

Examining the Practice of Digital Scholarship Services at Vietnam National University Ho Chi Minh City

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ABSTRACT

The article reports the results of an investigation on the practice of providing digital scholarship services at Vietnam National University Ho Chi Minh City, Vietnam. This study is part of an ongoing research project entitled *Developing a digital scholarship service framework for universities at Vietnam National University Ho Chi Minh City*. It employed a qualitative research approach through in-depth interviews with 31 individuals who are university managers, library managers, lecturers, and postgraduate and undergraduate students from six member universities and Central Library of Vietnam National University Ho Chi Minh City. Research results show that some digital scholarship services have been provided at Vietnam National University Ho Chi Minh City. However, they have not been yet systematically implemented and have not met users' needs. Lack of needed resources such as space, technology infrastructure, human resources, finance, and stakeholder support are among major challenges in developing digital scholarship services. The management of existing digital scholarship services is fragmented without a clear policy for developing digital scholarship and supporting services. The study contributes to the existing knowledge by adding substantially to current understanding of the practice of providing digital scholarship services in Vietnam's universities in the transition period, from state control to autonomy, which has not been much addressed in previous research. Furthermore, this study can be a useful reference for higher education institutions in developing countries regarding implementation of digital scholarship services.

Keywords: digital scholarship, digital scholarship services, higher education, Vietnam

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1. INTRODUCTION

In the digital environment, higher education institutions make constant efforts to apply digital technology to academic activities, creating favorable conditions for the development of digital scholarship. In an effort to help Vietnam's universities effectively implement support activities for digital scholarship, a four-stage research project entitled *Developing a digital scholarship service (DSS) framework for universities at Vietnam National University Ho Chi Minh City (VNU-HCM)* has been conducted from 2020 to 2022. This ongoing research project towards building a model of a DSS system at VNU-HCM, one of the two key national universities in Vietnam, is expected to be one of the solutions for digital transformation at this educational institution.

This paper, as part of an ongoing research project mentioned above, presents the results of a qualitative study (Stage 2) conducted to understand the practice of providing DSSs at VNU-HCM. The study used a preliminary framework for DSSs, which was built upon completion of the first phase of the aforementioned large research project, to identify three specific research objectives as follows.

- (1) Identify DSSs currently being implemented at VNU-HCM;
- (2) Understand the current status of resources for the implementation of DSSs at VNU-HCM;
- (3) Understand the governance of existing DSSs at VNU-HCM.

'Digital scholarship services' has become a fashionable topic in recent years and there are many studies conducted by researchers around the world. However, there is a shortage of research that addresses DSSs in the Vietnamese context, a developing country in the Far East. This study is therefore a contribution to fill the research gaps. Current DSS frameworks/models mainly concentrate on DSS groups. By investigating the practice of the DSSs provided and the conditions for their development at VNU-HCM, the work presented in this paper contributes to the construction of a future DSS framework that embraces both DSS groups and the conditions for the development of DSSs in higher education institutions.

2. CONTEXT OF THE STUDY

In recent years, the Vietnamese government has determined that digital transformation is a new driving force

for economic growth and social development (Prime Minister of Vietnam, 2020). This is demonstrated through the issuance of the *National Digital Transformation Program until 2025, with a Vision up to 2030* (Prime Minister of Vietnam, 2020). Digital transformation in education, one of eight prioritized fields in the program, will focus on developing online education platforms, technologies, and resources towards individualized training. Furthermore, the Scheme on Development of Education Society in 2021-2030 (Prime Minister of Vietnam, 2021) aims to improve the quality of human resources and, by 2030, for 90% of universities to deploy digital universities.

Vietnam has two national universities: VNU-HCM and Vietnam National University Hanoi. These two universities have received big support from the government and aim to become high-quality, multi-disciplinary, and multi-field educational, scientific research, and technology-transfer world-class institutions (Politburo Standing Committee, 2000). However, the situation changes when higher education institutions have to shift from centralized management to subsidized decentralization and strengthening the autonomy of universities. Recently, on December 30, 2019, the Government promulgated Decree No. 99/2019/ND-CP detailing the Law on Higher Education (Prime Minister of Vietnam, 2019), clearly stating that higher education institutions are allowed to have autonomy on finance, property, organizational structure and personnel, academic, and professional activities. On June 21, 2021, the Government issued Decree No. 60/2021/ND-CP on financial autonomy mechanisms for task performance, organizational structure, staffing, and finance for public administrative institutions (Prime Minister of Vietnam, 2021). This means the current expenditure budget for public universities has been cut, leaving them ever more dependent on tuition money. The above documents have had a great impact on the governance activities of public universities, including VNU-HCM.

To face the National Digital Transformation Program and decrees on university autonomy, VNU-HCM has developed a strategic plan for the 2021-2025 period, with a vision up to 2030 that aims for it to become a research university among the top in Asia (Vietnam National University Ho Chi Minh City, 2021). This plan identifies six strategic groups, most of which are strongly related to digital transformation and university autonomy: (1) Improving the efficiency and effectiveness of university governance; (2) Training human resources capable of working in an international environment, leading, and bearing the identity of VNU-HCM; (3) Developing science and tech-

nology, encouraging innovation; (4) Strengthening cooperation and proactive integration; (5) Building a smart and green campus; (6) Developing financial resources. This strategic plan has facilitated the development of digital scholarship at VNU-HCM.

VNU-HCM has a staff of 6,092 people, of which 3,532 (58%) are lecturers and researchers, and 2,560 are administrative staff (42%). VNU-HCM has a current student body of 76,000, including full-time undergraduate and postgraduate students (Vietnam National University Ho Chi Minh City, 2020). VNU-HCM's education fields span over many disciplines including natural sciences, engineering sciences, social sciences, humanities, economic sciences, and health sciences. VNU-HCM has seven member universities: University of Technology (UT), University of Science (US), University of Social Sciences and Humanities (USSH), International University (IU), University of Information Technology (UIT), University of Economics and Law (UEL), and An Giang University (AGU). Although AGU became a member university of VNU-HCM in 2019, the merger process will not be completed until the end of 2022. VNU-HCM also has several affiliated institutes, centers, and units, in which the Central Library is the affiliated unit responsible for coordinating the activities of member universities' library systems.

3. LITERATURE REVIEW

There is still no unified definition of digital scholarship up to now (Zhou et al., 2019), because it is a multi-faceted concept (Research Libraries UK, 2021) that can be defined and studied from different perspectives. University libraries therefore use varied and multi-faceted ways to support digital scholarship activities within their institutions (Greenhall, 2019). With the view that DSS is a reform of traditional library services and aims at providing user-centric research support services for universities in China, Zhou et al. (2019) proposed a DSS framework with six service groups: supporting services, formulating research ideas, locating research partners, writing proposals, conducting research, and publishing results.

Digital scholarship support is also profoundly contextual because the development and provision of DSSs depends on the needs of users and the characteristics of each university (Craft, 2018). Research by Hurrell (2019) found that the academic community at the University of Calgary had a need for space and community, access to interdisciplinary collaborators, and training/consultation on digital scholarship tools. Based on these findings, the

research raised the issue of providing support corresponding to identified user needs. Therefore, contextual factors need to be considered when implementing DSSs.

According to Boyer (1990), academics need to be able to perform four functions: discovery (conducting research), integration (making connections across the disciplines), application (translating theoretical knowledge into the real world of applied situations), and teaching (designing and implementing teaching and learning activities). One of the most commonly used definitions of digital scholarship introduced by Rumsey (2011, p. 2) indicates that "digital scholarship is the use of digital evidence and method[s], digital authoring, digital publishing, digital curation and preservation, and digital use and reuse of scholarship." Based on the above perspectives, digital scholarship can be broadly understood as the application of digital tools to research, teaching, and learning activities. Accordingly, DSSs should be provided in proportion to such activities.

The practice of DSSs has been explored in many studies conducted in different contexts. In general, many university libraries around the world have provided DSSs to the academic community (Li et al., 2020). However, the level of DSSs provided by each university is different. There are universities that have built a fairly comprehensive DSS model, for example, the four-tiered DSS model of New York University (USA): (1) Tier 1 – Enterprise academic and administrative tools; (2) Tier 2 – Standard research services; (3) enhanced research services; and (4) applied research and development (Vinopal & McCormick, 2013). There are also universities that only provide a very small number of DSSs, such as universities in Nigeria (Gbaje et al., 2020) and the University of Cape Coast (Ghana) (Ocran & Afful-Arthur, 2021). The Library of Congress (USA) is another example; although this organization is considered a world leader in the management of digital collections, the library still does not have a DSS system for the whole organization. Instead, it mainly deals with requests for digital scholarship consultations from reading rooms, informal consultations with researchers, and inquiries through some other channels (Library of Congress, 2020).

Previous studies have shown that the implementation of DSSs by universities faces many challenges that need to be addressed, such as the lack of financial support for digital scholarship (Clay, 2016; Koga, 2018; Lippincott, 2017); lack of cooperation among stakeholders (Clay, 2016; Lippincott, 2017; Tzoc, 2016) as well as lack of motivation for digital scholarship due to skepticism and limited prioritization.

zation of digital scholarship by faculty members (Lippincott, 2017); limitations in technological infrastructure as well as in communication and outreach (Clay, 2016; Lippincott, 2017); lack of skills of digital scholarship support staff (Clay, 2016; Mitchem & Rice, 2017); and lack of space and equipment (Mitchem & Rice, 2017). Therefore, the implementation of the DSSs needs to consider the above factors.

There are many models of DSS governance that have been proposed, including virtual, physical center, and hybrid models (Mitchem & Rice, 2017). There is also a central model connecting to satellite branches (hub-model or hub-and-spoke), lab model, network model (Maron & Pickle, 2014), centralized services, mesh network, and consortium models (Anne et al., 2017). There is no one-size-fits-all model for managing DSSs. Each university has its own approach in supporting digital scholarship based on practical considerations.

Past literature indicates that the development of DSSs is contextual. The DSS model of each university may therefore vary depending on the needs of users and the characteristics of the institution. In order to develop DSSs, universities should identify specific services tailored to the needs of users; secure the necessary resources to implement services such as space, technological infrastructure, finance, human resources, and stakeholder engagement; and perform service governance activities. This review helps to identify the components of the theoretical framework for DSSs as presented in Fig. 1. Current DSS frameworks/models are predominantly focused on defining DSS groups, for example, the four-tiered DSS model of New York University (Vinopal & McCormick, 2013) and a DSS framework for universities in China (Zhou et al., 2019). It is suggested to build a framework of DSSs that involves both DSS groups and the conditions for the development of DSSs.

4. THEORETICAL FRAMEWORK

Stage 1 of the larger research project mentioned above proposed a preliminary framework for DSSs (Fig. 1). In this research stage, the larger research project conducted an unpublished literature review combined with analysis of the website content of a number of university libraries around the world (Nguyen et al., 2021) to identify the components of the preliminary framework for DSSs. This theoretical framework is then used to guide data collection and analysis at later stages.

The preliminary framework for DSSs consists of three

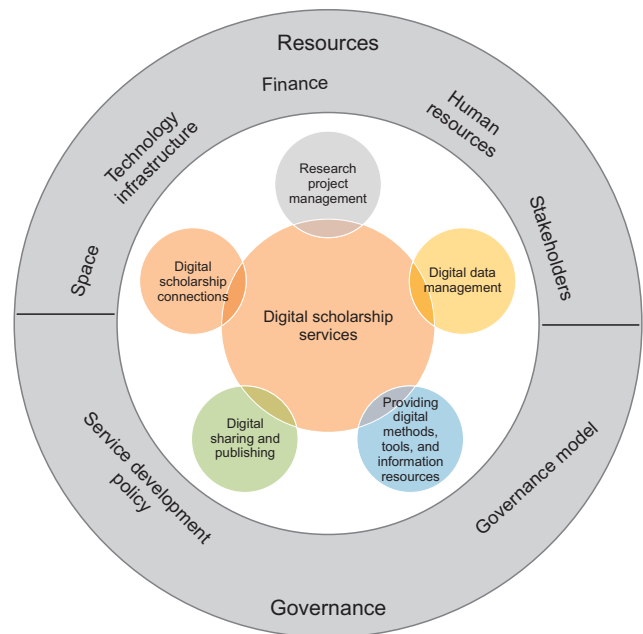


Fig. 1. Preliminary framework for digital scholarship services.

main components: DSSs, the resources required to implement DSSs, and service governance.

- DSSs: drawing from the results of an investigation of selected university library websites as mentioned above (Nguyen et al., 2021), five groups of DSSs are identified based on their functions: (1) research project management, (2) digital data management, (3) providing digital methods, tools, and information resources, (4) digital sharing and publishing, and (5) digital scholarship connections.
- The resources required to implement DSSs: there are five elements to consider when implementing DSSs such as space, technological infrastructure, finance, human resources, and stakeholders.

- (1) Space: physical and virtual space for academic activities;
- (2) Technological infrastructure: digital equipment, tools, facilities, and methods for academic activities;
- (3) Finance: funding to develop and maintain digital scholarship projects and services;
- (4) Human resources: capacity of university staff to provide DSSs;
- (5) Stakeholders: participation and engagement of the academic community (including researchers, lecturers, and learners) and related individuals and

units.

- Service governance: service development policy and the service governance model are two elements that need to be considered.

5. METHODOLOGY

This study used a qualitative research approach by means of individual in-depth interviews that allow collection of detailed information on respondents' perspectives based on their own experiences (Lune & Berg, 2017). This method of data collection makes it possible for the study to provide greater insight into the current state of DSSs at VNU-HCM.

Data collection was carried out at the six member universities of VNU-HCM and the Central Library. The study did not collect data at An Giang University because this institution has not been completely merged into VNU-HCM, so it is assumed that it does not reflect the reality of supporting digital scholarship in the system. Meanwhile, the study conducted data collection at the Central Library because this unit is responsible for coordinating the activities of member universities' libraries.

To investigate the practice of providing DSSs at VNU-HCM, the study brought the context of VNU-HCM at both macro and micro environment levels together based on Layder's (1993) approach (Table 1).

5.1. Sampling

Participants for in-depth interviews were recruited using a purposive sampling strategy. Purposive sampling allows the researcher to recruit 'information rich' cases, namely those who have knowledge and experience of the research problem makes them likely to provide data that are relevant to the research aim (Pickard, 2013). Accordingly, the participants of this study needed to have a certain understanding and experience of academic activities in the defined research context. To ensure this, the study conducted interviews with the following groups:

- (1) Managers of member universities of VNU-HCM. This group of people manages training and research activities.
- (2) Managers of member universities' libraries of VNU-HCM and the Central Library.
- (3) Lecturers who have at least five years of teaching experience and have conducted at least one research project.
- (4) Postgraduate students (masters, doctoral students) who have completed at least one semester in the program and are in the process of carrying out their research.
- (5) Undergraduate students who have completed at least two semesters in the program and have experience in conducting student research projects.

Considering the available resources, the study selected a sample size of 31 to conduct in-depth interviews. For each group, the study invited one participant from each member university. A member of the Central Library's board of management was also invited to take part in the research. Managers of member universities' libraries were contacted first and they were used as key informants to invite university managers, lecturers, and postgraduate and undergraduate students in their universities to participate in the research. Interviewee selection was based on their willingness. Details of the study participants are presented in Table 2.

5.2. Interview Protocol

The preliminary framework for DSSs was used to identify three key topics of the interviews: existing DSSs, resources required to implement DSSs, and service governance.

Participants who were interested in taking part in the study were sent an information pack with an invitation letter, information sheet, and a consent form. In order to collect as much information as possible on the practice of providing DSSs at VNU-HCM, the three key topics and guiding questions (Appendix) were sent to the partici-

Table 1. Context of VNU-HCM at both macro and micro environment

Context - Macro environment	- Digital transformation in higher education - University autonomy
Setting	Six member universities of VNU-HCM, Central Library
Situated activity	Teaching, learning, research
Self	Digital scholarship services (University managers, library managers, lecturers, learners)

VNU-HCM, Vietnam National University Ho Chi Minh City.

Table 2. Study participants

Participants	Institutions						
	USSH	UT	US	IU	UEL	UIT	Central Library
University managers	X	X	X	X	X	X	
Library managers	X	X	X	X	X	X	X
Lecturers	Faculty of History	Faculty of Chemical Engineering	Faculty of Mathematics and Computer Science	School of Biotechnology	Faculty of Economics	Faculty of Software Technology	
Postgraduate students	- PhD - Second year - Library Science	- MSc - Second year - Electronics Engineering	- MSc - Second year - Computer Science	- MSc - Second year - Electronics Engineering	- PhD - Third year - Business Administration	- MSc - Second year - Information System	
Undergraduate students	- BA - Third year - Educational Studies	- BSc - Second year - Construction Engineering	- BSc - Second year - Environmental Science	- BE - Second year - Industrial & Systems Engineering	- BA - Third year - Civil Law	- BSc - Third year - Information Technology	

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

pants in advance of the scheduled interview to help them focus and understand the scope of the interview.

5.3. Data Analysis

The study used a qualitative content analysis method through the following steps.

- Step 1: After each interview, one researcher transcribed the audio record word-by-word and then thoroughly listened to the recording twice to check the accuracy of the transcript. The transcribed version of the interview was then sent to the participants to allow them to double check what they said during the interview.
- Step 2: Based on the preliminary framework for DSSs, the following categories and their sub-sets were defined prior to data analysis: existing DSSs, resources, and service governance.
- Step 3: Interview transcripts went through a coding process to generate codes from data under the preconceived categories as well as to identify new categories and sub-categories. Themes identified through content analysis were tabulated in Excel along with the corresponding data and participants. This process went through three rounds using member-checking to ensure the trustworthiness of the data. In the first round, each of the three-member research team was primarily responsible for

analyzing one-third of the total interview transcripts. In the second round, the analysis results were checked by the remaining two research members. This was followed by a roundtable discussion among the three members to come to a consensus on different points of view in the data analysis process. No new categories and subcategories emerged from the interview data.

All interviews were conducted in Vietnamese. A number of comments were translated into English for presentation in the finding section.

6. FINDINGS

6.1. Implementation of Digital Scholarship Services

6.1.1. Existing Digital Scholarship Services

Research results show that VNU-HCM has not had a comprehensive DSS system at both VNU-HCM system and member university levels.

At the system level, the research results indicate the absence of centers, departments, and projects related to DSSs except for some activities carried out by the Central Library. One of the university managers said that “We mainly rely on our university’s conditions to support digital scholarship for lecturers and learners. There is no cen-

ter or department responsible for coordinating this activity from VNU-HCM.” DSSs were mainly provided at the member university level rather than at the system level. In this context, the Central Library is expected to deliver system-level DSSs. However, the study shows that DSSs were still underdeveloped in this library’s service system. This was confirmed by the manager of the Central Library:

Oversea university libraries deliver many DSSs [...] But for us, with very limited resources, we mainly make an effort to maintain the provision of databases so we have not implemented any other support activities yet. Users can also use the library space for learning and research.

It can be seen that the provision of electronic databases and space by the Central Library was still considered the main digital scholarship support activity at the system level.

At the member university level, the six member universities had more activities to support digital scholarship, although these were not yet systematically implemented and did not really meet users’ needs. The research data

show that DSSs were provided internally by each member university. There was no uniformity and very little cooperation among the six members. They provided a number of services that fell within the following five DSS groups: (1) research project management, (2) digital data management, (3) providing digital methods, tools, and information resources, (4) digital sharing and publishing, and (5) digital scholarship connections.

For research project management, six services were identified including (1) information provision, training, and seminars on research management; (2) information provision, training, and seminars on copyright and intellectual property; (3) supporting the planning of research project management; (4) Supporting the implementation of research projects; (5) help in seeking and applying for research funding; and (6) copyright registration (Table 3). The USSH was the only one to not indicate the presence of any service in this service group, while the other member universities provided at least one service. The UIT provided the most services (four). Help in seeking and applying for research funding appeared in four out of six member universities. In the meantime, there were two services offered by only one member university: (1) in-

Table 3. Services on research project management

Services	USSH	UT	US	IU	UEL	UIT
Information provision, training, and seminars on research management				X		X
Information provision, training, and seminars on copyright and intellectual property						X
Supporting the planning of research project management		X			X	X
Supporting the implementation of research projects		X				
Help in seeking and applying for research funding		X	X	X		X
Copyright registration		X			X	

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

Table 4. Services on digital data management

Services	USSH	UT	US	IU	UEL	UIT
Data search and collection					X	
Data cleaning and standardization					X	
Data storage						X

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

formation provision, training, and seminars on copyright and intellectual property; (2) supporting the implementation of research projects.

The digital data management services group seems to receive little attention from member universities as only three services were identified, including (1) data search and collection; (2) data cleaning and standardization; and (3) data storage (Table 4). At the same time, these three services were only available in two of the six member universities. There was an absence of many research data lifecycle management services.

The service group related to providing digital methods, tools, and information resources was considered the most popular and provided by the most member universities. Six services belonging to this service group were recognized, including (1) providing a venue for digital data processing; (2) providing digital tools; (3) providing data storage space; (4) supporting the use of digital tools and methods in research; (5) supporting the use of digital tools and methods in teaching and learning; and (6) providing information resources (Table 5). Two of the six services in this group were delivered by all member universities: (1) supporting the use of digital tools and methods in teaching and learning, and (2) providing information resources.

Meanwhile, the provision of data storage space was offered by only one member university.

For digital sharing and publishing, three services were identified: (1) consulting/training/workshops on how to publish; (2) assisting with publishing in institutional repositories; and (3) assisting with publishing in scientific journals (Table 6). Five out of six member universities provided assistance with journal publication. Meanwhile, assisting with publishing in institutional repositories was implemented by only one member university. The UT provided the most services in this group (three services).

For digital scholarship connections, participants indicated the presence of three services: (1) organizing events and discussions about research using digital methods and tools; (2) providing a physical venue for academic interaction; and (3) connecting researchers (Table 7). Research data show that organizing events and discussions about research using digital methods and tools was implemented by only one member university, while the other two services were offered by four out of six member universities.

6.1.2. Parties Involved in the Provision of Digital Scholarship Services

The results of the data analysis show that DSSs at

Table 5. Services on providing digital methods, tools, and information resources

Services	USSH	UT	US	IU	UEL	UIT
Providing a venue for digital data processing		X		X		X
Providing digital tools (software, hardware...)		X	X	X	X	X
Providing data storage space						X
Supporting the use of digital tools and methods in research	X	X	X	X	X	
Supporting the use of digital tools and methods in teaching and learning	X	X	X	X	X	X
Providing information resources	X	X	X	X	X	X

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

Table 6. Services on digital sharing and publishing

Services	USSH	UT	US	IU	UEL	UIT
Consulting/training/workshops on how to publish	X	X	X			X
Assisting with publishing in institutional repositories		X				
Assisting with publishing in scientific journals		X	X	X	X	X

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

Table 7. Services on digital scholarship connections

Services	USSH	UT	US	IU	UEL	UIT
Organizing events and discussions about research using digital methods and tools						X
Providing a physical venue for academic interaction	X	X	X	X		
Connecting researchers		X	X	X	X	

USSH, University of Social Sciences and Humanities; UT, University of Technology; US, University of Science; IU, International University; UEL, University of Economics and Law; UIT, University of Information Technology.

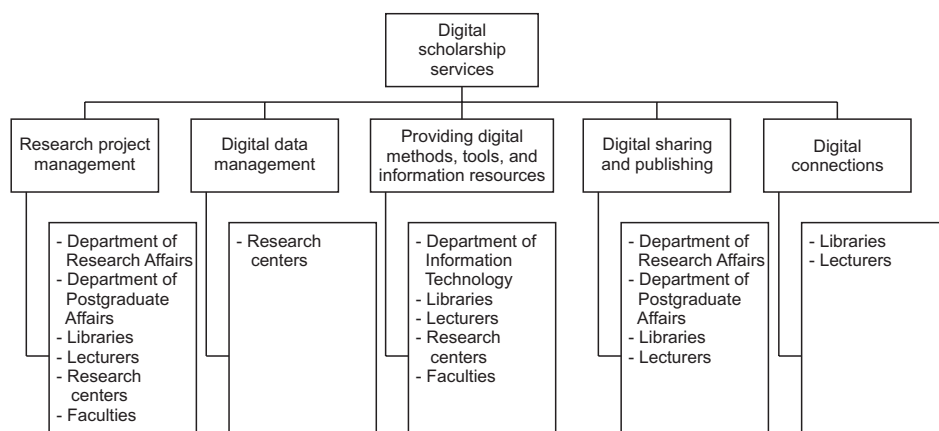


Fig. 2. Parties involved in the provision of digital scholarship services.

VNU-HCM’s member universities were primarily provided by the following units: the Department of Research Affairs, Department of Postgraduate Affairs, Department of Information Technology, libraries, research centers, and faculties. In addition, there was digital scholarship support from lecturers or research groups rather than being formally provided by the universities. The results of this study indicate that the above individuals or units delivered various DSSs (Fig. 2).

The presence of libraries in four out of five groups of DSSs, except for digital research data management, showed the important role of libraries in digital scholarship, as acknowledged by one of the lecturers: “When it comes to digital scholarship, I immediately think of libraries.”

Member universities’ research centers also offered a number of DSSs related to (1) DIGITAL research project management, (2) digital data management, and (3) providing digital methods, tools, and information resources. Specifically, the managers of the member universities said that research centers assisted in finding research funding: “My university’s Innovation Center supports finding research funding sources from organizations and provinces” as well as collecting and cleaning data: “The Center for

Economic and Financial Research buys the Thompson Reuters database as well as helps to collect and clean data.”

The Department of Research Affairs and the Department of Postgraduate Affairs mostly provided services related to (1) research project management and (2) digital sharing and publishing. This was reflected in the following statements of both a university manager and a postgraduate student: “The Department of Postgraduate Affairs provides advice to students on doing research and writing theses and papers,” and

The Department of Research Affairs often organizes seminars and workshops to enhance lecturers’ understanding and skills of doing research [...] Although they do not mention digital scholarship, the content and discussions refer to the value and foundation of digital scholarship.

Faculties focused on running DSSs related to (1) research project management, and (2) providing digital methods, tools, and information resources. These included training courses and guidelines about learning and research activities or providing digital materials, as shared by both a postgraduate student and a library manager:

“Our faculty organizes seminars and trainings for lecturers and students with the participation of foreign researchers,” and “Some faculties provide additional digital materials for their lecturers and students.”

The Department of Information Technology also supported digital scholarship activities, mainly in terms of infrastructure and digital means and tools, as confirmed by a lecturer: “The Department of Information Technology supports the installation of software and provides instructions on how to design online lessons.”

Research results show that there was also support from lecturers or research groups for learners and colleagues in most service groups, except for digital data management. Such support might include providing digital tools, as a lecturer said: “I sometimes receive digital tool-related support from research groups”; or providing materials, as confirmed by a postgraduate student: “My lecturer can download some materials for me that I cannot download because of the cost.” Leaving lecturers or research groups to solve the problem of digital tools on their own might lead to a concern that the quality and validity of digital tools cannot be guaranteed; in particular, some of the software were provided to learners in the form of pirated versions. One of the university managers said that: “There are expensive software tools that the university cannot support. Therefore, most lecturers have to find a way to use them. This may lead to copyright infringement.”

6.1.3. Evaluation of Digital Scholarship Services

Some DSSs, although not many, received positive feedback from research participants in terms of service attitude and costs to use DSSs.

Specifically, the staff were very supportive and had a good attitude when providing services, as commented by a lecturer: “The staff of the Department of Research Affairs [are] very enthusiastic in advising and guiding the application for research funding”; one of the students also said that: “The librarians are very supportive in searching for articles in the databases.” At the same time, “Currently the services are completely free,” as shared by a postgraduate student, was also considered a plus point for DSSs at member universities.

In addition to the positive responses, the results of the data analysis reveal the limitations of the DSSs currently being provided. The responses largely concentrated on providing information resources and digital tools. This could be attributed to the fact that these were the most common services offered by all member universities, as described in Subsection 6.1.1.

Among the existing DSSs, the provision of information resources was considered one of the basic services provided by all member universities. It therefore received lots of feedback on quality improvement. Research participants indicated that the provision of information resources did not meet the needs of users. Access to full-text databases was very limited, as a lecturer commented: “During my research I used some databases of both libraries, but most of the databases only provide access to abstracts of articles rather than the full text.” In addition, information resources were not fully updated to help researchers have appropriate sources for research purposes, especially in the fields of natural sciences and engineering. One of the lecturers said that “VNU-HCM’s digital information resources are not up-to-date [...] my university’s researchers cannot access the latest articles in our research area.” The lack of digital resources was also mentioned by one of the lecturers: “Libraries mainly provide printed materials instead of electronic documents which are essential for digital teaching activities.” Although institutional repositories are considered popular at universities around the world, VNU-HCM’s member universities have not paid much attention to building their own institutional repository to take advantage of their academic community’s own publication. A library manager said that “The university has not collected and distributed scientific publications authored by lecturers.” The search system was also not convenient and easy to use according to the following statement of a postgraduate student: “In the past, I searched for documents through the Central Library’s search system, but I found that this was too complicated, so I then only use the materials in my university library.”

As for the provision of digital tools, although there were certain supports in terms of digital tools and methods in teaching and learning, it is said that the university had not yet responded to the demand for use in practice. Online learning systems were considered unstable, as one of the university managers commented: “Although online teaching is encouraged, it is not based on a stable platform.” In addition, the tools to support learning and research activities had not yet met the actual needs, as said by one of the postgraduate students: “The university provides us with experimental servers that I can remotely control to work. However, this server does not meet the requirements of the research topic, so we have to rent the machine ourselves from outside services.”

6.2. Resources for Implementation of Digital Scholarship Services

Research results show that despite efforts to improve resources in recent years, in general member universities still face many challenges in terms of resources to implement DSSs.

6.2.1. Space

The space mentioned by research participants was mainly group study rooms for learners and research rooms for lecturers. These spaces had been improved to support academic activities as confirmed in the following statement by a postgraduate student: “The library has research rooms. The library has been repaired recently, so the space for academic activities is much better.”

Although the physical spaces had been greatly improved, the study participants still believed that the necessary facilities for academic activities were not provided satisfactorily. Taking self-study rooms as an example, one of the students said that:

The number of rooms for self-study is quite small while there are a large number of students in my university [...] Self-study rooms are only equipped with desks and chairs. They don't even have an electric socket for students to plug in their laptops in case the batteries run out.

At the same time, the space for researchers was still quite limited, as said by one of the lecturers: “An associate professor even does not have his own workplace.” Besides this, the lack of development of digital spaces could also be seen as a barrier to DSSs, as indicated by a postgraduate student: “In terms of digital space, it is quite limited, almost nothing.”

6.2.2. Technology Infrastructure

Similar to the space matter, member universities' technology infrastructure had improved dramatically over the past few years, as confirmed by one of the lecturers: “My university's technology infrastructure has been upgraded [...] Five years ago the technology infrastructure had many limitations, but the system has been much improved in recent years.”

Although there was an improvement in technology infrastructure, research participants showed that member universities needed to pay more attention to this issue in order to implement DSSs effectively. Technology infrastructure was said to be old and unsustainable, as con-

firmed by one of the library managers: “The technology infrastructure has not been built as in some way sustainable. It is old and often damaged. As a result, it is difficult to implement new services.”

In addition, one of the university managers said that the investment in technology infrastructure was fragmented and not comprehensive: “The development of DSSs requires the synchronization of both technology infrastructure and data. However, this has not happened in practice in member universities.”

Website and Internet access were the issues that were mentioned most frequently by the study participants. The lack of stability of the website system might affect the provision of services. This was reflected in the following comment of a lecturer: “My university's website is often down. The current information technology system of my university does not ensure the effective implementation of DSSs to the academic community at large.” Furthermore, the slow Internet connection speed had caused great difficulties for academic activities. One of the students said that “The Internet connection speed is very slow. We have to buy a 4G Internet package ourselves to access the Internet.”

6.2.3. Finance

Several financial aspects were also mentioned to show the impact of this resource on the delivery of DSSs. First, libraries had limited funding support to develop information resources, as said by a lecturer: “The library responded to me that there were many databases that we could not access the full-text articles due to insufficient funds.” Second, financial support to purchase digital tools for teaching and research had also not met the demand. One of the library managers said that “The limited funding means that we do not dare to invest more in digital tools.”

6.2.4. Human Resources

As mentioned in the research context, VNU-HCM in general and its member universities in particular have a large number of staff. This can be seen as an advantage when implementing DSSs. However, the research results show that there are still many concerns around the service delivery capacity of this workforce. Specifically, there was an opinion that staff knowledge and skills to support research were limited, as shared by a lecturer: “Current human resources can only support the general administrative tasks of the university, but they do not have the capacity to support the lecturers in the process of conducting research.” Not only that, delays in implementing

DSSs could result from the limited capacity of librarians. According to a library manager, “The library is still weak in providing DSSs because of limitations in the capacity of librarians.”

6.2.5. Stakeholders

The research results indicate two issues that need to be resolved related to stakeholders when implementing DSSs at VNU-HCM in general and member universities in particular: cooperation and awareness.

As described in Subsection 6.1.2, the current provision of DSSs originated from the Department of Research Affairs, Department of Postgraduate Affairs, Department of Information Technology, libraries, research centers, faculties, and lecturers. Available evidence shows that the stakeholders did not have a systematic coordination in building and providing DSSs. One of the library managers said that

During the past few years, the library has always tried to connect the university and the Central Library because there was a lack of collaboration between the two sides. [...] There is also a lack of collaboration between units within the university in delivering such services.

At the same time, not all stakeholders were aware of the importance of digital scholarship to implement DSSs, as indicated by a university manager:

The problem of underdevelopment of DSSs may arise from receiving low awareness of the importance of this activity by middle-level managers. They may think that doing research is only an additional responsibility, so they do not promote the implementation of DSSs.

6.3. Digital Scholarship Services Governance

6.3.1. Service Development Policy

Research results show that the universities also had ideas surrounding the development of digital scholarship and supporting services to meet the requirements of the transformation in teaching, learning, and research. This was confirmed by some university managers: “Ten years ago, my university also had discussions related to digital scholarship development, but it has not been well implemented,” and “In previous years, the issue of digital scholarship development has been discussed, but many things are needed to implement it.”

VNU-HCM in general and member universities did

not have a clear strategy for how to develop digital scholarship. This might lead to paying insufficient attention to the policy of developing DSSs, or a lack of investment in resources to support the development of DSSs, as well as a lack of systematicity in the implementation of DSSs. One of the university managers said that

Developing digital scholarship requires having a clear strategy. That is the basis for developing supportive policies as well as carefully analyzing related issues such as funding, infrastructure, etc. And these should have been done 10 years ago.

The library managers also reinforced this point of view when they said that

From 2010 up to now, each library has used a different software [...] despite having money, the criteria for purchasing software have not been properly determined from the early stages [...] There are half-done and abandoned projects.

And

Library software cannot handle the simultaneous access of many users [...] Digital transformation has problems when we cannot predict future needs.

6.3.2. Service Governance Model

Research results show that existing DSSs were mainly implemented and managed at the member university level. One of the university managers said that “Because there is no common policy on the management of academic activities of VNU-HCM, member universities manage their digital scholarship support activities based on their own conditions.”

At the member university level, DSSs were mainly provided by a few units, as described in Subsection 6.1.2. At the same time, these services were managed separately by those units instead of being systematically implemented under a common service management policy at each member university. This was reflected in the following opinions of library managers:

If the library finds that there is any academic activity that needs our support, we will plan and implement it ourselves. Currently, there are no common service management policies for all departments in my university.

And

My university provides a lot of support for digital scholarship activities but we have not yet established a service system. If units realize that they can do something, they just implement it themselves.

7. DISCUSSION

Although VNU-HCM has been making efforts to achieve the goal of digital transformation, this study found that there were still limitations in digital scholarship supporting activities. Although VNU-HCM is a system of several member universities and affiliated institutes, centers, and units, DSSs were delivered separately at member universities instead of being implemented systematically under cooperation between member universities. In each university, there is even a lack of linkage between supporting digital scholarship units. This situation has posed a requirement to promote cooperation at both levels: within each member university and among member universities. The cooperation helps to effectively utilize the resources available in the system as well as ensure fairness and convenience in accessing the DSSs of the academic community of VNU-HCM. In addition, the role of the managers of VNU-HCM in orienting, coordinating, and managing the DSS system is essential to promote collaboration and resource sharing among member universities. Systematic and interconnected development of DSSs is also needed to reduce the pressure on lecturers because the research showed that lecturers sometimes had to provide support for learners' digital scholarship activities. Although learners often build their own networks for learning with the support of stakeholders, including lecturers (McNicol, 2003), the personalization of academic support that should be provided by the institution, for example the provision of learning materials, can create pressure on lecturers and may not guarantee the quality of such support.

Although the existing DSSs had not been implemented systematically, the presence of a number of DSSs at member universities could be seen as a positive signal of transformation in supporting academic activities. No new DSS groups emerged beyond the five DSS groups presented in the theoretical framework. Existing DSSs are the basis for the development of a future DSS system. This research reinforces the results of previous studies conducted by Li et al. (2020), Gbaje et al. (2020), and Ocran and Afful-Arthur (2021) to provide a comprehensive picture on the practice of providing DSSs at higher education institu-

tions. To ensure that DSSs maximize their functions for academic activities, the existing DSS system needs to be complemented with the addition of specific services under the five groups of services identified, typically digital data management services. At the same time, service quality also needs to be improved because some of the most popular services, such as providing information resources and digital tools, had not yet met the needs of users. In addition, an investigation of user needs should be carried out to ensure the provision of an appropriate DSS system (Lippincott, 2017).

Being one of the two key national universities in Vietnam, VNU-HCM has received a great deal of attention and support from the government to improve the facilities of member universities in recent years. However, the results of this study showed that the existing resources, including space, technology infrastructure, finance, human resources, and stakeholders, still did not meet the requirements to effectively implement DSSs at both the system and the member university level. There were no resource-related constraints other than the five factors mentioned above. The results of this study are consistent with those reported in some previous studies, such as Clay (2016), Lippincott (2017), and Koga (2018), showing that resource-related challenges are common problems for many universities in the world, not only VNU-HCM. In the process of implementing DSSs, VNU-HCM needs to consider these factors to ensure the success of the service system. The improvement and development of these resources is a big challenge for VNU-HCM in the context that member universities have entered the stage of autonomy. Therefore, the collaboration and systematic management in the implementation of DSSs is once again raised to contribute to reducing the pressure on the resources of member universities as well as for ensuring the sustainability of the DSS system (Clay, 2016). In addition, improving the capacity of human resources for DSSs is necessary to interact effectively with the academic community, in particular the capacity to implement a service and the understanding of research activities (Clay, 2016). There is a need to implement various training programs and continuing education for existing staff to build capacity for digital scholarship support, especially librarians (Gbaje et al., 2020). It is also necessary to focus on raising stakeholder awareness of the importance of digital scholarship, supporting services, and collaboration as this can create motivation in digital scholarship activities (Lippincott, 2017; Tzoc, 2016).

The development of a DSS system should be done with

an appropriate policy and governance model. The results of this study showed that VNU-HCM in general and its member universities in particular did not have a clear digital scholarship support policy. This might be one of the reasons for the lack of completeness in the DSS system as well as the limitations in the resources required to implement DSSs. Therefore, the development of a strategic plan along with policies to support digital scholarship is necessary to ensure the sustainability of the DSS system. Since VNU-HCM is a system of several members, it is suggested to consider the use of a network model in the managing of DSSs because this model encourages cooperation among stakeholders at different levels (Maron & Pickle, 2014). With this model, VNU-HCM can provide DSSs based on building a key center in the role of general coordinator (larger scale, possibly the Central Library), and satellite centers (smaller scale, belonging to member universities). The suitability of the network model needs to be further corroborated by later research stages to complete the DSS framework for VNU-HCM.

8. CONCLUSION

The study provides an understanding of the practice of providing DSSs at VNU-HCM from the perspective of multiple stakeholders, including university managers, library managers, lecturers, and learners. Research results showed that there were digital scholarship support activities implemented at member universities of VNU-HCM. However, these supports were limited in terms of both quantity and quality. The development of DSSs at VNU-HCM faced many challenges that could be encountered across educational institutions around the world, such as the lack of necessary resources. However, issues related to collaboration, service development policy, and the service governance model are considered noticeable issues at VNU-HCM. These issues need to be addressed to promote the development of effective DSSs for VNU-HCM to meet the requirements of digital transformation in higher education.

The development conditions and governance model of VNU-HCM are different from many other universities in Vietnam because it is one of the two key national universities in this country, meaning that the results can only be generalized with caution. However, the research results partly reflect the general situation of digital scholarship support at Vietnamese universities because they are all placed in the same context of digital transformation and autonomy in higher education. It is suggested that an

extensive study with multiple universities in Vietnam is needed to provide a more complete picture of the practice of DSSs in the country. The findings and issues drawn from this study are not only useful references for universities in Vietnam but also for higher education institutions in other developing countries.

The study used a relatively small sample size to fit within available resources. Conducting further interviews with a larger sample, especially with lecturers and post-graduate and undergraduate students, could reflect more deeply on the practice of providing DSSs at VNU-HCM. This should be addressed in future studies.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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APPENDIX. Interview protocol

Focus of interview	Participants	Questions
Existing DSSs	University managers/library managers	How does the university/library support digital teaching/learning/research activities?
	Lecturers	How are you supported in digital teaching activities/conducting digital research?
	Students	How are you supported in digital learning activities/conducting digital research?
Resources required to implement DSSs	University managers/library managers	What resources are needed to implement DSSs? How would you evaluate the current state of those resources at your university/library?
	Lecturers	
	Students	
Service governance	University managers/library managers	How does the university/library manage DSSs? How would you evaluate the management of DSSs at your university/library?
	Lecturers	How would you evaluate the management of DSSs at your university/library?
	Students	
Other	All	Is there anything else you would like to share about DSSs not already covered here?

DSS, digital scholarship service.