of electronic resources on research productivity of academic staff in Nigerian universities,

found there was no significant perceived effect. They however share the assumption of a correlation between access to information, information use and research productivity. In an earlier related study related by Ani et al. (2015) it was found that demographic variables had significant effects on accessibility and utilization of electronic resources. Bhatti (2013) equally highlights the usefulness of e-resources, online bibliographical services and databases for teaching, research and other purposes. This conception about information use and access by social scientists suggests a number of ways in which information services might be optimized in order to best serve them. Increasingly, electronic information is becoming an important source of current information on contemporary issues and events for social science researchers and practitioners. This is achieved through the Internet and the World Wide Web which delivers better, faster and timelier sources of information.

### **2.3.1 Benefits**

Digital Information resources pose an advantage over the traditional sources with respect to access to information. One of the best benefits of digital resources is that they can be accessed from users' desktops (Veeramani and Vinayagamoorthy, 2010). Dadzie (n.d., as cited in Egberongbe, 2011) attributes global access to varied information sources as a main advantage of digital resources. According to Mckie and Guchteneire (2003), the Internet offers enhanced collaboration, better dissemination of one's information and immediate peer review among other benefits to social scientists. A study of a cross-section of social science researchers to determine their awareness and extent of adoption of information technologies found that "over 55% used the World Wide Web and e-mail; list services to locate and use government information; while 88% used other electronic sources of information" (Meho & Haas, 200).

### **2.3.2 Constraints**

Despite the high level of enthusiasm in the use of electronic resources, HSS researchers have identified obstacles in their usage of these resources. They are mainly identified as a lack of networked computers to access databases, “availability, reliability and cost of the necessary equipment” (Harley, et al., 2006); “poor searching skills, inadequate library resources and a lack of effective information service delivery” (Popoola, 2008).

### **2.4 Empirical Gap**

Likewise, there is not enough literature that adopts a comparative perspective and examines the role of digital technologies in more than one discipline or beyond the discipline-neutral level. Even studies that attempt to compare disciplines tend to examine just one particular platform or technology (Holmberg and Thelwall, 2014). In addition, existing research works consider digital means of research work in relation to specific tasks and stages of the research process, such as the recruitment of research participants of hidden populations whose geographical span goes beyond country, language or cultural borders (Barratt et al., 2015). This report aims to address these knowledge gaps by offering an insight into researchers’ employment of digital technologies in various phases of the research process and in various disciplines in the field of HSS in Sri Lankan universities.

### **2.5 Summary**

It is said that there is a developing and extremely active digital research community in the world that has yet to develop a concrete shape and features, regardless of discipline and project-specific differences. This is to argue that in both social sciences and humanities research, a burgeoning and vibrant digital

research community cuts across traditionally established academic boundaries. The testing of whether such a digital research community has emerged or yet to emerge in Sri Lankan universities especially in the field of HSS would be the prime aim of this study and it will certainly make a significant contribution to the growing body of literature in the field of digital research and various theoretical positions it has developed so far.

# Methodology

## 3.1 Introduction

This chapter provides a description of materials and methods used in order to achieve the objectives of the study. Initially, this chapter briefly presents the research design which provides the philosophical foundation for the methodology adopted with the current study. Then, the conceptual framework of the current study and operationalization of the variables are presented. Later, identification of the target population, decision of the sample size, selection of the appropriate sampling method, methods of data collection, structure of the questionnaire and other areas of the sample survey methods, and structure of the interviews are explained. This chapter discusses the techniques of both qualitative and quantitative data analysis used in this study. The validation and reliability of data are presented in the last section of this chapter.

## 3.2 Research Design

The study mainly adopted the mixed method approach whereby both qualitative and quantitative data were collected and analyzed. Mixed method research is defined as a type of user research that combines both qualitative and quantitative methods into a single study. In addition to the literature review, the qualitative data analysis was mainly used to derive the research model through a thematic analysis. Moreover, quantitative research findings were elaborated through the qualitative data. Under quantitative data analysis, descriptive analysis and advanced analysis were carried out. Using appropriated graphs, summary measures and frequencies, data such as demographic profile, ICT accessibility, and information on use of ICT in teaching and research were explored. As advanced analysis, Confirmatory Factor Analysis and Linear Regression

Modelling techniques were used. Adopting Digital Research Methods were considered as the dependent variable, while Computer and Digital Literacy, ICT Infrastructure Facilities, Library Support on Digital Research, Institutional Support on Digital Research, Attitudes towards Digital Research Methods, and Motivators to use Digital Research Methods were considered as independent variables. Each variable was considered as a latent construct and they were indirectly measured using appropriate scales by conducting a cross-sectional sample survey. The conceptual framework is presented in the figure 1.

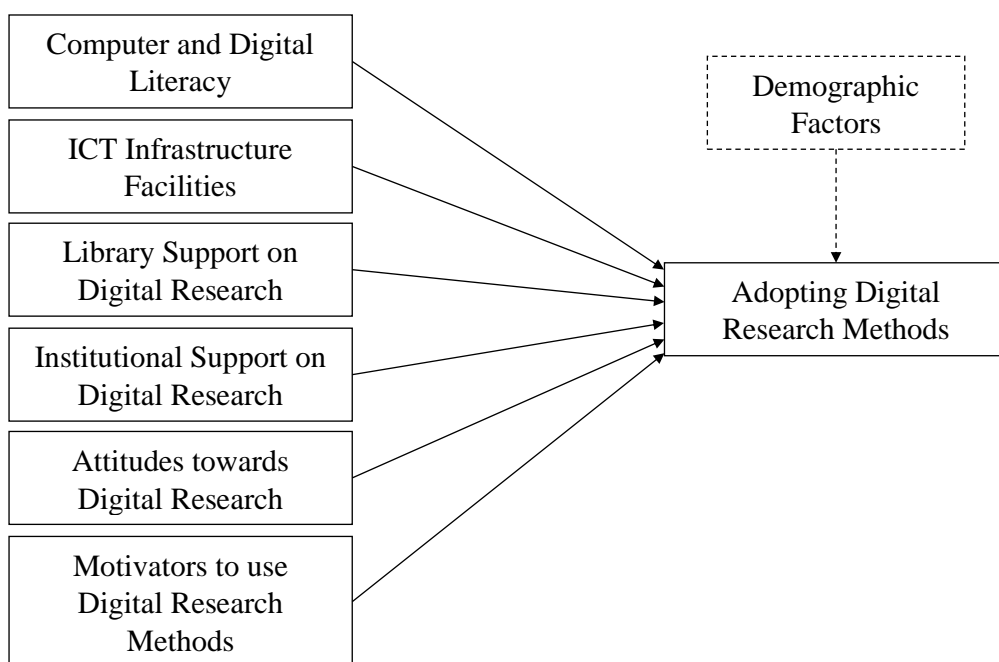


Figure 3.1: Conceptual Framework

### 3.3 Population and Sample

The target population of this study was university academics who are representing the fields of HSS at three public universities in Sri Lanka, namely, University of Colombo (UoC), University of Kelaniya (UoK), and University of Sri Jayawardenepura (USJ). The selected HSS fields were Economics, English,



English Language Teaching, Geography, History and Archeology, Pali and Buddhist Studies, Political Science, Sinhala, and Sociology which are commonly offered at those three public universities. These three universities are located in highly urbanized areas in the Western Province. The target population comprised academics in both Humanities and Social Sciences across ten disciplines. Table 3.1 presents the structure of the target population. Initially, the invitation for the survey was emailed to 365 academics whose contact information was retrieved through the staff web page of each department. A total of 182 valid responses (University of Colombo: n = 47, 26%, University of Kelaniya: n = 52, 29%, University of Sri Jayewardenepura: n = 83, 46%) were received with a response rate of 50%. Hence, a sample of 182 academics was considered in this study. Since the sample covers 50% of the population, generalizations can be validated in terms of statistical considerations.

Table 3.1: Structure of the Target Population

Academic Field	University		
	UoC	UoK	USJ
Pali and Buddhist Studies	06	26	12
Economics	27	15	10
English	10	06	08
English Language Teaching	28	10	08
Geography	17	11	12
History and Archeology	07	13	13
Political Science	13	08	07
Sinhala	14	15	14
Sociology/Anthropology/Criminology	23	12	20
Total	145	116	104

Source: Compiled by Research Team based on University Web Sites (2021)

Primary data were collected from the selected departments of HSS (47 responses out of 145 from UoC, 52 responses out of 116 from UoK and 83 responses out of 104 from USJ). The sample adequately represents the academic composition of different departments in three different universities. Table 3.2 presents the structure of the sample in this study.

Table 3.2: Structure of the Sample

Academic Field	University		
	UoC	UoK	USJ
Pali and Buddhist Studies	04	05	09
Economics	08	10	09
English	02	03	02
English Language Teaching	13	02	08
Geography	10	05	12
History and Archeology	00	08	11
Political Science	02	06	02
Sinhala	05	08	10
Sociology/Anthropology/Criminology	03	05	20
Total	47	52	83

For the purpose of collecting qualitative data, 24 structured interviews were conducted through Zoom Meetings. From each university, 8 academics representing all the academic positions in both Humanities and Social Sciences fields were selected as shown in table 3.3.

Table 3.3: 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

A detailed plan of the interviews including the participants' characteristics is shown in annexure I.

### 3.4 Data and Data Collection Methods

The primary data were collected through a cross-sectional survey that utilized a structured questionnaire. The structured questionnaire consisted of Background Information, Access to and Use of ICT, Using ICT for Teaching and Learning, Research Works and Using ICT for Research, and Perceptions of Use of Digital Technologies in Research. A detailed structure of the questionnaire is presented in table 3.4 and the questionnaire is shown in annexure II.

Table 3.4: Structure of the Questionnaire

Main Themes	Sub Themes
Background Information	University
	Department
	Gender
	Age Group
	Current Position
	Highest Educational Qualification
	Teaching Experience
Access to and Use of ICTs	Ownership of and Access to ICTs
	Internet Access
	Use of ICTs
	Social Media
	Technology-Enabled Learning Environment

Using ICTs for Teaching and Learning	Use and Creation of Digital Content for Teaching
	Training and Staff Development
Research Works and Using ICTs for Research	Research Works
	Access to e-Resources in Libraries
	Availability of Research Support
	Adoptability of Digital Technologies in Research
Perceptions of Use of Digital Technologies in Research	Attitude
	Motivators
	Overall Comments

The structured questionnaire was converted to a Google form and was circulated via emails of the respondents. Semi-structured interviews were conducted through Zoom in order to collect qualitative data based on a schedule. The format of the schedule is shown in annexure III.

### **3.5 Data Analysis Techniques**

For qualitative data analysis, at first, recordings of the structured interviews were transcribed in Microsoft Word documents and were analyzed using NVivo. Mainly, Thematic Analysis was used to identify common themes, topics, ideas and patterns of meaning that come up repeatedly throughout transcripts of interviews. Frequency Analysis of References and Word Cloud were used to explore the qualitative data. Moreover, appropriate verbatim were derived in order to support findings of quantitative analysis.

Quantitative data collected from the Google form were cleaned in Microsoft Excel, hence, it allowed the data to be analyzed using Statistical Package for Social Sciences (SPSS). Dimension reduction, reliability and validity were checked using Cronbach’s alpha and KMO values. Scores were taken for each construct through a Confirmatory Factor Analysis extracted as Principal Components. With scores, Pearson’s Correlation Analysis was used to determine the relationships among factors of the conceptual model and dependent variable (adoption to use digital methods for research) of the research model. To identify the effect of demographic factors, independent t-tests, ANOVA tests and paired t-tests were used. Statistical generalizations were made under 5% significance level.

### 3.6 Reliability and Validity

Prior to perform data analysis, it is essential to validate the data collected through reliability and validity measures. Table 3.5 presents the Cronbach’s Alpha and KMO values corresponding to latent constructs of the conceptual model in the study.

Table 3.5: Reliability and Validity Measures

<b>Latent Construct</b>	<b>Cronbach’s Alpha</b>	<b>KMO Value</b>	<b>Decision</b>
Adoption to use Digital Research Methods	0.906	0.878	Satisfied
Computer and Digital Literacy	0.916	0.895	Satisfied
ICT Infrastructure Facilities	0.887	0.884	Satisfied

Library Support	0.936	0.910	Satisfied
Institutional Support	0.896	0.837	Satisfied
Attitudes towards Digital Research Methods	0.924	0.925	Satisfied
Motivators to use Digital Research Methods	0.927	0.924	Satisfied

In terms of Cronbach's alpha, since all the values are greater than the threshold level: 0.7, items of each construct were reliable for considering as one latent construct. With the KMO values, because all its values are also greater than acceptable level: 0.7, sample data is validated by using confirmatory factor analysis. Overall, the data were suitable for developing latent constructs given in the research model.

### **3.7 Response Rate**

Out of 354 academics of selected disciplines in Humanities and Social Sciences, 182 academics participated in the survey. Overall, the response rate was reported as 51.4%. Among three universities, the lowest response rate was reported for the University of Colombo. One of the reasons of less participation from the University of Colombo might be that there was the end-semester examination during the survey period. Less response rates were also reported with the following departments: English (29.2%) and History and Archeology (38.8%). In terms of gender, current position and qualification, adequate response rates were recorded as all those were reflective to the targeted group.

Table 3.6: Response Rate

<b>Description</b>	<b>Responses Targeted</b>	<b>Responses Received</b>	<b>Response Rate</b>
<b>University</b>			
Colombo	137	47	34.3
Kelaniya	112	52	46.4
Sri Jayewardenepura	105	83	79.1
<b>Department</b>			
Economics	50	27	54.0
English	24	07	29.2
English Language Teaching	40	23	57.5
Geography	41	27	65.9
History & Archeology	49	19	38.8
Pali & Buddhist Studies	31	18	58.1
Political Science	20	10	50.0
Sinhala	44	23	52.3
Sociology	55	28	50.9
<b>Gender</b>			
Male	188	96	51.1
Female	166	86	51.8
<b>Current Position</b>			
Lecturer	74	40	54.1
Senior Lecturer	180	87	48.3
Professor	80	40	50.0
Senior Professor	20	15	75.0
<b>Highest Qualification</b>			
Bachelor's	24	14	58.3
Master's	97	38	39.2
MPhil	47	29	61.7
PhD	186	100	53.8
Total	354	182	51.4

### 3.8 Summary

This study mainly adopted a mix method research approach where both quantitative and qualitative data analyses were worked out. A cross-sectional survey was conducted in order to collect primary data in terms of structured

questionnaire and semi-structured interviews. Data were mainly analyzed using SPSS and NVivo. The overall purpose and central premise of adopting mixed methods in this study is that quantitative and qualitative approaches in combination provides a better understanding of research problems and complex phenomena than either approach alone (Creswell & Plano Clark, 2007).



# Data Analysis and Findings

## 4.1 Introduction

The chapter of data analysis initially presents respondents' demographic profile and information of respondents' availability and usage of information technology. Then, findings of both qualitative and quantitative analyses are presented in relation to adoption to use digital methods for research. Moreover, the demographic characteristics like age and factors such as computer literacy, infrastructure facilities, institutional and library support, attitudes and Motivators related to adoption of using digital research methods is explored. Finally, analysis regarding the impact of COVID-19 on adoption to use digital methods for research is presented. Findings based on the analysis are also interpreted in accordance with hypotheses derived base on the research model.

## 4.2 Demographic Profile

### 4.2.1 Respondents' Composition of University

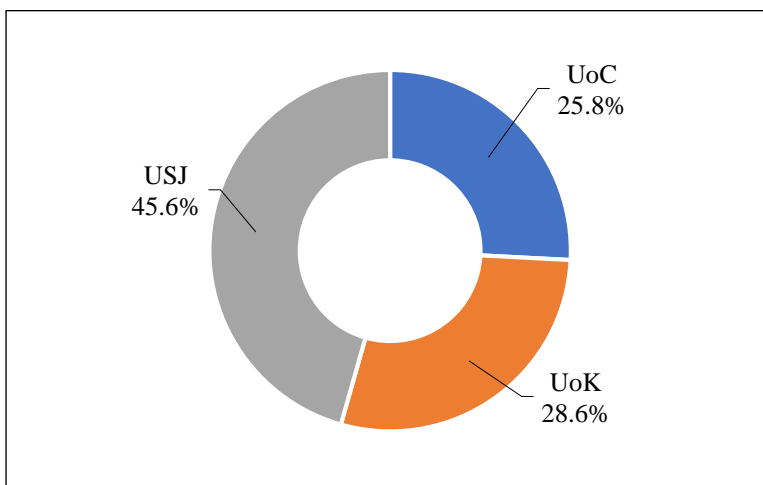


Figure 4.1: Respondents' Composition of University

As per the figure 4.1, of the survey participants, the majority were from the University of Sri Jayewardenepura (45.6%); the second-most were from the University of Kelaniya (28.6%); the minority were from the University of Colombo (25.8%).

#### 4.2.2 Respondents' Composition of Field

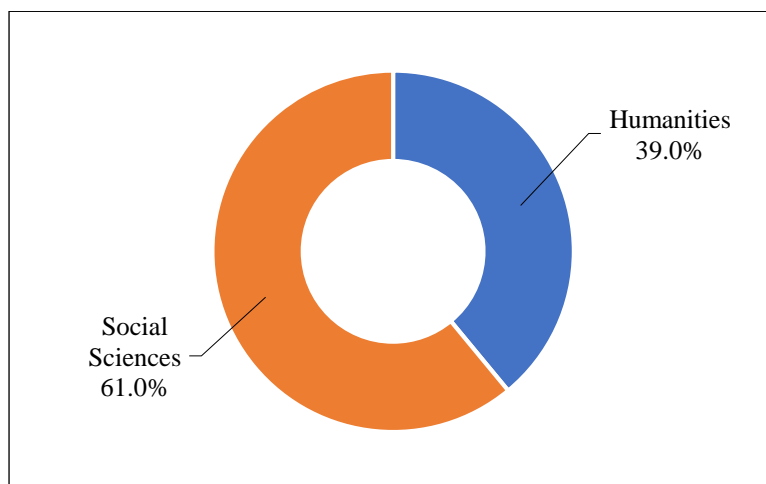


Figure 4.2: Respondents' Composition of Field

The academics surveyed in this study comprised 61% from the field of Social Sciences and 39% from the field of Humanities. Therefore, the majority of the respondents are Social Science researchers.

#### 4.2.3 Respondents' Composition of Department

In terms of academic department, academics of Sociology made up the maximum percentage (15.4%) while academics from most of the other disciplines represented a percentage ranged 10% - 15%. Academics of English (3.8%), and Political Science (5.5%) made a minimal contribution.

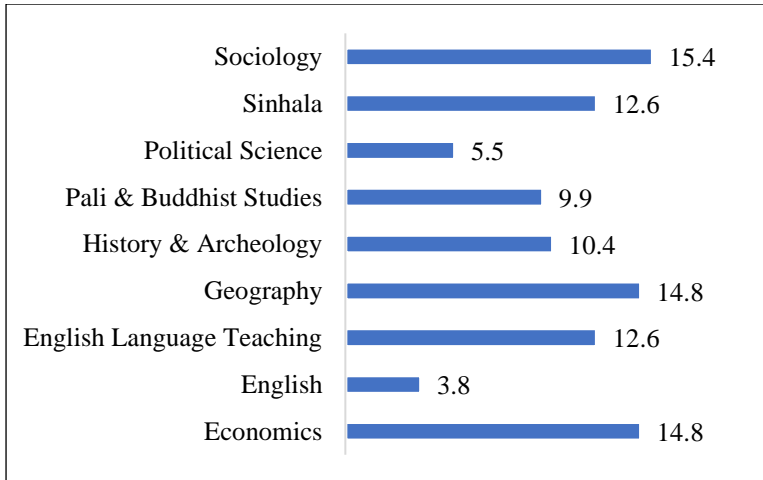


Figure 4.3: Respondents' Composition of Department

#### 4.2.4 Respondents' Composition of Gender

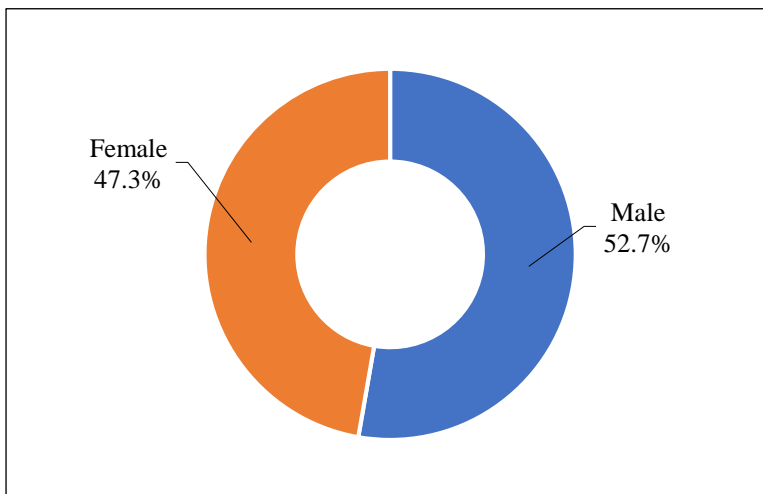


Figure 4.4: Respondents' Composition of Gender

Reflective to the composition of male and female academics in Humanities and Social Sciences of Sri Lanka, respectively, 52.7% and 47.3% of the participants were males and females.

#### 4.2.5 Respondents' Composition of Age Group

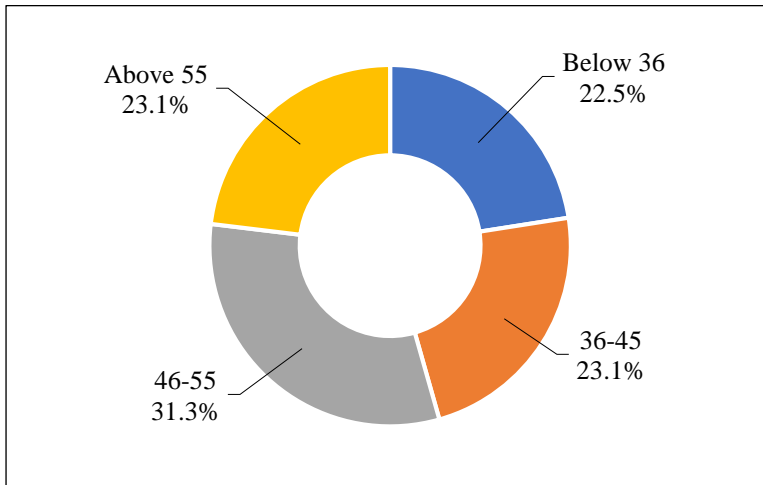


Figure 4.5: Respondents' Composition of Age Group

In terms of age group, the participants were clustered into four groups: Below 36 years (22%), 36 years - 45 years (23.1%), 46 years - 55 years (31.3%), and above 55 years (23.1%).

#### 4.2.6 Respondents' Composition of Academic Position

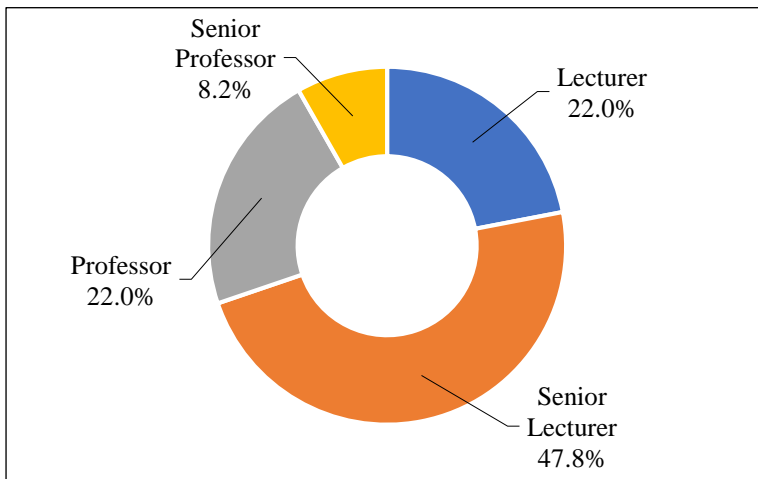


Figure 4.6: Respondents' Composition of Academic Position

The dominant group was Senior Lectures in terms of current academic position, and comprised 47.8% of the participants. Participation of both lectures and professor were the same percentage (22%). The percentage of Senior Professors who took part in the survey was 8.2%. These percentage contributions are reflective with current academic position composition in Humanities and Social Sciences of Sri Lanka.

#### 4.2.7 Respondents' Composition of Highest Qualification

Figure 4.7 presents the composition of surveyed academics in terms of their highest educational qualification level comprising Bachelor's, Master's, MPhil and PhD.

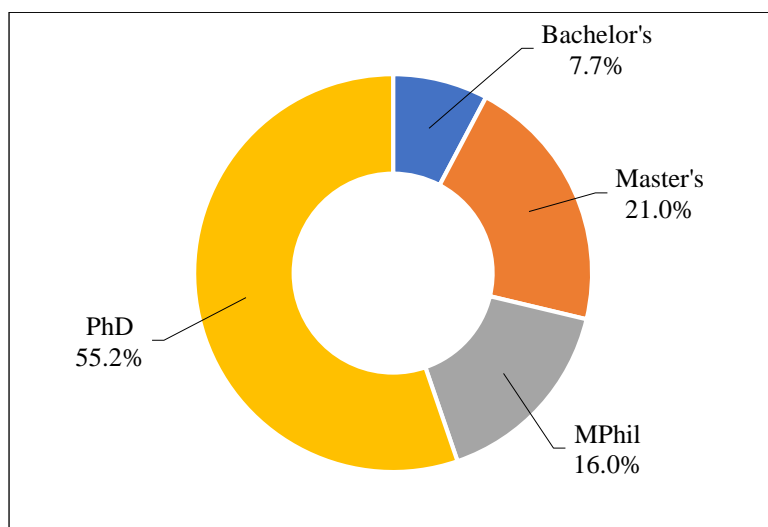


Figure 4.7: Respondents' Composition of Highest Qualification

The majority of the survey academics were qualified with PhD (54.9%) while 8.2% of respondents were first-degree holders.

#### 4.2.8 Respondents' Composition of Academic Experience

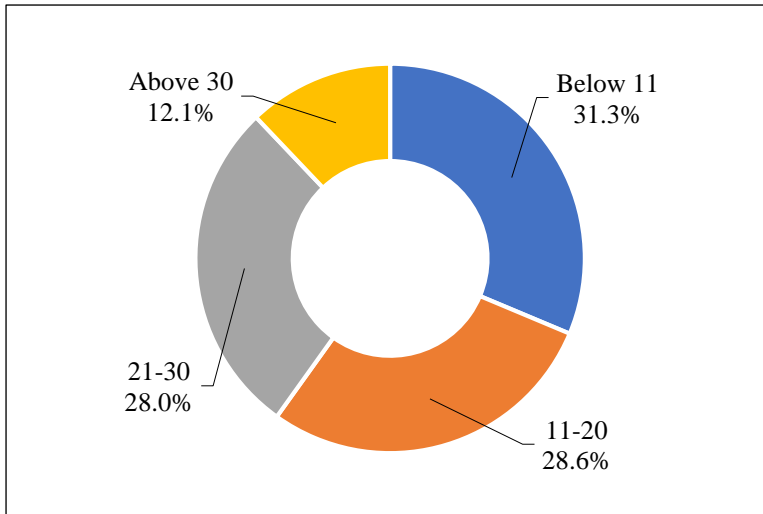


Figure 4.8: Respondents' Composition of Academic Experience

With regard to academic experience, most of the survey participants have less than 11 years' experience (31.3%) whereas the second-highest group was between 11 - 20 years' experience (28.6%). The over 20 years' experience group is also significantly higher (40%).

### 4.3 Availability and Use of Information Technology

This section explores the access to and usage of different information technologies.

#### 4.3.1 Availability of Devices

Among academics surveyed, laptops (98.9%) and smartphones (94.5%) are the most commonly available devices.

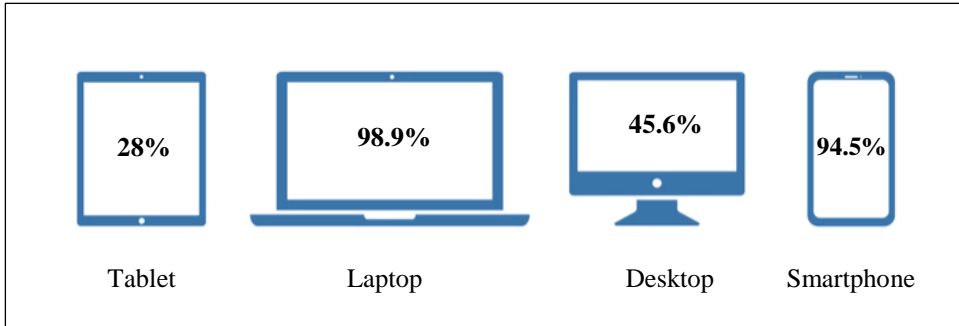


Figure 4.9: Respondents' Availability of Devices

#### 4.3.2 Availability of Internet Connection at Different Locations

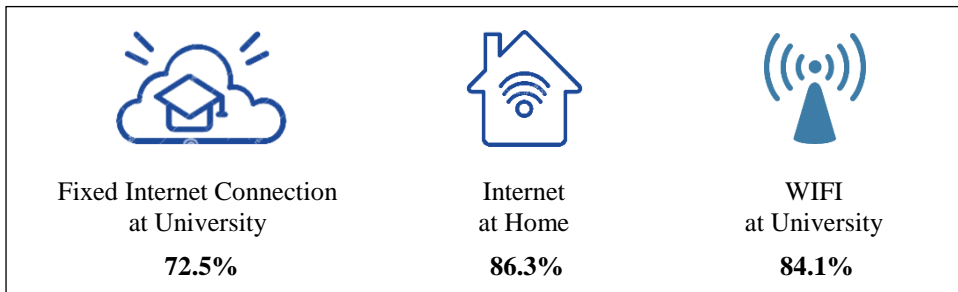


Figure 4.10: Respondents' Availability of Internet Connection at Different Locations

The majority of the participants confirmed that internet connectivity through fixed line was available at university (72.5%) as well as at home (86.3%) in addition to WIFI connectivity at university (84.1%).

#### 4.3.3 Available Types of Internet Connection

For participants, mobile devices (79.7%) were the major type of internet broadband facility. However, most of the participants adopted both fixed line (65.9%) and wireless (70.3%) broadband internet facilities.

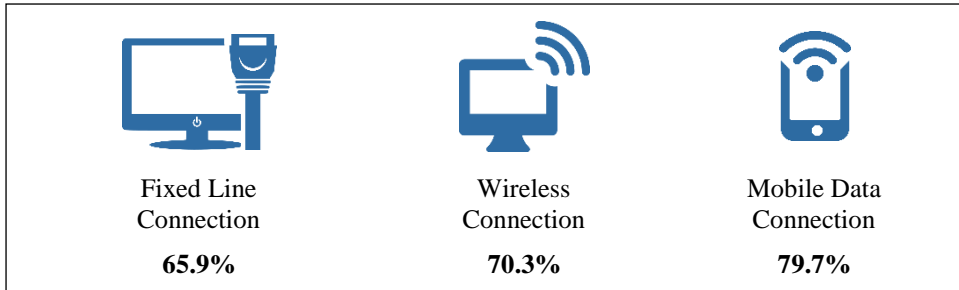


Figure 4.11: Respondents' Available Type of Internet Connection

#### 4.3.4 Ownership of Social Media Profiles

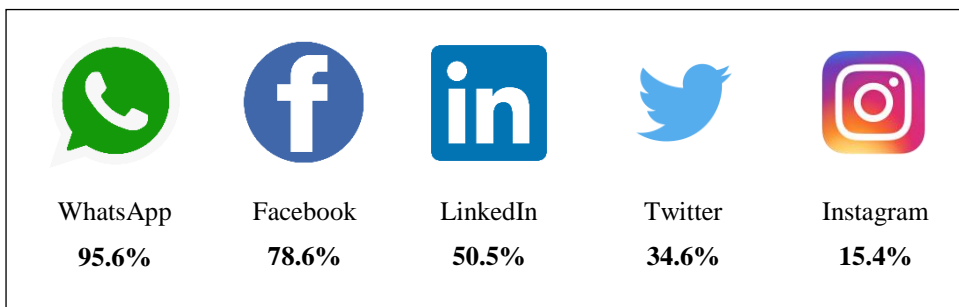


Figure 4.12: Respondents' Ownership of Social Media Profiles

The majority of the academics surveyed used WhatsApp (95.6%) and Facebook (78.6%) while around 50% of academics surveyed used LinkedIn as social media platforms. Both Twitter (34.6%) and Instagram (15.4%) were not very popular among study groups.

#### 4.3.5 Ownership of Digital Research Profiles

In connection with ownership of different digital research profiles: Google Scholar (85.7%) and ResearchGate (75.8) take a dominant role since most of the participants have a profile in 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.

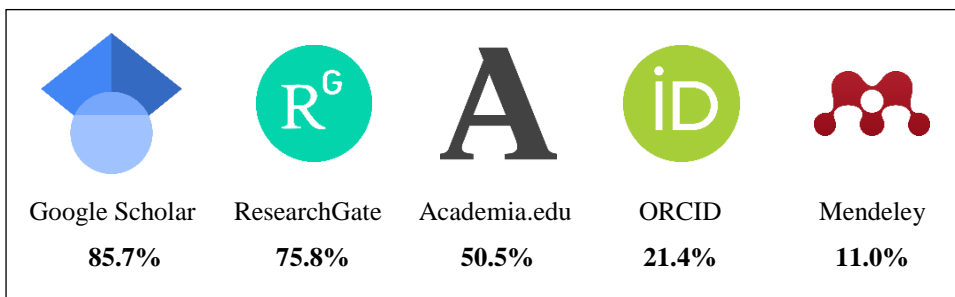


Figure 4.13: Respondents' Ownership of Digital Research Profiles

#### 4.3.6 Awareness and Training on Using Information Technology

Table 4.1: Availability and Use of Internet Technology

Description	Frequency	Percentage (%)
Awareness on Open Educational Resources (OER)	143	78.6
Training on the use of IT tools	151	83.0
Organizing training programs by institutes on IT tools	152	83.5
Training through online modes	153	84.1

A major section of the participants (78.6%) was aware on Open Education Resources (OER) which are related to their discipline and are 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%).

#### 4.4 Use of Digital Methods Throughout the Research Process

Under the qualitative analysis, “Use of Digital Methods throughout the Research Process” was derived as the Theme 01 which was considered as the dependent variable in the conceptual framework of this research. The theme further comprised of five second order categories as “Research Problem Formulation”, “Literature Review”, “Data Collection”, “Data Analysis” and “Publishing Research Findings”. These categories generally cover the research process. Table 4.2 presents the first order codes corresponding to each second order category.

Table 4.2: Codes and Categories of Theme 01

1 <sup>st</sup> Order Code	2 <sup>nd</sup> Order Category
Find the basic theoretical basis for research from the internet	Research Problem Formulation
Build new research concepts and hypotheses	
Use social media	
Download e-magazines and e-journals	Literature Review
Retrieve data from e-databases	
Find PDFs instead of printed books	
Use web-based forms for collecting primary data (Ex: Google form)	Data Collection
Use video-conferencing tools for interviews (Ex: Zoom)	
Use IT devices for recording interviews	
Use e-mail for collecting data	
Use e-databases for collecting secondary data	
Use data management software (Ex: Excel)	Data Analysis

Use quantitative data analysis software (Ex: SPSS)	
Use qualitative data analysis software (Ex: NVivo)	
Use data presenting software	
Publish research findings in e-journals	Publishing Research Findings
Present research findings in virtual conferences	

A research process involves a series of activities including research planning, data collecting, data analyzing, literature reviewing, publishing research findings and so on. According to interviewees, digital methods and materials can be used for different stages of a research process. For example, Participant 14 clearly stated the usability of digital methods throughout the research process as:

*“Digital methods do help the researchers throughout the entire research process starting from the research planning up to publishing and disseminating the research findings.”*

#### 4.4.1 Research Problem Formulation

“**Research Problem Formulation**” could be identified as a category as interviewees exhibit that those researchers use the internet, social media and different digital methods for formulating research problems nowadays. As we are living in a digitalized society today, there are different research problems which are directly or partially connected to the digital media. Furthermore, utilization of digital methods in order to find new research areas, theories, and hypothesis was emphasized by the interviewees. For example, Participant 17 explained the importance of the internet as:

*“Through searches on the Internet, hundreds or thousands of pages can often be quickly found with some relation to a given topic. As such, researchers use the Internet to gain knowledge of the basic theoretical basis for research.”*

Further, Participant 21 similarly reasoned:

*“Digital methods can be used to build new research concepts or hypotheses for research.”*

As we all know, social media plays a key role in modern society especially among young people. As a result of increasing usage of social media, new research problems and research areas have been come across where young researchers have been more enthused to study those digital-oriented areas. It eventually popularizes the usability of digital methods in research among young people. This was clearly expressed by Participant 3 as:

*“I think it is a very good thing, especially for those who are working with young people, or if you are exploring their use on matters, it is absolutely essential that researchers use, exploit and learn about the social media.”*

#### **4.4.2 Literature Review**

Another pattern taken from the interviews included the usability of digital sources for the literature review. This resulted in a second order category as **“Literature Review”**. For instance, the usability of digital sources such as e-magazines and

electronic research papers for literature reviews was expressed by Participant 10 as:

*“I read electronic journals and some research papers collected from the internet.”*

Additionally, Participant 24 also suggested that:

*“Database referring, E-book referring and Web Link referring can be used in a literature review.”*

One of the advantages of using digital methods for a literature review is cost effectiveness. If you find printed versions of some books, it is difficult to find such books or they may be expensive. An alternative to this is the availability of those books in PDF which are freely accessible or somewhat cheaper in terms of cost. This argument was supported by Participant 15 as:

*“In these days, we can find some books available as PDF in different web sites. It is very helpful because some printed books are very expensive.”*

#### **4.4.3 Data Collection**

Participants of semi-structured interviews also presented different digital methods that can be used for collecting data. Therefore, a second order category was derived as **“Data Collection”** under the theme 1. The word cloud in figure 4.14 is helpful to identify the importance of each code according to the participants.



Figure 4.14: Word Cloud of Using Digital Methods for Data Collection

According to the word cloud in figure 4.14, Google Forms, Zoom Meetings for interviews, Padlet, web-based survey, databases, and emails are some of the highlighted digital tools for research among scholars.

#### 4.4.4 Data Analysis

Together with data collection, participants of semi-structured interviews also emphasized the importance of digital methods in data analysis. Different data analysis methods highlighted by participants were coded and as a group, the second order category of “**Data Analysis**” was derived. Figure 4.15 illustrates the word cloud of using digital methods for data analysis.

The Word cloud in the figure 4.15 presents that SPSS, EViews, STATA, SAS are some of popular statistical software used for analyzing quantitative data. It is obvious that SPSS is the most popular data analysis software among researchers in the Social Sciences and Humanities. In addition to that, NVivo is one of the popular qualitative data analysis software according to participants of semi-

structured interviews. Moreover, software like MS Word and Excel are also important for researchers.



Figure 4.15: Word Cloud of Using Digital Methods for Data Analysis

#### 4.4.5 Publishing Research Findings

As a result of identifying publishing research findings as another important step of the research process based on participants' ideas, the second order category was derived as “**Publishing Research Findings**”. This category includes two main codes as publishing research findings in online journals and presenting research findings at virtual conferences. In present days, there are a vast number of online journals which are published not only locally but also globally. This was clearly expressed by Participant 18 as:

*“Yes, we have disseminated the knowledge produced through those collaborative methods in both printed methods and digital publication platforms.”*

Likewise, Participant 14 stated:

*“Without a doubt, there is a high potential to disseminate the research findings to a wider audience across the globe.”*

In addition to publishing research findings in journals, participating in virtual conferences is also popular among researchers. Due to the increasing popularity of digital tools for video conferencing, there is a high tendency of participating in virtual conferences. One of the benefits of conducting virtual conferences is both local and international participants can be joined together. For instance, this was argued by Participant 12 as:

*“I have gained experience in physical as well as virtual participation in national/ international conferences seminars and other research activities during the pandemic period.”*

In addition to digital publications, maintaining a researcher profile in networking platforms such as Google Scholar, ResearchGate, etc., is also demanded among academics nowadays. Participant 08 clearly highlighted this idea as:

*“Digital publications and professional networking platforms will be useful for me.”*

#### **4.5 Overall Level of Adoption to Use Digital Methods for Research**

Adoption to use digital research methods was measured in terms of 17 dimensions: planning, reference management, bibliography, data collection, video conferencing, remote sensing, cloud storing, data repositories, web analytics, data mining, data visualization, data analysis, statistical computing,



report generation, publishing, scholar profile, research conferences over online modes throughout the entire research process. Both literature review and codes generated through the qualitative analysis were considered to measure the level of adoption. Table 4.3 presents the results of the level of adoption to use digital methods for research.

Table 4.3: Results of Level of Adoption to Use Digital Research Methods

Summary Measurement	Value	95% Confidence Interval
Mean	44.61	(41.39, 47.82)
Median	40.64	(36.83, 46.06)
Standard Deviation	21.98	
Interquartile Range	33.04	
Skewness	0.41	
Kurtosis	-0.42	

With the principal component approach, the adoption to use digital research methods was quantified as a level with a range of 0 - 100. The average level of adoption in the sample was 44.61 in terms of mean, and 40.64 in terms of median. The deviation of the adoption level in the sample was 21.98 in terms of standard deviation and 33.04 in terms of interquartile range. Both skewness and kurtosis values are closer to 0 and below 1, therefore, a symmetric and mesokurtic distribution can be seen for the adoption level in the sample that also justifies the use of parametric tests in this study. As a generalization to all the academics of selected disciplines in the University of Colombo, Kelaniya, and Sri Jaywardenepura, the average level of adoption is ranged from 41.39 to 47.82 with a 95% confidence. In terms of median, a 95% confidence interval shows that the median adoption level is ranged from 36.83 to 46.06 with the current target group. Therefore, it can be concluded that the adoption to use digital research

methods are still in the foundation level and need more attention among researchers in the fields of Humanities and Social Sciences.

#### 4.6 Usage of Digital Research Methods: Humanities vs Social Sciences

Figure 4.16 presents a summary of responses for each dimension as a comparison between Humanities and Social Sciences disciplines.

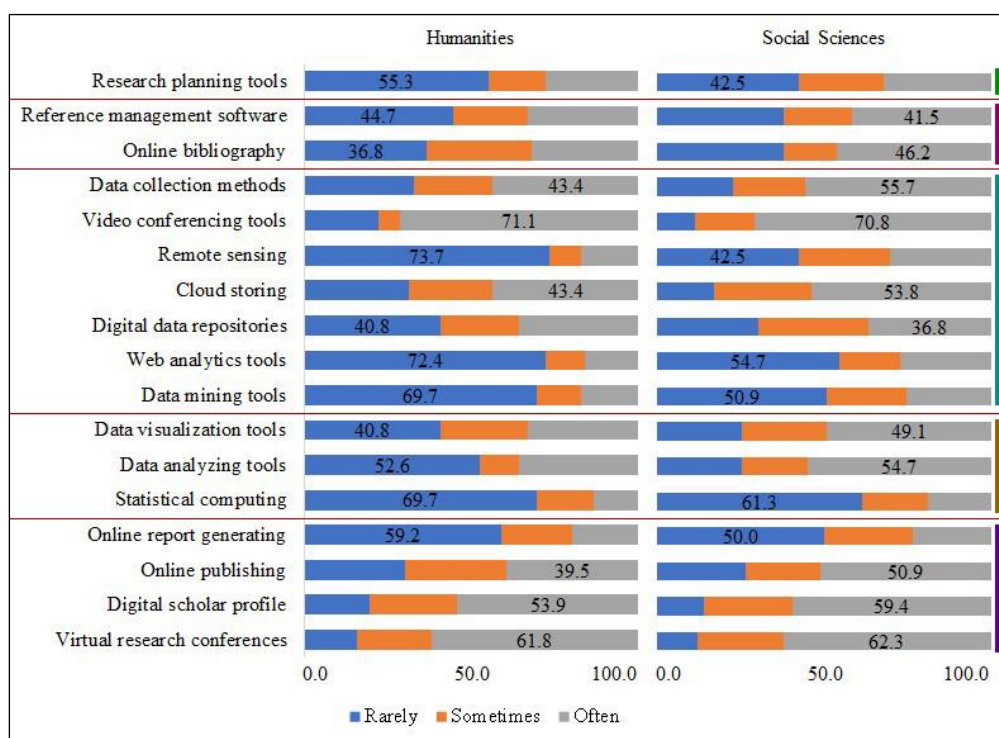


Figure 4.16: Items of Adoption to use Digital Research Methods

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. Academics surveyed in both disciplines mostly participate

for virtual research conferences (Humanities: 61.8%, Social Sciences: 62.3%). In the surveyed group, 53.9% of academics in Humanities owned a digital scholar profile while 59.4% of academics 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 form. 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%), data analyzing tools (54.7%), 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 generating, the majority of surveyed academics in both disciplines reported that they rarely use those digital methods.

Also, it can be seen that there are very limited attempts of using digital methods in some areas due to the minimal usage of secondary data when comparing to primary data in Humanities and Social Science research. During the interview, most of the academics also emphasized that digital methods are restricted in collecting primary data where researchers have to highly interact with respondents. As an example, Participant 10 stated as:

*“As Social Science researchers, we have to go to the field for collecting primary data. But, by using digital technologies it is difficult to collect primary data.”*

Overall, the adoption of digital research methods by Social Science researchers is somewhat higher than that by Humanities researchers. This observation can be further generalized statistically to the target group using a t-test. The results of the test are presented in table 4.4.

Table 4.4: Results of t-test for Testing Different Adoption Levels in the Field

Hypothesis	Test Statistic Value	P-value	Decision
The level of adoption to use digital research methods same for both fields	-2.42	0.017	Significant

The results in table 4.4 indicate that the hypothesis can be rejected since the p-value (0.017) is below the significance level (0.05). Therefore, a significant change can be identified between Humanities and Social Sciences fields in terms of the adoption to use digital research methods. The different nature of subject areas is an important matter of the adaptability of digital research methods.

#### **4.7 Generation Gap and Using Digital Methods in Research**

While university academics can be categorized into several age groups, it is essential to have a discussion on whether age is a determinant of adopting digital methods in research. Since the participants of semi-structured interviews covered different age groups, their perceptions regarding this notion were explored. As an instance, Participant 10 argued that age is not a factor as:

*“No, no. Age is not a problem.”*

Conversely, Participant 09 argued that generation gap is a matter of using digital technologies.

*“There is generation gap of using digital technologies.”*

However, most of the participants emphasized that rather treating age or generation gap as a determinant of adopting digital methods in research, it is depending on someone’s ability or Motivators. This idea was brought out by Participant 18 as:

*“In my point of view, rather than the factor ‘Age’, one’s ability and willingness to adapt to these digital methods is the main cause.”*

Nevertheless, there is a higher inclination among younger people since they are digital natives and have more exposure to digital technologies. This was highlighted through the notion expressed by Participant 12 as:

*“In my generation, we have been doing academic research activities through a traditional system. Now we jumped to the digital system. The attitudes of some younger groups between 15-30 are very different. They like to use digital technologies. But the elders’ group have a lot of past experience with conventional methods. They still believe in those methods.”*

With the current context, younger researchers have good opportunities to use digital technologies in emerging research fields avoiding the generation gap. For instance, Participant 02 emphasized this matter as:

*“Using digital methods is a great opportunity to improve young researchers’ knowledge and enthusiasm.”*

Statistical evidences were also provided supporting that there is no impact of age on adoption to use digital research methods. The results of the ANOVA test are presented in table 4.5, and what it is clear is that the test was not significant at a

5% significance level. Therefore, no difference can be identified across different age categories for the adoption level.

Table 4.5: Results of F-test for Testing the Impact of Age Groups on Adoption

Hypothesis	Test Statistic Value	P-value	Decision
The level of adoption to use digital research methods is the same across different age groups	1.23	0.289	Not Significant

#### 4.8 Usage of Digital Research Methods and Demographic Factors

In addition to field and age, the impact of other demographic factors: Gender, Current Position, Qualification and Experience on adoption to use digital research methods were considered. The T-tests and F-tests (one-way Analysis of Variance approach) were used to test the significance, impact and results which are presented in table 4.6.

Table 4.6: Results of T-tests and F-tests for Other Demographic Factors

Demographic Factor	Test Statistic Value (T or F)	P-value	Decision
Gender	-0.39	0.696	Not Support
Current Position	0.86	0.491	Not Support
Qualification	1.35	0.254	Not Support
Experience	1.39	0.212	Not Support

According to the results in the table 4.6, all the p-values are greater than the significant level (0.05). Therefore, it was statistically evident that the

demographic factors considered here are not affecting the adoption to use digital research methods. This eventually supports that the adoption to use digital research methods does not depend much on demographic factors such as age and gender. In fact, current position, qualification and experience are also reflected through age, however, it is obvious that there are different specific determinants than age behind the adoptability of digital research methods. Consequently, through the literature review and qualitative output, a few of the determinants were sorted out.

#### **4.9 Determinants of Adopting Digital Research Methods**

This section explores the respondents' distributions for different determinants. Some of the determinants were directly taken from the existing literature. Other were developed through reviewing existing literature as well as coding with qualitative data. Each determinant was considered as latent constructs; therefore, composite indices were developed to measure each determinant quantitatively. For that, the dimension reduction technique (PCA) was worked out after confirming the reliability and validity of the data. Moreover, the relationship between each determinant and adoption to use digital research methods was assessed using Correlation Analysis.

#### **4.10 Computer-related Skills and Adopting Digital Research Methods**

A larger part of the surveyed group of academics self-rated that they are at an expertise user level of using Word Processor (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 System (41.8%); Web 2.0

Tools like social media (30.2%), at most, academics self-rated that they are at an advanced user level.

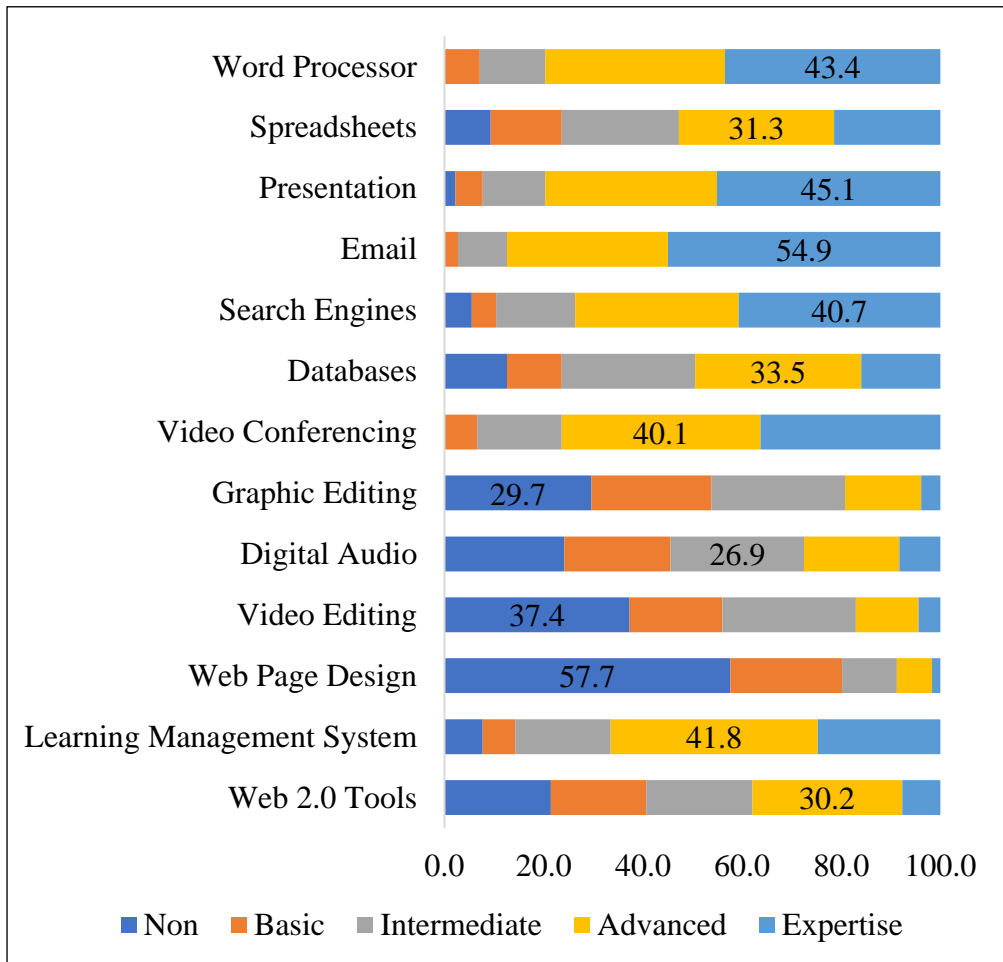


Figure 4.17: Items of Computer-related Skills

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 at 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.



The results of the correlation analysis corresponding to computer-related skills and adoption to use digital research methods are presented in table 4.7.

Table 4.7: Results of Correlation Analysis for Computer-related Skills

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between computer-related skills and adoption to use digital research methods	0.371	0.000	Significant

According to the p-value (0.000) reported in table 4.7, it is less than the significance level (0.05). Consequently, the given null hypothesis was rejected and it was evident that there is a significant positive (0.371) correlation between computer-related skills and adoption to use digital research methods. Therefore, it can be concluded that computer-related skills can be considered as a significant determinant of adoption to use digital research methods. It implies that when researcher’s computer-related skills increase, the adoption level of using digital research methods also increases.

#### **4.11 Infrastructure Facilities, Library and Institutional Support**

Based on the participants’ contribution in semi-structured interviews and literature review, the second theme was extracted from qualitative analysis as “Infrastructure Facilities, Library and Institutional Support on Using Digital Methods for Research”. This theme 02 covers three categories: “Infrastructure Facilities”, “Institutional Support on Using Digital Methods for Research” and “Library Support on Using Digital Methods for Research”. Table 4.8 presents the first order codes corresponding to each second order category under theme 02.

Table 4.8: Codes and Categories of Theme 02

<b>1<sup>st</sup> Order Code</b>	<b>2<sup>nd</sup> Order Category</b>
Provide ICT facilities	Infrastructure Facilities
Provide access to digital tools for research	
Provide training	Institutional Support on Using Digital Methods for Research
Provide service of expertise	
Provide access to e-resources	Library Support on Using Digital Methods for Research
Provide services to use digital methods in research	

As presented in table 4.1, infrastructure facilities, institutional support and library support can be identified as important measures of adopting digital methods in research as per the participants' expressions. As an example, Participant 10 clearly explained this matter as:

*“In our university, most of the students use SPSS. More than 450 computers are there and we have installed SPSS. Students can freely use them. We have to also get some help from others. Specialists are there in university. The library gave us good support to find e-resources”*

In order to make the researchers aware regarding digital methods, different training programs and workshops have been organized time to time by universities in different levels. This was accepted by Participant 01, who stated:

*“The University organized some workshops to make us aware of digital methods.”*

In addition to the library, the role of the university is very crucial for promoting digital methods which can be used in research. Interestingly, there is such attention from the side of university administration as stated by Participant 04:

*“I believe we have been offered multiple opportunities from the university in the recent past, which is indeed a good measure.”*

#### **4.11.1 ICT Infrastructure Facilities and Adopting Digital Research Methods**

As presented in figure 4.18, eleven areas were considered under available institutional-level ICT infrastructure facilities. The majority of the surveyed academics rated that the email service provided by the institute (45.6%) and faculty-level Learning Management System (46.7%) are excellent. Availability of e-Classroom facilities such as computers, projectors, Smart boards (41.2%); Computer labs with internet access for practicals (46.2%); e-Portfolio (25.8%); Network bandwidth (36.3%); Wi-Fi access (36.8%); Virtual technologies such as cloud-based file storage system, web portal, etc., (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. Overall, the facilities of maintenance and repair of ICTs provided by the institute are not adequate to the perceptions of academics who were surveyed.

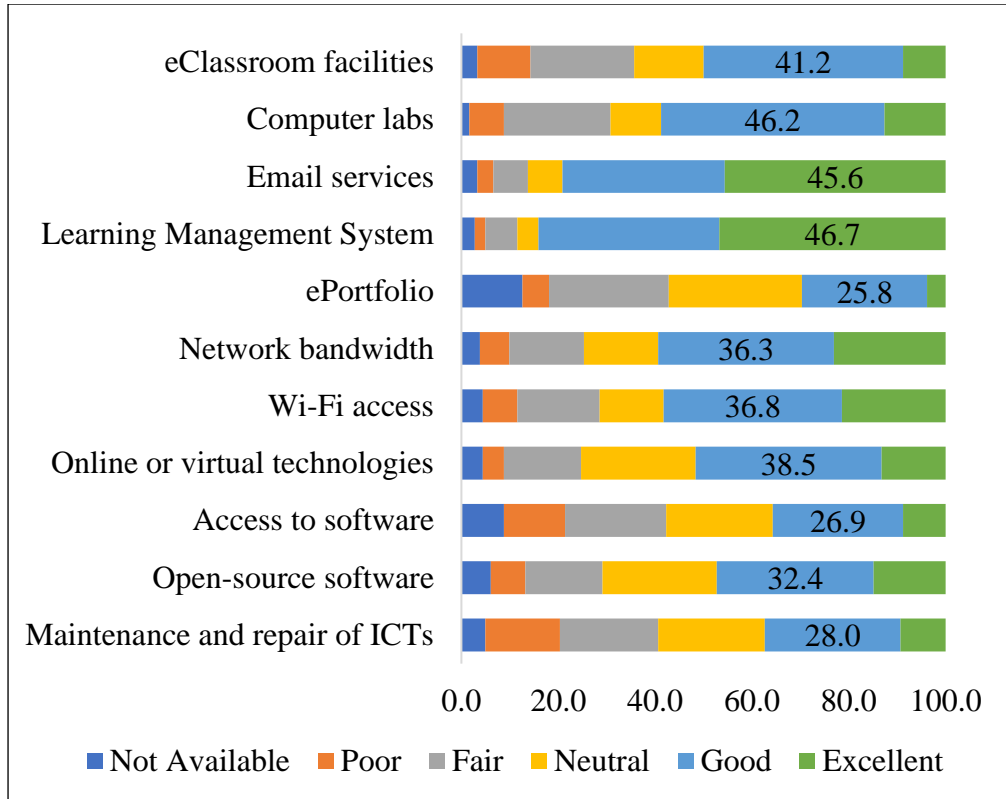


Figure 4.18: Items of ICT Infrastructure Facilities

Moreover, the results of the correlation analysis corresponding to infrastructure facilities and adoption to use digital research methods are presented in table 4.9.

Table 4.9: Results of Correlation Analysis for Infrastructure Facilities

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between infrastructure facilities and adoption to use digital research methods	0.162	0.029	Significant

According to the p-value (0.029) reported in table 4.9, it is less than the significance level (0.05). Hence, the given null hypothesis was rejected and it was

evident that there was a slightly significant positive (0.162) correlation between infrastructure facilities and adoption to use digital research methods. Therefore, it can be concluded that infrastructure facilities can be considered as a significant determinant of adoption to use digital research methods. It implies that when infrastructure facilities improve, then the adoption level of using digital research methods also enhances.

The notions of Participant 09 also supported the infrastructure facility as an important determinant of adopting to use technology.

*“We have to improve this digital system. Especially in our university and other areas, we also have some signal problems which the government and relevant telecommunication authorities have to pay their attention to and take necessary action for.”*

#### 4.11.2 Institutional Support and Adopting Digital Research Methods

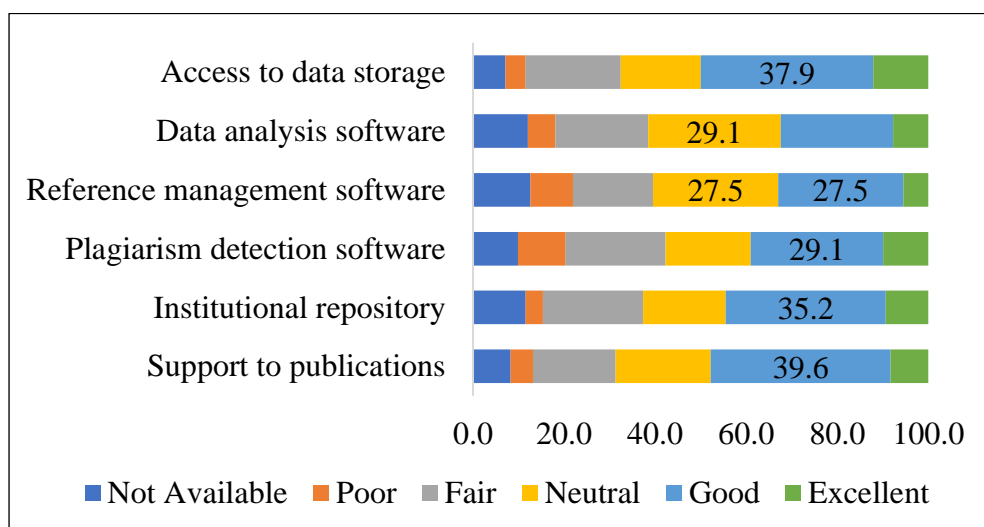


Figure 4.19: Items of Institutional Support on Digital Research

Figure 4.19 presents a summary of academics' perceptions on six criteria with respect to the institutional support on digital research. In general, the majority of respondents believed that they have a good support from the faculty and university for using digital research methods. The academics who 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%) in addition to excellent were more in the sample. At most, 29.1% and 27.5% of the surveyed academics were neutral on faculty support for data analysis software and reference management software.

The results of the correlation analysis between institutional support and adoption of digital research methods are presented in table 4.10.

Table 4.10: Results of Correlation Analysis for Institutional Support

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between institutional support and adoption to use digital research methods	0.244	0.001	Significant

As per table 4.10, the p-value (0.001) of the test is below the significance level (0.05). Therefore, a significant correlation can be found between institutional support and adoption to use digital research methods.

#### 4.11.3 Library Support and Adopting Digital Research Methods

The role of a library is crucial in teaching, learning, and assessment for any higher educational institute. 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 conference (26.9%) and statistical databases (37.4%), the use of library support is at a minimal level since most of the respondents never asked support for those things.

In terms 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. Nevertheless, academics who participated in the interviews further emphasized the importance of the library's role in promoting digital research among the academic community.

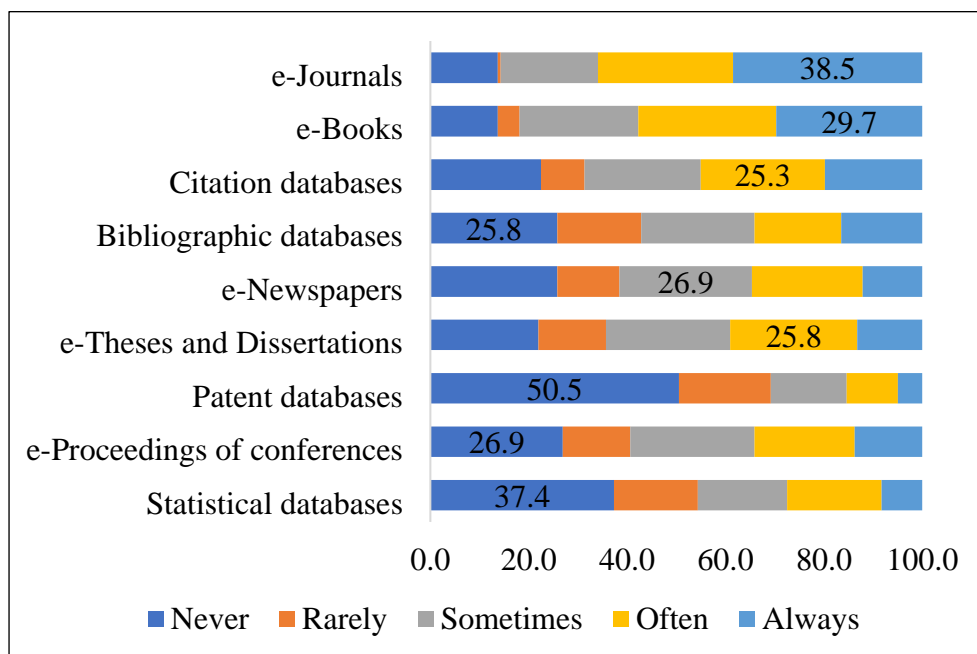


Figure 4.20: Items of Library Support on Digital Research

Moreover, the results of correlation analysis also revealed that library support can be considered as a determinant of adopting digital methods in research. The corresponding p-values and correlation coefficients are given in table 4.11.

Table 4.11: Results of Correlation Analysis for Library Support

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between library support and adoption to use digital research methods	0.504	0.000	Significant

Participant 17 also emphasized the role of universities to develop an e-library system as:

*“In order promote the digital research methods, the universities also have to pay their attention to develop their e-library system.”*

#### **4.12 Attitudes and Motivators towards Digital Research Methods**

Another theme developed was attitudes regarding “Attitudes and Motivators towards Digital Research Methods”, within these three categories which were included due to the patterns of participants. As a first category, attitudes regarding benefits of using digital research methods were coded. Under the second category, attitudes towards constraints of using digital research methods were coded. Lastly, motivation due to internal rewards and Motivators due to external rewards was coded under the third category: Motivators to Use Digital Methods



in Research Table 4.12 summarizes the corresponding categories and codes of theme 03.

Table 4.12: Codes and Categories of Theme 03

<b>1<sup>st</sup> Order Code</b>	<b>2<sup>nd</sup> Order Category</b>
Availability of Different Sources	Attitudes regarding Benefits of Using Digital Methods in Research
Cost effectiveness	
Convenience	
International collaboration	
Time saving	
Accessibility to participants	
Usability of secondary data	
Quality of research	
Insufficiency of internet connectivity	Attitudes regarding Constraints for Using Digital Methods in Research
Lack of physical interaction	
Lack of technical knowledge	
Incompleteness	
Limitation of collecting qualitative data	
Reliability issues	
Limitation of collecting primary data	
Limited usability in humanities	
Difficulty of data cleaning	Motivators to Use Digital Methods in Research
Insufficient access to e-resources	
Motivate due to internal rewards	
Motivate due to external rewards	

Participant 11 agreed that there are positive attitudes as well as negative attitudes towards using digital research methods:

*“There are pros and cons of online methods.”*

Therefore, interviewees’ attitudes regarding the adopting digital research methods are ranged from negative to positive. Some of the interviewees looked at digital research methods negatively. As an example, Participant 13 stated as:

*“Digital methods to collect data is not good in a country like Sri Lanka. But it is okay for developed countries.”*

Those pessimistic perceptions regarding the adoption of digital research methods were further emphasized by Participant 19 as:

*“We can’t create the real researchers from digital methods.”*

However, most of the participants who took part in the semi-structured interviews emphasized that digital methods cannot be considered as a complete mechanism for doing research. If research has only adopted a digital method in research, the findings of such studies might be limited due to different considerations. For instance, Participant 16 believed that:

*“If we use only the digital method, that is not suitable.”*

This idea of Participant 16 was also supported by the idea of Participant 22 as:

*“In my perspective, I believe that this method alone cannot be used for research.”*

Therefore, adopting digital methods for research is not an easy thing. It is a challenge due to different factors. The nature of the research, the set-up of the research, the type of the investigators, the scope of the objectives, the

characteristics of the participants. Likewise, several aspects are needed to address when digital research methods are applied. This was clearly highlighted by Participant 23 as:

*“Actually, that’s a challenge. However, we have to adopt them, we have to use them, and every question has an answer.”*

One of the important statements found in qualitative results is the compatibility of digital research methods with research problems directly involved in digital technologies. Participant 03 stated this as:

*“Digital methods could be used in solving problems if digital problem-solving approaches are applicable.”*

It is very crucial that while applying digital research methods, identification of the drawbacks of those methods in different situations should be understood. In order to adopt digital methods in research, the researchers should have sufficient knowledge on their drawback in addition to the usefulness of those methods. Participant 14 presented this idea nicely as:

*“However, a researcher must have a sound understanding of the drawbacks of each digital tool / method as well.”*

Overall, attitudes are very important for adopting digital methods for research not only from the side of the researcher, but also the side of participants and society at large. Therefore, the effectiveness of adoption of digital research methods may greatly depend on attitudes, which was highlighted by Participant 15 as:

*“Most of the people are not willing to fill in Google forms. Attitudes are also impacted.”*

Therefore, it is noticeable that there are positive aspects as well as negative aspects when considering the participants’ perceptions regarding digital research methods. For this study, the positive attitudes regarding digital research methods were categorized as benefits while the negative attitudes regarding digital research methods were categorized as constraints.

#### **4.12.1 Benefits of Using Digital Methods in Research**

Each code under the category: “Benefits of Using Digital Methods in Research” were identified as different benefits that can be gained from using digital research methods in research. The importance of each benefit was ranked based on the frequency of references corresponding to each code. Table 4.13 summarizes the frequencies of codes under this category. According to the frequencies of codes, the availability of different sources was identified as the most important benefit of using digital methods in research. It highlights digital methods enable researchers to find data and relevant inputs from different sources. The second-important benefit was cost effectiveness. Participants of the semi-structured interviews believed that using digital methods for research rather than conventional methods will helpful to reduce the cost. Convenience, international collaboration and time saving were given equal importance according to participants’ perceptions. Both convenience and time saving can be identified as two advantages of using digital methods comparative to conventional methods such as contacting participants to physically collect data.

Table 4.13: Frequency of Codes under Benefits of Using Digital Methods in Research

<b>Code</b>	<b>Frequency of References</b>
Availability of Different Sources	10
Cost Effectiveness	6

Convenience	5
International Collaboration	5
Time Saving	5
Accessibility to Participants	4
Usability of Secondary Data	2
Quality of Research	2

And one more benefit of using digital methods in research was high accessibility to participants through tools like Google Form which can be distributed among a larger group of people. Usability of secondary data and enhancement of the quality of research also contributed to the usefulness of digital methods in research, however, they were less important according to participants' perceptions. Moreover, Figure 4.21 illustrates various benefits of using digital methods in research and their level of importance.

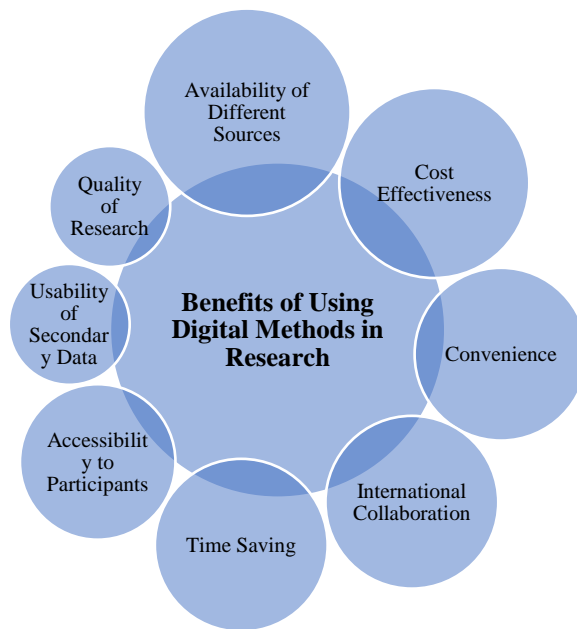


Figure 4.21: Benefits of Using Digital Methods in Research

#### 4.12.2 Constraints to Use Digital Methods in Research

In contrast to benefits, constraints to use digital methods in research were also coded as per the perceptions of interviewees. Table 4.14 presents the frequencies of codes under this category.

Table 4.14: Frequency of Codes under Constraints to Use Digital Methods in Research

<b>Code</b>	<b>Frequency of References</b>
Insufficiency of Internet Connectivity	9
Lack of Physical Interaction	9
Lack of Technical Knowledge	6
Incompleteness	4
Limitation of Collecting Qualitative Data	3
Reliability Issues	3
Limited Usability in Humanities	2
Limitation of Collecting Primary Data	2
Difficulty of Data Cleaning	1
Insufficient Access to E-resources	1

According to table 4.14, both insufficiency of internet connectivity and lack of physical interaction were mostly cited as limitations to use digital methods in research. 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, 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 virtually, and observing human behaviors are always preferred research strategies under the fields of Social Sciences and Humanities. 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. Figure 4.22 visualizes the limitations to use digital methods in research according to the codes derived through participants' perceptions.

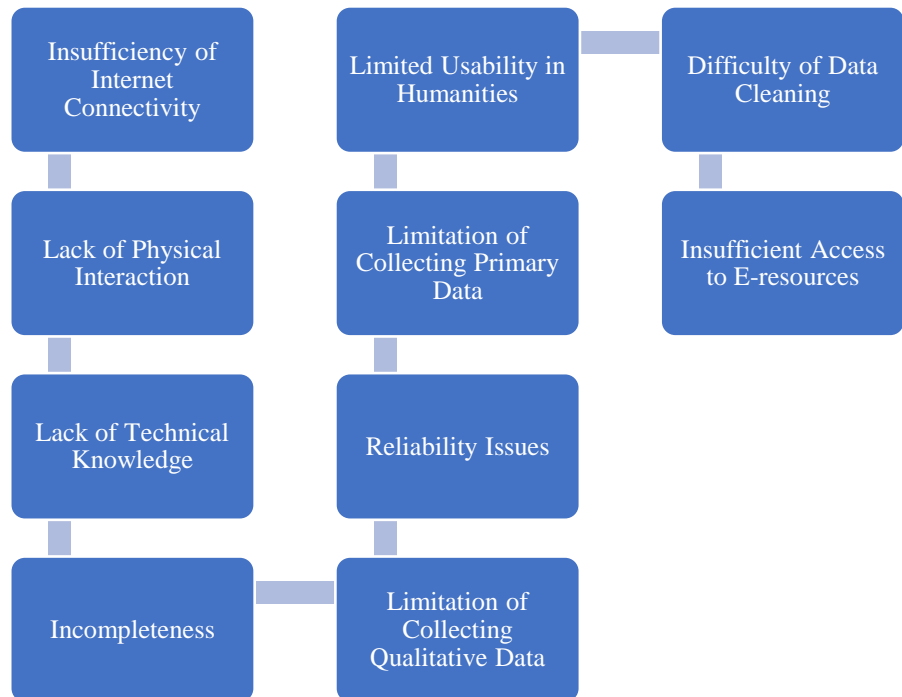


Figure 4.22: Constraints to Use Digital Methods in Research

### 4.12.3 Attitudes and Adoption to Use Digital Research Methods

Through the structured questionnaire, attitudes were measured in terms of different items extracted from the existing literature review and results of qualitative analysis. Figure 4.23 illustrates how respondents perceived each item.

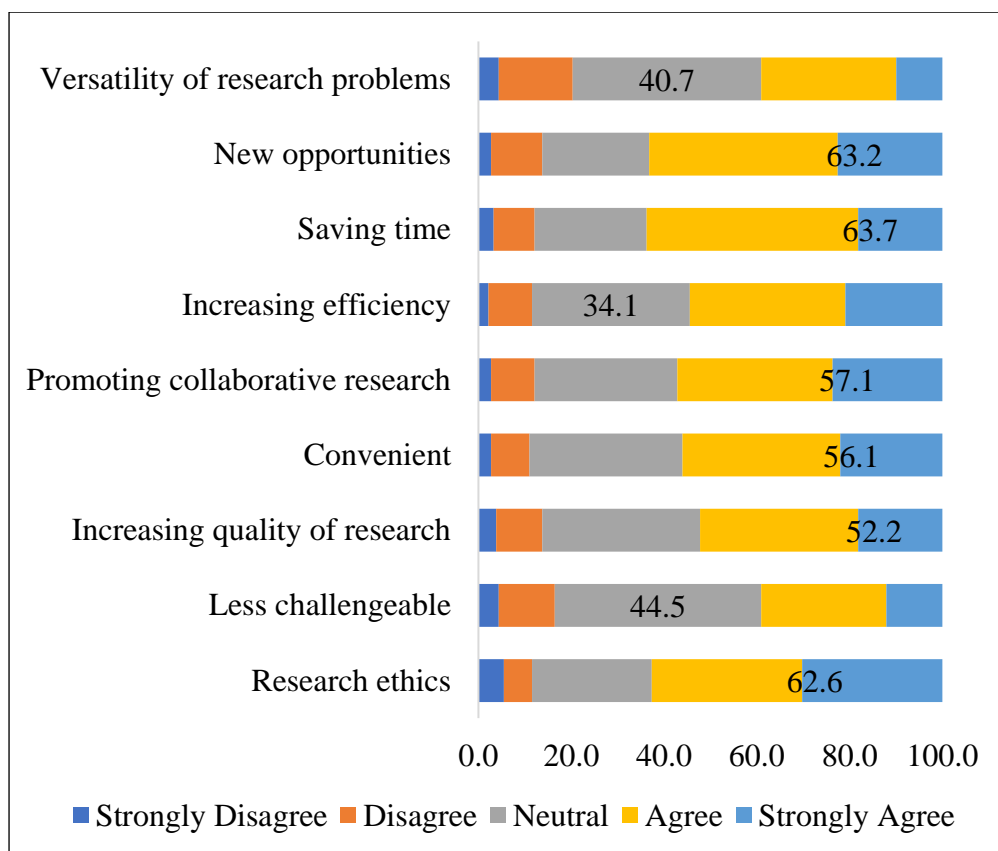


Figure 4.23: Items of Attitudes towards Digital Research Methods

The attitudes towards digital research methods were assessed through nine dimensions that were 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 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 challengeable (44.5%). Overall, academics in Humanities and Social Sciences who participated with the survey showed positive attitudes towards adopting digital research methods in the fields of Humanities and Social Sciences. Using correlation analysis, the relationship between attitudes and adoption to use digital research methods was assessed. The corresponding results are presented in table 4.15.

Table 4.15: Results of Correlation Analysis for Attitudes

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between attitudes and adoption to use digital research methods	0.319	0.000	Significant

According to the correlation analysis, a significant positive correlation (0.319) can be found between the attitudes and adoption to use digital research methods. Therefore, positive attitudes towards digital research methods promotes the adoption to use digital methods for research.

#### 4.12.4 Motivators and Adoption to use Digital Research Methods

The category “**Motivators**” is a vital measure of adopting to use anything. Likewise, individuals’ Motivators to use digital methods in research due to both

internal rewards and external rewards was highlighted by participants in the semi-structured interviews. In this research, 13 different items were considered extracted from the existing literature review and results of qualitative analysis as in figure 4.24.

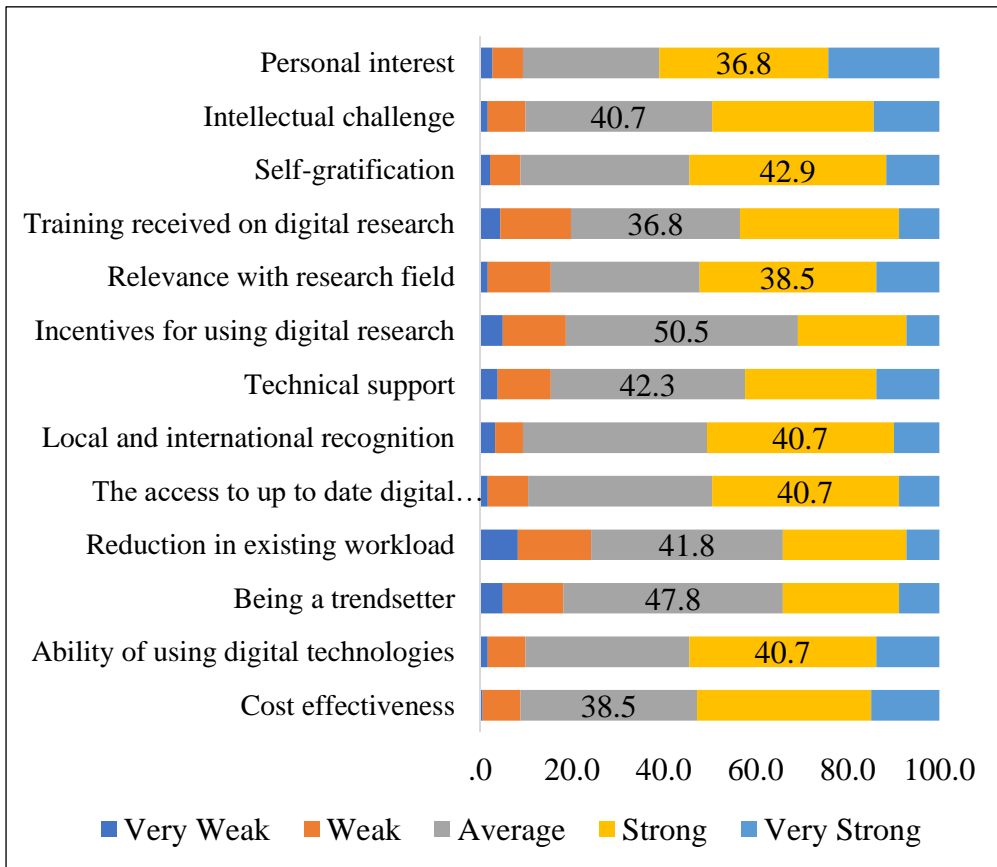


Figure 4.24: Motivators to use Digital Research Methods

Among motivators to use digital research methods, personal interest, self-gratification, relevance with research filed, local and international recognition, access to updated data resources, ability of using digital technologies were the strong motivators as per 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, cost effectiveness were averagely motivated to using digital research methods.

The motives were further identified as a significant determinant of adoption to use digital research methods through the correlation analysis. The results of the correlation analysis are presented in table 4.16.

Table 4.16: Results of Correlation Analysis for Motivators

Hypothesis	Correlation Coefficient	P-value	Decision
There is no relationship between motivators and adoption to use digital research methods	0.330	0.000	Significant

Results of the correlation analysis revealed that motivators including internal rewards and external rewards increase the level of adoption to use digital methods for research. Therefore, different motivators can be identified in order to enhance the adoption of using digital research methods among academics in public universities.

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

Table 4.17: 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 on the usage of digital methods in research. It is true that during the pandemic the conventional practices among academics have been changed dramatically. As one of the arms of an academic career, research was also influenced by the pandemic. Throughout the semi-structured interviews, participants were asked how they perceive the impact of COVID-19 on the usage of digital methods for the research process.

Although Social Science research incorporates ground-level research methods, Participant 23 argued that the pandemic was negatively impactful as:

*“Since the field of social sciences is very much associated with field visits, ground-level research, etc., the negative impact caused during the pandemic was high as no such outdoor activities could be conducted.”*

Even with the negative experiences of doing research during the pandemic period, some of the participants perceived positively regarding the adoption of digital methods for research. As an example, Participant 20 stated as:

*“My experiences abroad mainly influenced me because I experienced much. They made use of these digital methods for their research. Apart from that, the growth of the use of digital things during the covid pandemic also increased my inclination.”*

Similarly, Participant 05 also noted as:

*“Exactly, we got much more familiar with the digital methods during this pandemic and I believe that paved the way for researchers to apply more digital methods within their research works.”*

In contrast with the argument of Participant 05 towards the impact of COVID-19 on researches carried out in Social Sciences, Participant 24 brought an argument as:

*“COVID-19 has paved the way to improve the field of social sciences in many ways, including the teaching-learning process and research activities.”*

#### **4.14 New Trends in Research due to Digital Methods**

As a result of incorporating digital methods with research, there are emerging trends such as promoting collaborative research. In recent times there is a trend in Social Sciences and Humanities of conducting research with international collaborations; carrying out multidisciplinary research where researchers in

different fields are working together; and publishing research papers jointly. Participant 07 highlighted this as:

*“Collaborative research is the trend now.”*

According to Participant 20, in Sri Lanka, there is a growth of adopting digital methods in research. His notion was as:

*“Compared to the other countries, the adaptation and update of digital tools and methods are less, but I can notice there’s a growth of such uses in Sri Lanka than before.”*

During the recent period, the popularity of using digital methods specially for collecting data was emphasized with the following experience by Participant 01:

*“I usually receive three-four requests to fill out online research questionnaires per month.”*

According to Participant 11, the Internet can be identified as a widely-used source in the research process:

*“The Internet has now become a widely used source in the research process.”*

There is an evolving popularity for indexing and citation, in particularly Social Sciences Citation and new database in the fields of Social Sciences and Humanities. As an example, this was supported by participant 19 as:

*“Social science citation and new databases are in the field.”*

An important argument was brought to the discussion by Participant 14 as:

*“I think when it comes to epistemology and the general theoretical understanding, all that use digital indexing methods are the ones that are used to more positivistic areas like hard sciences. Therefore, this needs to be questioned and adopted if they are going to use it to measure the research contribution of humanities and social sciences.”*

Due to the development of various digital methods, researchers have been exposed to a new horizon in terms of research. Some of the trends such as collaborative research, multidisciplinary research, digital indexing, web analytics, etc., came to the front during recent times. Especially in the fields of Humanities and Social Sciences, there are discussions whether digital methods are compatible with researchers in these fields.

## **Discussion, Conclusions and Recommendations**

### **5.1 Introduction**

In this chapter, at first, the findings based on the analysis are discussed as a generalization to HSS academia while comparing with the existing scholarly works found in the literature. Also, a conclusion of the findings of the study and the recommendations made based on those findings are presented in this chapter.

### **5.2 Discussion**

Based on the results presented in the Data Analysis chapter, a discussion is carried out in addressing the objectives of the research project.

#### **5.2.1 Availability and Use of Information Technology**

IT devices such as laptops and smartphones are available with most of the academics, and there is an adequate access to the internet in their workplaces as well as their houses. Although Academics are more familiar to use mobile data, over 60% of them use a fixed line connection. WhatsApp can be identified as the most frequently used social media among academics although most of the academics own a Facebook account. Only half of the academics use LinkedIn. The majority of the academics own a Google scholar profile while the second most used platform is ResearchGate. A higher portion of the academics participated in various training programs on using IT via online modes.



### **5.2.2 Use of Digital Methods throughout the Research Process**

The research process involves five major phases according to the findings of this research as research problem formulation, literature review, data collection, data analysis and publishing research findings. Throughout this research process, different digital methods were used. Researchers use the Internet and social media platforms when they formulate research problems. With the frequent use of social networking sites, different research problems are raised. Some researchers (Kwon, Park, and Kim, 2014; Hagger-Johnson, Egan, and Stillwell, 2011) also highlighted this tendency of using social networking sites for research problem formulation. Though the Internet and web play a vital role in the research process (Aya, 2000; Popoola, 2008; Bright, 1999), researchers retrieve a number of research papers which are available online. In modern days, there are so many platforms where full research papers are openly accessible. White (1973) also argued that accessibility of journals is very useful for literature reviews. Not only that, some universities and especially university libraries have free access to various research publishing web sites. Through the Internet, researchers can access existing scholarly works done locally and internationally over the boundaries. On the other hand, reference management software like EndNote and Mendeley are available for managing research papers (Bhatti, 2013). Most of the academics are also familiar of using this software during their research works.

Data collection is also an important phase of any research work. In modern days, researchers use big data which are accumulated through different digital technologies such as web sites, web-based databases, etc. Although data mining tools are available for retrieving big data, academics in the field of Social Sciences and Humanities are not very familiar of using those tools. Moreover, there are different databases that can be accessed over the Internet. But, the

majority of the HSS academics are still focusing on collecting primary data rather than secondary data. However, most of the researchers use Google forms for collecting primary data which has been more popular during the pandemic as well. In addition to Google forms, video conferencing tools like Zoom are also becoming popular in conducting interviews. Therefore, HSS academics tend to use different digital tools when they collect data although there are a few barriers which are unique to the field of HSS that can be also identified.

Even with the conventional research works, the data analysis phase is mostly depended on digital technologies. Especially in quantitative research studies, statistical software is used mostly. Among HSS academics, SPSS is the most popular statistical software. In addition to that, EViews, STATA, SAS are some of the statistical softwares used by academics. Not only for quantitative data analysis, but also for qualitative data analysis, useful software is available such as NVivo. It is obvious that researchers have to depend largely on digital technologies when they analyze data.

Publishing research findings is the ultimate phase of a research process. Today, various opportunities can be found for the purpose of disseminating knowledge produced through a research project. One way is presenting research findings at research conferences. Currently, there is a higher tendency for organizing virtual research conferences using digital technologies. This enables researchers to present their research findings in front of research crowd that may consist both local and international participants. On the other hand, online publication is more popular among academics. HSS academics also tend to publish their research findings in local and international journals which are available online. In addition to online publications, digital indexing is also becoming a prominent matter of research works. Most of the HSS academics maintain digital research profiles

such as Google Scholar where others can see their research works and digital indexing. Therefore, digital technologies are equipped by academics for the purpose of sharing research findings.

### **5.2.3 Adopting Digital Methods in Research and Contrast between Humanities and Social Sciences**

As the research findings have revealed, HSS researchers adopted digital methods in their research works with different extents. The adoption level was measured using selected HSS academics covering various aspects of the research process. The adoption level was below 50 (Mean = 44.61) which indicates that the adoption of using digital methods in research among HSS academics is still somewhat low. One of the major concerns of adopting digital research methods is the versatility of the field of Humanities and Social Sciences. The research findings also exhibit that the adoptability of digital methods in Humanities research is lower than that in Social Sciences research.

### **5.2.4 Impact of Age and other Demographic Factors on Adopting Digital Methods in Research**

Ani et al., 2014 found that demographic factors are responsible for determining the usage of digital research methods. Contrawise, the current study revealed that there is no significant impact of demographic factors like age, gender, academic position, educational qualification and experience on adopting digital research methods. Especially, age cannot be considered as a factor according to most of the academics. Most of the HSS academics believed that they can adopt digital methods in research works if they are relevant to their research scope over the demographic factor like age.

### **5.2.5 Determinants of Adopting Digital Research Methods**

The present study mainly considered a few of the factors retrieved through the literature review and qualitative data analysis, and whether those factors can be considered as significant determinants of adopting digital research methods. With the statistical evidences, the impact of all the factors is significant. The corresponding factors are computer skills; infrastructure facilities; library support; institutional support; attitudes; and motivators. With the higher computer and digital literacy, HSS academics tend to highly use digital research methods. Therefore, computer and digital literacy of academics can be treated as a significant factor of determining the adopting digital research methods. IT infrastructure facilities, support for accessing digital research methods by library, and support for adopting digital research methods by institute also significantly contributed to adopting digital research methods. For the HSS academics, the library has to play a big role of promoting digital research methods among HSS academia.

On the other hand, attitudes are very important. Especially, positive attitudes regarding the usability of digital methods in research increases the interest of using digital research methods. These positive attitudes can also look like benefits of digital research methods. Some of the benefits such as accessibility (Dadzie, 2011), collaboration and publishing opportunities (Mckie and Guchteneire, 2000) are mentioned in the literature. However, the findings of the present study extracted 08 benefits as Availability of Different Sources, Cost Effectiveness, Convenience, International Collaboration, Time Saving, Accessibility to Participants, Usability of Secondary Data, and Quality of Research. It might also be noted that the negative aspects of adopting digital research methods was also revealed. Harley (2006) found a lack of IT devices as a constraint of using digital

methods in research while Popoola (2008) highlighted the poor library resources as a disturbance to adopting digital research methods. The current study identified 10 constraints to use digital methods in research as: Insufficiency of Internet Connectivity, Lack of Physical Interaction, Lack of Technical Knowledge, Incompleteness, Limitation of Collecting Qualitative Data, Reliability Issues, Limited Usability in Humanities, Limitation of Collecting Primary Data, Difficulty of Data Cleaning, and Insufficient Access to E-resources.

In addition to attitudes, both internal and external motivators are also helpful for enhancing the adopting of digital research methods. Some of the motivators strongly perceived by academics are personal interest, self-gratification, relevancy with research filed, local and international recognition, accessibility to resources, and ability to use digital methods.

### **5.2.6 Impact of COVID-19 and Trends Towards Digital Research Methods**

During the COVID-19 pandemic, academics had to rely largely on digital methods not only for teaching but also for doing research. The current research findings further confirmed that there was expansion of using digital research methods during the pandemic compared to before the pandemic. Therefore, the COVID-19 pandemic influenced researchers to adopt digital research methods. During the recent years, due to the popularity of digital technologies, a few of these trends can be identified in relation to research such as: collaborative research works are promoted; virtual conferences are organized; internet has become a widely-used source of data; Social Science citation and databases; and digital indexing.

### 5.3 Conclusions

Considering the results from the data analysis, the key findings of the current research are concluded as follows:

- Most HSS academics have IT devices and access to internet adequately.
- Most HSS academics use social media platforms such as WhatsApp and Facebook.
- Most HSS academics maintain digital research profiles such as Google Scholar and ResearchGate.
- Training programs have been conducted in order to raise the knowledge of using digital research methods among HSS academics.
- During the research process, most HSS academics adopted digital research methods to formulate research problems; literature review; data collection; data analysis; and publish research findings.
- The Internet and social media play an important role in formulating research problems.
- The HSS academics mostly use the Internet to find research articles for their literature reviews.
- Google Forms and Zoom are more popular among HSS academics for data collection.

- SPSS is the most familiar quantitative data analysis software, while NVivo is the most familiar qualitative data analysis software particularly among young academics.
- The HSS academics prefer to participate in virtual conferences and in publishing research papers online.
- The level of adopting digital research methods by HSS academics is around 40%.
- Academics who are in the field of Humanities have lower adoption levels in using digital research methods compared to academics in the field of Social Sciences.
- Age is not a factor of adopting digital research methods.
- Demographic factors such as gender, academic position, education qualification, experiences do not impact on adopting to use digital research methods.
- The HSS academics' computer and digital literacy can be considered as a determinant of adopting digital research methods.
- The IT infrastructure facilities, support by libraries and institutes are helpful to adopt digital methods in research.
- The positive attitudes towards using digital research methods contributes to adopting digital research methods among HSS academics.
- Both internal and external motivators determine the adoption of digital research methods among HSS academics.

- The COVID-19 pandemic did not only impact on teaching but also impacted on research while expanding the use of digital research methods.
- Due to digital research methods, a few emerging trends can be identified such as collaborative research, virtual conferences, use of the Internet for research works, and digital indexing.

## **5.4 Recommendations**

- Organize training and awareness programs continuously in order to increase the use of digital research methods among HSS academics.
- Provide access to academics to find digital literature through e-databases and e-sources.
- Provide access to data analysis software such as SPSS and NVivo.
- Conduct training programs on the use of data analysis software such as SPSS and NVivo.
- Improve IT infrastructure facilities within university premises, so that academics can utilize those facilities without any disturbance.
- Establish research centers which are equipped with digital technologies within the universities.
- Promote the use of digital research methods through research centers.
- Make strategies to overcome the constraints of adopting digital research methods.



- Promote to combine digital research methods with existing conventional research practices.
- Promote collaborative and multi-disciplinary researches by creating research groups with academics from different disciplines.
- Provide funding facilities to conduct digital research and encourage academics to be published online or on digitally driven journals and open access e-sources.

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## Annexure I

### Interview Participants

<b>Participant ID</b>	<b>Position</b>	<b>Department</b>	<b>Gender</b>
Participant 01	Senior Professor	Economics - UoC	Male
Participant 02	Professor	Buddhist Studies - UoC	Male
Participant 03	Professor	English - UoC	Female
Participant 04	Senior Lecturer	Political Science - UoC	Male
Participant 05	Senior Lecturer	Sinhala - UoC	Male
Participant 06	Senior Lecturer	Geography - UoC	Female
Participant 07	Lecturer	English Teaching - UoC	Male
Participant 08	Lecturer	Economics - UoC	Female
Participant 09	Senior Professor	Geography - UoK	Male
Participant 10	Professor	Economics - UoK	Male
Participant 11	Professor	Sinhala - UoK	Male
Participant 12	Senior Lecturer	Economics - UoK	Male
Participant 13	Senior Lecturer	Archaeology - UoK	Male
Participant 14	Senior Lecturer	English - UoK	Female
Participant 15	Lecturer	History - UoK	Male
Participant 16	Lecturer	Political Science - UoK	Female
Participant 17	Senior Professor	Archaeology - USJ	Male
Participant 18	Professor	History - USJ	Male
Participant 19	Professor	Anthropology - USJ	Female
Participant 20	Senior Lecturer	English - USJ	Male
Participant 21	Senior Lecturer	Political Science - USJ	Female
Participant 22	Senior Lecturer	English Teaching - USJ	Female
Participant 23	Lecturer	Sociology - USJ	Male
Participant 24	Lecturer	Geography - USJ	Female

## Annexure II



International Center for Multidisciplinary Studies  
Faculty of Humanities and Social Sciences  
University of Sri Jayewardenepura

### Digital Research in the Field of Humanities and Social Sciences in Sri Lankan Universities

The primary aim of this questionnaire is to understand the university academics' access to media and technology and their nature of use; perceptions and beliefs about the use of technology for teaching, learning and research; and the use of digital research in the field of Humanities and Social Sciences. All information will be kept confidential and only be used for study purpose. For any inquiries, please contact Ms. Piyoda or Mr. Kasun through [mdrcfhss@sjp.ac.lk](mailto:mdrcfhss@sjp.ac.lk).

#### A. Background Information

- 1.1 Name of the university:  University of Colombo  University of Kelaniya  
 University of Sri Jayewardenepura
- 1.2 Department:  Buddhist Studies  Economics  English  
 English Teaching  Geography  History/Archology  
 Political Science  Sinhala  
 Sociology/Anthropology/Criminology
- 1.3 Gender:  Female  Male
- 1.4 Age group:  Below 26  26-30  31-35  36-40  
 41-45  46-50  51-55  56-60  
 Above 60
- 1.5 Current position:  Senior Professor  Professor  Senior Lecturer  Lecturer  
 Lecturer (Probationary)
- 1.6 Highest qualification obtained:  PhD  MPhil  Master's  PGD  Bachelor's
- 1.7 Teaching experience:  5 or <5 years  6-10 years  11-15 years  
 16-20 years  21-25 years  26-30 years  
 31-35 years  >35 years

#### B. Access to and Use of Information and Communication Technologies (ICTs)

**1. Ownership of and Access to ICTs** (Do you own any of these devices?)

Devices	Yes	No
Desktop computer	<input type="checkbox"/>	<input type="checkbox"/>
Laptop	<input type="checkbox"/>	<input type="checkbox"/>
Smartphone	<input type="checkbox"/>	<input type="checkbox"/>
Tablet device (Ex: iPad)	<input type="checkbox"/>	<input type="checkbox"/>

**2. Internet Access**

2.1 Where do you access the Internet? (Tick (✓) all that apply.)

- Home     Office     Cybercafe     Do not access

2.2 You have access to Internet through (Tick (✓) all that apply.):

- Fixed line     Wireless     Mobile devices     No

2.3 Which device do you use most frequently to access the Internet?

- Smartphone     Tablet or iPad     Laptop     Desktop computer

2.4 Do you have broadband Internet connectivity at ...

your university?  Yes     No

your home?  Yes     No

2.5 Do you have Wi-Fi/wireless Internet connectivity at your university?  Yes     No

2.6 How often you use the Internet?

- Daily     Alternate days     Once a week  
 Irregularly     Rarely     Never

**3. Use of ICTs**

3.1 Please rate your comfort level with the following computer-related activities.

Computer-related skills	Expertise level	User level (Advanced)	User level (Intermediate)	User level (Basic)	Non-user level
Word processor (Ex: Word)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheets (Ex: Excel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentation (Ex: PowerPoint)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search engines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Databases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video conferencing (Ex: Zoom)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Graphic editing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital audio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video editing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web page design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning Management System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web 2.0 tools (wikis, blogs, social networking and sharing tools)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### 4. Social Media

4.1 Do you have a profile/account on a social media platform(s)?

- Yes  No

4.2 Which social media platforms? (Tick (✓) all that apply.)

- Facebook     SlideShare or similar presentation platform  
 Twitter     Photo sharing (Instagram/Flickr/Picasa web, etc.)  
 WhatsApp     Research sharing sites (Academia.edu, ResearchGate.net etc.)  
 LinkedIn     Social bookmarking sites (Delicious, Scoop It, Pinterest, etc.)

4.3 How frequently do you update your social media status?

- Several times a day     Once a day     Once a week  
 Once a fortnight     Not very frequently     Not at all

#### 5. Technology-Enabled Learning Environment

5.1 Please rate your experiences with the following resources/services/spaces provided by your institution.

Resources/Services/Spaces	Poor	Fair	Neutral	Good	Excellent	Not available
eClassroom facilities (Ex: computers, projection systems, lecture capture systems, SMART boards, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer labs (for practical and Internet access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Email services (institutional)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning Management System - LMS (Moodle, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ePortfolio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Network bandwidth/speed of Internet (download and upload)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wi-Fi access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Online or virtual technologies (Ex: network or cloud-based file storage system, Web portals, etc.)

Access to software (Ex: MATLAB, GIS applications, statistical software, qualitative data analysis, graphics software, textual or image analysis program, etc.)

Facility to free download and use of open-source software for teaching and learning

Support for maintenance and repair of ICTs

**C. Using ICTs for Teaching and Learning**

**1. Use and Creation of Digital Content for Teaching**

1.1 Nature of the classes that you teach (tick (✓) all that apply):

- Traditional face-to-face  Completely online
- Blended, where some components of the study are done online

1.2 Please indicate how often you use the following digital resources/platforms in your teaching.

Types of Resources	Always	Often	Sometimes	Rarely	Never
Images (pictures, photographs, including from the Web)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentations (Ex: PowerPoint, including from online sources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word files (activity sheets/handouts/notes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital films/video (Ex: from YouTube)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video/audio recordings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Simulations and 2D/3D animation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Learning Management System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blogs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video conferencing (Zoom, MS Teams, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microblogging (Twitter, Facebook, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Open textbooks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open access research papers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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1.3 Are you aware of open educational resources (OER) in your discipline?  Yes  No

## 2. Training and Staff Development

2.1 Have you received training on the use of ICTs for teaching and learning?  Yes  No

2.2 Does your university provide regular training on the use of new technologies for teaching and learning?  Yes  No

2.3 Have you ever participated in any online training?  Yes  No

## D. Research Works and Using ICTs for Research

### 1. Research Works

1.1 What is your research expertise? .....

1.2 What are the ongoing research projects you are engaging in at the moment? 1... 2... 3...

1.3 Mention the number of publications by yourself for each of the following categories:  
 Books  Book chapters  Full paper in indexed journal   
 Full paper in non-indexed journal  Extended abstract   
 Abstract  Conference presentation  Other articles (Magazine, Newspaper)

### 2. Access to e-Resources in Library

2.1 Does your library provide access to subscription-based e-resources?  
 Yes (Go to 1.2)  No  Do not know

1.2 If yes, which kind of library resources do you regularly access for research.

Digital library resources	Always	Often	Sometimes	Rarely	Never
e-Journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Citation databases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bibliographic databases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Newspapers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Theses and Dissertations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patent databases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e-Proceedings of conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statistical databases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 2. Availability of Research Support

2.1 Please rate your experiences with the following resources/services/spaces provided by your institution.

Resources/Services/Spaces	Poor	Fair	Neutral	Good	Excellent	Not available
Access to data storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data visualization and analysis software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Citation/reference management software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plagiarism detection software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Institutional repository for sharing of research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support to open access publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 3. Adoptability of Digital Technologies in Research

3.1 Please indicate how often you use the following digital resources/platforms in your research.

Digital resources	Always	Often	Sometimes	Rarely	Never
Research planning tools (Ex: Je-S)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Citation/reference management software (Ex: EndNote, Mendeley)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data collection methods: Google Form, Survey Monkey, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video conferencing tools for interviews (Ex: Zoom)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remote sensing, IoTs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cloud storing (Ex: Google drive)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital data repositories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web analytics tools (Ex: Google Analytics)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data mining tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data visualization tools (Ex: Excel, Tableau)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data analyzing tools (Ex: SPSS, Minitab, NVivo)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statistical computing (Ex: R, Python)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online report generating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Publishing in online journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintaining digital scholar profile (Ex: Google scholar)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participating in virtual research conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2 Do you have any experience in organizing research conferences virtually?  
 Yes  No

3.2 Do you have any experience involving multidisciplinary research studies which are  
integrated with digital technologies?  Yes  No

**E. Perceptions of Use of Digital Technologies in Research**

1. **Attitude**

1.1 Please rate the following attitude statements.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Digital research can solve many of our research problems in the field of Humanities and Social Sciences.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital research will bring new opportunities for conducting research.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital research saves time and effort for researchers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital research increases access to various aspects in the research field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital research will increase my efficiency in research works.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital research enables collaborative research and publication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Digital research can engage researchers more than other forms of research.

Digital research increases the quality of research because it integrates all forms of media: print, audio, video and animation.

Adoption of digital methods is a challenge due to numerous factors like age gap, nature of the research area, nature of the respondents, etc.

There should be a higher concern on research ethics when conducting digital research

## 2. Motivators

2.1 Please rate the following motivators for you to adopt digital research.

Motivator	Very weak	Weak	Average	Strong	Very strong
Personal interest in using technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intellectual challenge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-gratification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training on digital research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevancy of digital research with your research field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional incentives to use digital research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Technical support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Peer recognition, prestige, status and global acceptance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved infrastructure (hardware and software) deployment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Release time/Reduction in existing workload	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To be a trendsetter by early adoption of technology in research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability of using digital technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of digital technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost effectiveness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**F. Your Comments**

.....

.....

.....

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.....

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.....

**Thank you.**

## **Annexure III**

### **Interview Schedule**

**Survey Topic: Digital Research in the field of Humanities and Social Sciences in Sri Lankan Universities**

#### **Introduction**

1. Research Topic
2. Purpose/Objectives
3. Target Group
4. Motivators
5. Time Line (120 min)
6. Consent

#### **General Academic Information**

1. What is your current academic position?
2. How long have you worked at the current university?
3. How about the experience of teaching during the pandemic time?
4. What are the research areas you have expertise in?
5. Please share your experiences as a researcher?

#### **Basic Questions**

1. What is your overall attitude towards online education and researches?
2. How has the field of social sciences been affected by Corona?

3. If problems do arise, how do you think digital methods can be used to solve them?
4. As a researcher, what is your inclination towards digital methods?
5. What are your negative experiences in using digital methods?
6. What positive experiences have you had using digital methods?
7. What digital tools do you use when doing research?
8. What digital methods do you use to collect primary data?
9. What digital methods do you use to collect secondary data?
10. What are the tools used for that?
11. Do you use digital methods for literature?
12. Can digital methods be used to build new research concepts or hypotheses
13. What are the digital tools and methods you use in data analysis?
14. Have researchers abroad contributed to your researches?
15. Has your research knowledge been disseminated through that collaborative research?
16. What are the special digital tools available in your research field?  
Explain
17. What is the tendency for methodological updates of digital tools or methods in your field?
18. What are the opportunities to use digital tools or methods in your study environment?
19. What is your view on the potential of digital methods to fulfill the social responsibilities of research?
20. How would you describe the positive and negative features of an online education system?
21. What are the factors that have influenced your inclination towards the use of digital research methods?

22. Can self-study be used to research the digital tools relevant to your field? What are the reasons for your answer?
23. What is your attitude towards research seminars and internet-based journalism?

### **Statement Base Questions (Opinions)**

(Please give your comment on following statements):

1. What is your opinion on the fact that conducting research only through digital methods does not realistically highlight the internal processes that exist in society?
2. There is an idea that digitization has increased the researcher's Motivators towards the anthropology and social sciences. What do you think about that?
3. Many researchers use the Internet to gain knowledge of the basic theoretical basis for research.
4. There is an opinion that the use of social media greatly influences a researcher's research problem identification and concepts. What do you think about that?
5. Digital research methods are more effective than conventional research methods.
6. Digital methods are helpful to improve the research process.
7. Adoption of digital methods is a challenge due to numerous factors such as age, nature of the research area, nature of the respondents, etc.
8. Adoption of digital methods in teaching and learning process during the Pandemic situation motivators to use digital method in research too.

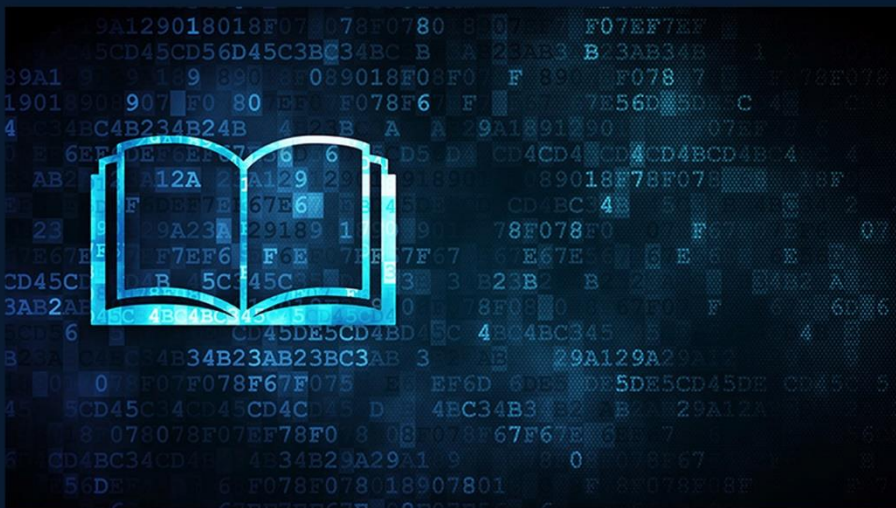
### **Higher-Order Questions (Attitudes)**

1. What do you think of online data collection methods as a research methodology?
2. What is the use of internet and online methods for research in Sri Lanka?
3. To you, what is the most significant challenge you have to face when you adopt digital methods in research?
4. There is a potential for various shortcomings in the data collection through the digital methods
5. A new trend is to classify the research contribution of all researchers through digital indexing methods. (H-index)

### **Conclusion and Summary**



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