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Doctoral Dissertation

Resource Integration for Value Co-creation in
Archival Service Ecosystem

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Abstract

Archives are unpublished original documents relating to past important historical, cultural, and administrative evidence that have particular message to future generation. As a primary source of documents archives bear functional, social, emotional and epistemic value for education and research. But it is observed that archival resources cannot contribute to the education and research as expected. This is because 1) archive centers have little scope of collaboration with other centers for sharing service knowledge; 2) most of the centers do not evaluate users' feedback and demand on archives for initiating new service or improving existing services; and 3) archives centers are usually do not have advisory committee to suggest/coordinate archive related services. As a result, though archival content bears significant value of its own, they cannot create much users' impact in specific context of knowledge creation. In general, archival science and archive related studies discuss about the preservation and management issues of archival content but could not address how to create more users' impact during service encounter. Archive centers need to adopt services based on users' demand for enhancing archival value.

In Service-Dominant logic (S-D Logic) value can be co-created when service providers and service recipients actively involve and apply their skill and knowledge in the co-creation activity for the benefit of each other. In service ecosystem, actors and their respective resources are linked together through value propositions in a network of relationships. Service ecosystem approach helps to elaborate the relationship between the development of value propositions and the co-creation of values. Actors within a service

ecosystem are attracted to share their knowledge and skills, responding to value propositions that offer potential benefits. For effective archive management system, and to meet ever changing demands on archives as well as to deal with the information seeking and using behavior of archive users, archive centers need to redesign service frequently. In this case, archives centers need to create mutual relationship with other center for knowledge sharing and exchanging competency. Besides, the value co-creation concept help archive center to build sustainable services. Archives center need to involve stakeholders for managing archival content and involve users for design services appropriate for users. Hence, archive service needs to redesign services from Value Co-creation (VCC) and service ecosystem point of view.

Considering the above issues, the main objective of the research is to develop an integrated archive management framework for increasing archival value. The specific objectives include to 1) review different management strategies used in archive services; 2) identify the factors of value co-creation in existing archive management framework; and 3) develop an integrated archive management framework incorporating value co-creation strategy.

To attain the above objectives, this study identifies the key mechanism of co-creating values in archives through answering one Major Research Question (MRQ): How to develop an integrated archive management framework for promoting archival value? and three Subsidiary Research Questions (SRQs) as- SRQ1*: What are the strategy of existing archive management and services?; SRQ2*: What are the factors involve in value co-creation in archives? and SRQ3*: How to integrate resources from different actors in archival value co-creation?

To find out the answer to the above questions first of all the research reviewed literature on major issues of archive management practice throughout the world. During literature review special focus were given to archive digitization, digital preservation, web-based services in archives, user involvement in archive services, service ecosystem, value co-creation in archives, etc. Secondly, the research conducted case study on two national level archive management practice in Bangladesh and Japan for determining value co-creation and resource integration activities in archive services. Thirdly, the research collected primary data from local archive centers of Japan using structural questionnaire for validating conceptual framework on value co-creation activities in archive services. Besides, in order to get center specific data, a total of 92 questionnaires had been distributed to the person in-charge/planning manager/manager/director of the center, and 68 (75.56%) responses were collected for analysis. Among the respondents 44.12% are prefecture archive centers, 32.35% are municipal archive centers and 11.76% are city and academic archive centers each. Resource integration and value co-creation activities of local archive centers in Japan have been measured with 21 structural questions and 02 open-end question divided into four sub-categories. A total of 128 items were analyzed using 9 Likert type questions (5-point Likert), 11 check box question and two open-end questions. The collected data were analyzed by frequency count and percentage methods. Besides, descriptive analysis methods were followed using SPSS (version 17.0). In addition, SmartPLS 3.2.8 were used for analyzing Structural Equation Modeling (SEM).

Result shows that archive management practice witnesses many changes during several decades. Initially, archival resources were confined to specific place for preservation. People could hardly access and use archival contents for research and

development purposes. In addition, improper handling and physical degradation was main threat for archival resources. To come up such physical threat and to ensure usability, durability and intellectual integrity, archive enters throughout the world moved to digitization process. Later on, with the development of Web 2.0, archive management system throughout the world incorporated interactive communication tool archives 2.0 in archives services. In addition, adoption of different social media tools helps archive centers to deliver archive service to individual doorstep. Social media tools also enable archives centers and users to co-create values through discussion and feedback, following, commenting, sharing and so on. But most of the local archives centers in Japan do not have web-based services. Besides, majority (53%) of local archive centers in Japan do not have advisory committee for administration and initiating new services based on users' demand; 74% centers do not maintain any collaboration with other centers; along with limited use of users' feedback in designing new services or developing quality of existing services.

The study identified that archive services is associated with three actors: archive center staff, stakeholders, and archive users. In general, stakeholders and archive users include different category of people like researchers, academic experts, historians, IT experts, politicians, government officials, local representatives, etc. Each of the actors have different level of skills and knowledge (operant resources). Integration of resources from those expert professionals could jointly increase archival value. But for exchanging ideas, there needs a co-creation platform. Though the platform may be physical or web-based, web-based space is more appropriate to communicate and deliver services to distance users. In this case several components reflect the success of archival value co-

creation. Archival value co-creation components include stakeholders' involvement, motivation of staff of archive centers, co-creation platform, participation of users in knowledge sharing, and organizational creativity and effectiveness. Each of components of archival value co-creation have different essence which act upon another component for value co-creation. Considering the two-tire relationship, the research formulated six hypotheses relating the archival value co-creation. The hypotheses were tested with the primary data collected from local archive centers in Japan and found that out of six hypotheses, five were supported.

This research identified that there are several separated but vital entities linked together for uplifting archival value. In other words, archive service ecosystem requires direct or indirect relationship among different actors. From the literature review and finding from data analysis, the study identified eight essences that works behind archive service ecosystem as - Essence 1: Stakeholders improve quality of archive services through considering the future direction of archive center; Essence 2: Staffs have attention to potential changes regarding users' expectation as well as have positive attitudes toward the changes; Essence 3: Social media platform promotes easy access to archival content for users; Essence 4: Social media platform improves recognition of archive center; Essence 5: Social media reduces communication gap between archive center and users; Essence 6: Users provide feedbacks on services which help archive administrator to develop new service ideas; Essence 7: Staffs' positive attitude in adopting new services is the basis of functioning archive management ecosystem; and Essence 8: Organization cultivates creative climate by appreciating new ideas and

services as well as providing technological supports. Considering the essence, the study proposed an archival value proposition framework including implementation guidelines.

This research address different issues of interaction between users and archives center to know each other service system and develop mutual understanding for designing better services. Stakeholders involvement in archive management addressed in this research provides new opportunity for archive centers in sharing risk and getting direction from other concerned except archive management staff. The research also addressed technological issues for connecting archives centers and users for value co-creation. By implementation of the proposed value co-creation model provided in this research, both archive centers and users can create better understanding and emotional connection for archival education, entertainment, and participation.

By implementing the proposed framework users can have easy and wider access to archival content which will increase archival value-in-use. Archive center will be able to generate new service idea from users, and implementation guideline from stakeholders. As a result, archive center can improve their management process as well as build trust to both users and stakeholders. Effective preservation and management are the main concern of stakeholder. Through value co-creation dialogue with archive center, stakeholders can be benefitted by effective management of archival content.

Keywords: Archive management, Digital archives, Value co-creation in archives, Archives service ecosystem, Stakeholder involvement in archives.

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Chapter 1:
Introduction

1.1 Introduction

Archives are unpublished original documents relating to past important historical, cultural, and administrative evidence that have particular message to future generation. As a primary source of documents archives carry on functional, social, emotional and epistemic value for education and knowledge creation. Besides, archives also preserve cultural heritage and historical evidence of nations, regions, organizations, communities, and individual which are regarded as original source of information for historical research. For ensuring safety and security of such valuable documents, almost all the countries of the world established national as well as regional archives centers. In Bangladesh, the National Archives of Bangladesh (NAB) was emerged in 1973 to preserve and manage archival resources available in Bangladesh. In Japan, the National Archives of Japan (NAJ) was established in 1971 for safeguarding public records and archives as well as providing access to them for public use. Traditionally, archive centers are supposed to collect, preserve and provide users services to archives. But while providing users services, archives centers faces two difficulties: 1) security issue which relates to the confidentiality of records in terms of national security and sovereignty, and 2) fear of loss of archival value - being very old and fragile document public access and inappropriate handle may deteriorate the physical form of archival content (value destruction). On the basis of these situation, archives centers do not afford to play

anticipated role in delivering archival knowledge to users. As a result, though archival content bears significant value of its own, they cannot create much users' impact in specific context of knowledge creation. In general, archival science and archives related traditional studies discuss about the preservation and management issues of archival content but could not address how to create more user impact overcoming the above barriers. Accordingly, to overcome the above challenges and to create greater users' impact on archival content, archival centers need to re-design archival services based on service science and service ecosystem point of view.

Service science describe different issues to handle complex systems for value co-creation among different service entities. Spohrer et al. (2007) stated that service science is the center of value co-creation in service system with dynamic integrations of people, organizations and technology to create benefit for each other. In service ecosystem approach, value co-creation is a dynamic integration of resources of inter-related systems of service-for-service exchange. Frow et al. (2016) stated that service ecosystem bounds actors and their resources with direct and indirect resource sharing activities influencing its well-being. Besides, in service dominant (S-D) logic perspective value is jointly co-create with interaction and exchange of knowledge and skills of different entities (Vargo & Lusch, 2008). Application of value co-creation concept used in service science can overcome present challenges of archives as well as increase potentiality in archive services.

Considering the importance of archival services and its present obstacles, archival center needs to redesign services integrating different entities of archives management and services. Accordingly, this research focus on archive management issues from service science and service ecosystem point of view.

1.2 Statement of Problem

Dansereau (2018) stated that archival institutions are currently being challenged on issues related to archival literacy in the digital world. With this issue providing transparent access to archive content is much important. Nowadays archive users want resources as per their own interests and needs. Hence, archive centers are required to deliver archival content to as many users as possible maintaining the authenticity and security of resources. To meet such changing information, need of users, archive centers are supposed to integrated web-based services where users not only use archival resources but also provide feedback on resources and services. Accordingly, both NAJ and NAB initiated web-based service with digitization of selected content and providing web-based access. However, the archive management services of local archive centers other than NAJ and NAB is not up to the mark. Inappropriate management framework and less involvement of users who are supposed to use them also not satisfactory level. In this situation, this research undertakes following problem into account.

Major Research Problem

Archive centers do not have integrated framework for value co-creation in archive services.

Other problem includes-

1) archive centers have limited scope of collaboration with other centers for sharing service knowledge;

2) most of the centers do not evaluate users' feedback and demand in archives for improving service; and

3) archives centers usually do not have advisory committee to coordinate archive related services.

1.3 Research Objectives and Research Questions

Based on the background and research problem, the main objective of the research is to develop an integrated archive management framework for increasing archival values. The sub-objectives include to:

1) review different management strategy used in archives services;

2) identify the factors of value co-creation in existing archive management framework; and

3) develop an integrated archive management framework incorporating value co-creation strategy.

To attain the above objectives, this research identifies the key mechanism of co-creating values in archives through answering one Major Research Questions (MRQ) and three Subsidiary Research Questions (SRQs) as below:

Major Research Questions (MRQ)

MRQ: How to develop an integrated archive management framework for promoting archival value?

Subsidiary Research Questions (SRQs)

SRQ1*:* What are the strategies of existing archive management and service?

SRQ2*:* What are the factors involve in value co-creation in archives; and

SRQ3*:* How to integrate resources from different actors in archival value co-creation?

1.4 Significance of the study

Archives help society and social system to decide different roles that enable civilized communities to explore root, enable education and research, provide entertainment and leisure, protect human rights and confirm identity. But archival resources are unique, contemporaneous in historical issues which cannot be replaced in case of loss or permanent damage. Accordingly, archivists play vital role for the benefit of humanity by proper identification, care and providing access to archives. Archival center needs to create responsive and convenient service to remain sustainable in the changing environment. They need to jointly work with users for co-creating value as well as delivering maximum values to users.

The concept of value co-creation has been emerged in service science discipline and getting attention to academics and practitioners as a predominant research concept in the past twenty years. In general, value co-creation is considered as a form of marketing strategy where value is formed with mutual understanding between firms and customers. In service organization, value is co-created with the joint endeavor of service provider and recipients in a service system. Archival contents have their own value. But the value depends on how effectively, and efficiently those resources are treated. To generate more values on archival resources, archivists are supposed to adopt user focused services. Value co-creation concept help archivists to co-create values in this regard. Value creation of archives includes the activities associated with managing and transforming archival materials to any other suitable usable media maintaining the original physical form and quality (Rahman, Ahmed, & Shirahada, 2017). Archivists

need to co-create values with the joint endeavor of users and stakeholders. Accordingly, value co-creation in archival resources includes joint endeavor among the stakeholders, users and archival centers. In archival value co-creation process, user could co-create value by providing information on required services and how archive centers could improve its service offerings for users. In addition, user could co-create value collectively by interacting with other users who uses this service at the same time. Stakeholder can create value by proper monitoring and guideline to archival services.

The existing literature on archives studies emphasized on different issues of archival preservation and management. But as far the researcher aware, no study has been conducted on archive management from service ecosystem point of view. Therefore, the present research can serve as a pioneer of archive management in service ecosystem point of view.

1.5 Operational Definition of the Study

Archives

Archives are unpublished and unique historically important public and private records, government documents, rare books, manuscripts, letters, diaries, maps, paintings, photographs, newspapers, government yearly reports etc. of past days which have been selected for permanent preservation ("Friends of Archives, Bangladesh | Creating awareness about Record management," n.d.). According to the International Council on Archives (ICA) ("What are archive? | International Council on Archives," n.d.) the basic characteristics of archival documents include: *Authenticity* – claim to be original, *Reliability* – accurately presenting the event, *Integrity* – the content is sufficient to give a coherent picture, and *Usability* – the archives must be in an accessible location and usable condition.

Archives may be different types depending on nature of content, sources of origin, and governance procedure. Society of American Archivists (n.d.) categorized archives as college and university archives, corporate archives, government archives, museums, religious archives, and special collections. At the same time Dutch genealogist classifies archives as national archives, provincial archives, regional archives, and municipal archives. Besides, there are other types of archives which includes: thematic archives, autonomous org/institutional archives, non-government/private archives, and personal or private collections.

Archives value

Society of American Archivists (1997) asserted that the value of archival content is measured considering its usefulness or significance of records, based on the administrative, legal, fiscal, evidential, or historical information they contain. Though archival documents bear different types of value, some common archival value are as below:

Functional value

Functional value indicates the perceived utility of archival content. Archival content is primarily selected considering its functional value contained herein. The functional value of archives includes physical, aesthetical, scenic, educational, or any other value that bears the document.

Social value of archives

Archives hold evidence of social memory, power and accountability, justice, conformity for the benefits of future generation. These types of evidence positively or negatively associate with demographic, socio-economic and cultural- ethnic group. By providing evidence, archive can promote accountability, diversity and social justice.

Emotional value

Emotional value is a set of positive or negative feeling or affective states towards any objects. Archives illustrate many historical past success events. Whenever users see such success stories of their past ancestors, there arose precipitating or perpetuating feeling. This type of archival value is known as emotional value of archives.

Indigenous value

Indigenous value is a set of perceptions, information, relationships, rituals and practices that is unique to a given culture or society. Archival records codify such information and serve as source of knowledge about understanding past and present. Archival document uncovers indigenous history or culture for research and learning.

Epistemic value

Epistemic value relates to curiosity, novelty, and knowledge. Archival content can arouse curiosity of learning new knowledge or exploring new insights in the existing beliefs. Archival content lead users to know what the truth is, how it is known, and what is the difference between concurrent believe and real fact.

Ethnographic value of archives

Ethnographic study is an approach of understanding people and cultures in certain environment. Archival documents present historian and anthropologist the real picture of the past events for more informed research. This type of archival value is known as ethnographic value of archives.

Intrinsic value

Intrinsic value of archives refers to state of qualities and characteristics of archival content. The intrinsic value of archival content is judged by either physical or intellectual values (National Archives and Records Administration, 1999). The physical intrinsic indicates the physical base of records, whereas the intellectual intrinsic indicates the information is recorded on the document. Archival documents are preserved based on their intrinsic value. However, the concept of intrinsic value may vary from archivist to archivist and from one generation of archivists to another.

Social media

Social media are interactive computer-mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011). Social Media allow users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community.

Value co-creation in archives

Value co-creation (VCC) is a process of creating value jointly by service providers and customers through the integration of resources and applications of competencies (Vargo & Lusch, 2004). Value co-creation in archives is a process of involving users in archive management for tapping creative thinking of potential user in order to get consistent ideas, service concept and improving service quality.

Scope of VCC in archives

- creating user-centric services for archive users,

- designing user-centric web-interface,

- adopting new distribution methods in archival content delivery,

- implementing new application technology for service process,

- integrating new service for users' experience and satisfaction, and

- continuously working to make the archival content more useful for users.

Stakeholders engagement in archives

Stakeholders engagement is a process of engaging relevant people for a clear purpose to achieve accepted outcome (AccountAbility, 2008) in an organizational process. The aim of stakeholders engagement is reducing constraints of operation, planning for future, minimizing risks and enhancing opportunities by better understanding of political, economic, social, technological and environmental context (Jeffery, 2009).

In case of archival issue, stakeholders include researchers, nominated government officials, IT experts, historians, academic experts, archive experts, representative of local community, etc. In this study, involving these people in archive management decision making cycle is considered as stakeholders' involvement in archives.

Collaborative archive management system

Collaborative management is a sense of unity and teamwork among the group members or multiple groups. The aim of collaborative management is to identify strength and weakness of each member and share expertise to meet a common uplifting change. In archive management, different archive centers have different types of people with different competency. Some archive center has technologically competent staff but other do not have. Similarly, some center may have expertise in different fields and vice versa. In this case, archive centers can share their expertise to other centers to develop service quality. This type of expertise exchange framework is known as collaborative archive management.

1.6 Structure of the Study

The dissertation is structured in six chapters. Figure 1 illustrates the overall chapter structure and brief content of each chapter.

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┌──────────────────────────────────────────────────────────────┐
│                   Chapter 1: Introduction                      │
│  (Background, Research problem, Objective, Research questions,  │
│                        Significance)                           │
└──────────────────────────────────────────────────────────────┘
                              ↓
┌──────────────────────────────────────────────────────────────┐
│                Chapter 2: Review of Literatures                │
│  (Archive Management, Technology adoption in archives, value   │
│                       co-creation)                             │
└──────────────────────────────────────────────────────────────┘
                              ↓
┌──────────────────────────────────────────────────────────────┐
│               Chapter 3: Methodology of the Study              │
│  (Sample and data sources, Research site, Data collection      │
│                  methods, Data analysis)                       │
└──────────────────────────────────────────────────────────────┘
        ↙                                          ↘
┌────────────────────────────────┐  ┌────────────────────────────────┐
│ Chapter 4: Archive management   │  │ Chapter 5: Value co-creation    │
│ case analysis                   │  │ practice in archives (Service   │
│ (Archive management in Japan,   │  │ delivery system, Stakeholder    │
│ Archive Management in           │  │ engagement, User engagement,    │
│ Bangladesh)                     │  │ Test of hypothesis)             │
└────────────────────────────────┘  └────────────────────────────────┘
        ↘                                          ↙
┌──────────────────────────────────────────────────────────────┐
│                   Chapter 6: Conclusion                        │
│  (Research summary, Answer to the research questions, Research  │
│  Implications, Proposed model, Limitations, and Scope of       │
│               further research)                                │
└──────────────────────────────────────────────────────────────┘
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Figure 1: Structure of dissertation

Chapter 1 describes research background, research problem, research objectives and research questions, significance, operational definition and general idea of the dissertation.

Chapter 2 provides extensive review of literature. In this chapter the finding on literature review were grouped into archive management, technology adoption in archive services, value co-creation in archives, etc. At the end of the chapter, a summary of reviewed literature was presented.

Chapter 3 describes the methodology of the research. The content of this chapter includes sample and data sources, research site, data collection procedures, data analysis techniques and also summary of the chapter.

Chapter 4 describes case study on archive management practice. In this chapter, archive management practice of one developed country (Japan) and one developing country (Bangladesh) have been described and analyzed how contextual situation can influence on archive management system. At the end, a comparative analysis was made followed by hypothesis construction based on case analysis.

Chapter 5 describes value co-creation practice among the local archives' centers in Japan. In this chapter, focus was given to describe service delivery system, status of engaging stakeholders in archive management, engaging users in service design and other value co-creation elements. Besides, this chapter demonstrate results of hypothesis test followed by Structure Equation Modeling (SEM) among archival ecosystem constructs.

Finally, chapter 6 provides brief summary of the research, answer to the research questions, research implications including limitation and scope of future works.

Chapter 2:

Review of the literature and practical issues of value co-creation in archive management

2.1 Introduction

The purpose of this chapter is to address background issues relating to value co-creation in archives. Accordingly, the research reviewed literature on archives management practice in different countries, archives digitization, digital preservation, technology adaptation in archives management and services, users' integration in archives services, value co-creation concepts, etc. to determine the research context and identify the gap. The overall finding of the literature review was grouped into three major areas: archive management, web-based service integration, and value co-creation point of view. At the end, this chapter provides a summary for developing key concept in archival value co-creation.

2.2 Archive Management Viewpoint

Archivist around the world have been devoted themselves to safe gourd public/private records of all nations having research and reference value for generations. Archive centers receive records from different sources after certain years of their origin. Such records are usually found in vulnerable conditions, mostly unorganized and in poor physical state. In this case, the core responsibility of an archive center is to ensure the durability of the received records through physical treatment and effective management. However, in spite of all the efforts made by an archival center, archival resources are still in danger due to frequent handling by the users. So, direct access to archive have generally been restricted. But this restriction arise question of not making archives available to mass people. At present people in knowledge-based societies deserve the right to having access to any kind of information for research and development. To overcome the obstacles, archivists throughout the world implemented different technologies in archive management to make the knowledge more accessible to its users.

Archival management (AM) issues have been emphasized in different research and memorandum of archival organization. In general, Archive management is organizational function for managing archival content. The function of AM involved with identification, classification, storing, securing, retrieving, tracking and destroying or permanently preservation of records (ARMA International, 2001). AM is efficient and systematic process of archives center for managing archival records for permanent preservation. This process includes receiving records from different sources, process the records according to archival standards, physically house and protect and made available for public use (Cook, 1999).

The emergence of digital recording technology and digital media changed the way of archive management. From the data management perspective archive management involves with three activities: 1) identifying relevant infrastructural facilities for storing, processing and providing access to archive data ; (2) selecting efficient and effective access mechanism to access and use preserved data; and (3) determining the mechanism of retrieving missing data (Diamond, Bates, Clark, & Mairs, 2003). Now researchers mostly rely on online sources instead of visiting physical spaces or even the use of traditional documentary materials housed in the physical repository. Hence, archivist need to adopt the paradigm of archive digitization and provide service accordingly.

2.2.1 Archive Digitization

Archive digitization and the preservation of digital information has received considerable attention among the archivists and digital library professionals world-wide for the last few decades. However, in recent years much emphasis was given on digital archives preservation and management. Archival institutions and research centers throughout the world are actively planning and developing digital preservation strategy for protection and dissemination of archival resources. Librarians and archivists throughout the world instigated many digital preservation initiatives, projects and have formed various national schemes to enhance value of archival resources (Rahman & Mezbah-ul-Islam, 2012b). Archives digitization ensure enhanced access to cultural heritage and reliable approach of administering documents.

Archival resources require special caring while accessing and using them. But due to frequent use and inappropriate handling, archival resources very often face destruction. Kathpalia stated that large numbers of documents in developing countries are getting deteriorated due to climatic issues, internal degradation, disasters, improper handling, in appropriate storage management, use of untested materials-which have done more harm than good to documents (Kathpalia, 1984).

Archives digitization is a process by which archival records are transformed to digital form in order to ensure usability, durability and intellectual integrity of the information contained therein. Archives digitization process includes: checking condition of materials, mending the materials if necessary, making cataloguing information, scanning materials, quality inspection, and quality control after digitization (Yokaichiya, 2015). In this case, digital technology is used for producing, distributing and storing information. Digitization offers many apparent benefits for preservation process. Digital files are suitable for enhancing access and usability, and for reducing handling of original materials (Asogwa, 2011).

However, the objectives of archive digitization can be summarized as under:

1. Digitization helps in promoting and marketing of resources worldwide and also helps the readers to see the original material.

2. Helps to search automatically and swiftly and also, they are more quickly and efficiently accessible and also furthers e-learning opportunities.

3. Ensure maximum utilization of resources for the sake of society, democracy, education, advancement of science and technology.

4. Ensure preservation of rare and fragile objects without denying access to those who wish to use them.

However, sustainability of archives digitization is a major concern among the archivist throughout the world. In this case, Library of Congress provided a guideline of seven factors relating to archive digitization sustainability issue. Table 1 describes archive digitization sustainability issue.

Table 1: Sustainability factors of archive digitization

Disclosure	There should be complete specifications of digital content including validation process and accessibility option.
Adoption	Should have multiple format suitable for primary creators, disseminators, or users of information resources.
Transparency	The digital representation is open to direct analysis with basic tools, including human readability.
Self-Documentation	The metadata is descriptive of the digital object.
External Dependencies	Which format depends on particular hardware, operating system or software for rendering or use and the predicted complexity in future technical environments.
Impact of patents	Patents inhibit the ability of archival institutions to sustain content in that format.
Technical Protection Mechanisms	Degree to which content may be replicated on new media, migrated and normalized in the face of changing technology and disseminate it to users at a resolution consistent with network bandwidth constraints.

Note: Based on (Congress, 2007)

2.2.2 Digital Preservation

Digital preservation is associated with storage and the safeguarding digital resources. Preservation is a vital part of any digital collection. Digital preservation refers to preservation of materials that are created originally in digital form and never existed in print of analog form (born-digital) as well as those converted from legacy documents and artifacts (printed documents, pictures photographs or physical objects) into image using scanners, digital cameras or other imaging technologies for access and preservation purposes (Arora, 2006).

Sharma (2011) defines digital preservation as a set of processes and activities that ensure continues access to information and all kinds of records existing in digital formats. Digital preservation combines policies, strategies and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. Singh & Kuriya (2011) stated that digital preservation combines policies, strategies and actions to ensure the accurate rendering of authenticated content over time, regardless of the challenges of media failure and technological change.

From the above study it is clear that the archive digitization and digital preservation is a mechanism to transfer, display, retrieve and use of digital collections with the help of technological apparatus. Digital preservation is concerned with ensuring that records which are created electronically will remain available, usable and authentic even hundreds of years later. During preservation, questions of record context, content, structure, appearance and behavior must also be taken into account. Most commonly used digital storage media are CD ROM disc, DVD, Magnetic tapes. Besides, the hard disc in a computer also can be taken as an item of digital materials.

Digital preservation model

Digital preservation comprises complex workflows from extracting content from a repository, characterizing it, using the results to select one or more services to treat, transform, or encapsulate the content, and then either returning the result to the repository with a detailed record of treatment, or providing a capability that can be used in a delivery environment so that end-users can get appropriate access (Farquhar & Hockx-Yu, 2007). There are many methods of preservation and management. But Open Archival Information System Reference (OAIS) model is regarded as one of the most used and standard methods for digital preservation.

The OAIS model is a conceptual framework for a generic archival system which is committed to a dual role of preserving and providing access to information. It became an ISO standard in 2003 and has been widely adopted and used to inform the development of preservation tools and repositories (Lavoie, 2004). Information in this system is managed in different packages: Submission Information Packages (SIPs) at point of ingest, Archival Information Packages (AIPs) in the preservation store, and Dissemination Information Packages (DIPs) for access by users or another services system.
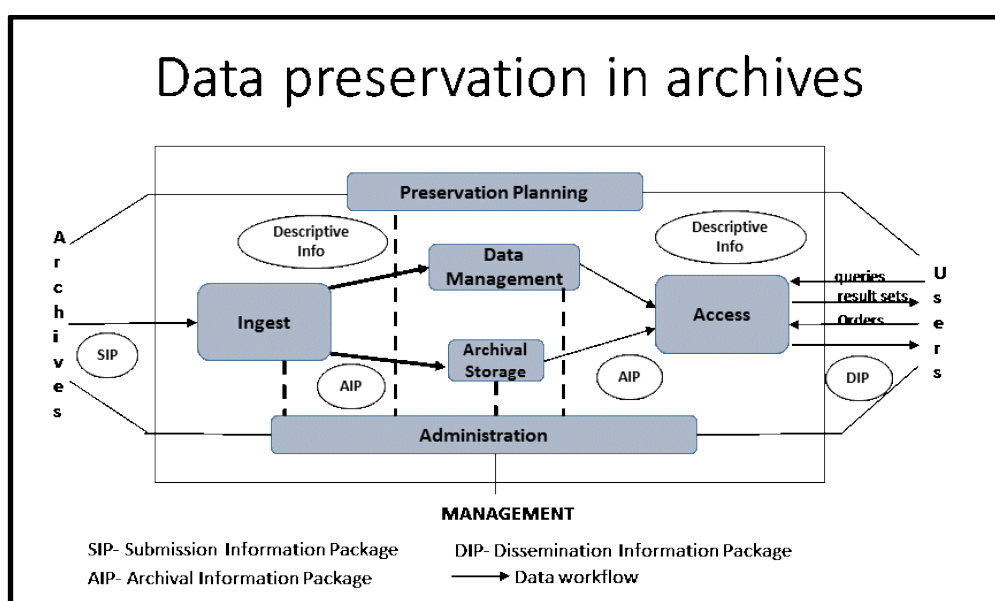
Figure 2: OAIS Reference Model for Digital Preservation

(Source: Reference Model for an Open Archival Information System (OAIS).

In the OAIS model illustrated in figure 2, *ingest* determine the metadata, the acceptable formats, means of transferring objects, and the quality checks that must be performed; *archival storage* manages the long-term storage and maintenance of digital materials including safeguard mechanisms, such as error checking procedures, media replacement, outcome of preservation processes, as well as disaster recovery policies to

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mitigate the effects of catastrophic events; *data management* stage provides the glue for the system by capturing and managing all of the metadata that is needed to operate the system; *preservation planning* is responsible for mapping out the preservation strategy, as well as recommending appropriate revisions to this strategy in response to evolving conditions in the OAIS environment. Its function represents the OAIS's safeguard against a constantly evolving user and technology environment. It detects changes impacting the OAIS's ability to meet its responsibilities, designs strategies for addressing these changes, and assists in the implementation of these strategies within the archival system. The access function manages the processes and services by which consumers and community – locate, request, and receive delivery of items residing in the OAIS's archival store. *Access* receive processing queries, forward the request to data management and present the response to the consumer; and coordinate the retrieval and delivery of requested content – by forwarding the request to *Archival Storage*, receiving the requested items, and performing any necessary transformations that must occur prior to delivery to the consumer. Finally, the *administration function* is responsible for managing the day-to-day operations of the OAIS, as well as coordinating the activities of the other five high-level OAIS services. The Administration function is also responsible for overseeing the operation of the archiving and access systems, monitoring system performance, and coordinating updates to the system as appropriate.

From the above literature, it is understood that archive digitization and digital preservation is an influential research topic among the information management scholar. In addition to above literature, Table 2 summarized important scholarly contribution on archive management.

Table 2: Study on digitization and digital preservation

Scholars and Year	Contribution to digitization and digital preservation
Bansode (2008)	Cost analysis in digitizing rare materials for initiating digitization project.
Soheili & Khalili (2008)	Designed digital archives desk through content analysis and opinion of library and information specialists
Bahmanabadi (2009)	Advantages and disadvantages of eArchives in scientific relations
Arora (2009)	Challenged involve in preserving fragile content for digital preservation
Schmidt & Colomb (2009)	Described about representing overlapping structures, based on different overlapping hierarchies, or versions of textual variation and modelled ordered list of pairs with fragment of text or data
Srivastava & dey Kanungo (2010)	Steps in digitization process including using Optical Character Recognition (OCR) tools for browsing and searching in digital content.
Lee (2010)	Describes different issues and policies of collaboration in cultural heritage preservation.
Abd Manaf & Ismail (2010)	Risk management of digital resources in Malaysia context.
Tzadok & Neudecker (2010)	Develop IMPACT (Improving Access to Text) tools to improve OCR results for historical printed texts
Conway (2010)	Impact of mass digitization on preservation and the mitigation factors for preservation leadership

2.2.3 Access management of archives

It is assumed that collection and preservation of archival content is the main function of archival centers. But only collection and preservation of archival content cannot create much user engagement in archive. Hence, providing access to archival resources is one of the main function of archive management. McClauseland(2007) stated that the ultimate goal of preserving archive is to providing access and facilitate user. Many previous studies emphasized on access issues of archival contents. Table 3 presents a brief outline on this issue.

Table 3: Study on access to archives

Scholars and Year	Excerption to archival access issues
Blais & Enns (1990)	National archive is supposed to make their products and services visible and accessible to all.
Duff & Fox (2006)	Required skills of archival staff for providing access to archival content.
Valge & Kibal (2007)	Access to public records is a fundamental human right. Archival institution should provide access to archival content which are related to public interest.
Loewen (2008)	National cultural heritage document should be wholly accessible to the advancement of the society.
Greene (2010)	Emphasized the importance of ensuring access and use of archival content.
Smart (2011)	Access to archival records can contribute to the country's social, economic and political decision and impact on public.
Mason (2014)	Archival institutions should engage in programmes and activities that will make known their collections to the public.
Thurston (2015)	Access to public archives give people an opportunity to exercise their rights while promoting accountability, transparency and good governance.
Grut & Press (2017)	Being a democratic institution archival center should take active stance towards accessing archives in order to facilitate learning and development for everyone.
Chaterera & Ngulube, (2019)	Archival institutions have a great responsibility to ensure that documentary heritage under their custody are visible and able to attract large visitor-ship.

2.3 Web-based Service Integration Viewpoint

2.3.1 Adoption of web 2.0

Archive services in the 21st century have been changed radically to keep pace with the changing users' expectations and way of information seeking behavior. Nowadays, archive centers are forces to adopt participatory and collaborative service using different web technologies. Lyons (2002) stated that the increased growth of digital technologies presents archivists with an opportunity to broaden and deepen their public service and community ties while reducing the wear and tear of the original documents. Now users expect digital content in virtual space where they can easily access and interact for their research and engagement (Daines & Nimer, 2009). Mason (2014) stated that the 21_{st} century hailed the age of social media and Web 2.0, characterized by user participation and collaboration in online spaces through digital technologies. Providing web-based access to archival resources is considered as important initiative for accelerating use and delivering value-in-context. Accordingly, social media have been widely used in libraries and museums in order to disseminate a variety of information to the wider public (Rogers, 2009; Whelan, 2011). However, the use of social media in the archival services is a relatively new (Milasenko, 2013). Bountouri & Giannakopoulos (2014) stated that the social media platform emerged in 2004 but the use of social media in archives started much later.

To meet up such users demand, archive centers reorganized their service pattern through integrating various web 2.0 tools like social tagging, book marking, commenting, wikis, RSS feeds, and reference services through instant messaging, etc. (Mason, 2014). Social media tool also provide incredible opportunities for exposure and engagement by

regularly updating contents, active forum discussions and interactions (Terras, 2011) . Adoption of social media in archives can promote the public image and the communication strategy of the archival services. Garaba (2012) stated that the use of social media among archival services and archivists is growing. Garaba also believes that it is easy for archival center and their staff to establish a social media presence. Hopman (2012) explored that the most widely used social media platforms used in archives centers are Facebook (83%) and Twitter (54%). Bountouri study also revealed that now 66% archives centers prefer to disseminate archival information and news regarding services through social media accounts and 44% centers promote information literacy of their users through social media.

Nowadays, archival institution throughout the world have been using social media tools for content delivery, promotion of archival content, improving public relations, enriching social networking. Archives centers consider social media as a 'community hubs' for strengthening relationships with the users' community as well as other organizations for better access of content, increasing visibility of collection, promoting reputation of the center and advocating for the value of the archives resources and services (Terras, 2011).

2.3.2 Archives 2.0

The concept of archives 2.0 drives from the similar phenomenon Web 2.0. The inter-operability of Web 2.0 was first coined in 2004 with the logic that users of web content are not merely a consumer but also creators of content. Web 2.0 allows user interactive communication with the service provider. Since archival institution also provides service

through website, archivist evangelized the web 2.0 concept to trigger their service. Theimer (2011) stated that archives 2.0 is an approach to archival practice that promotes openness and flexibility –to share collections, interact with users and improve internal efficiency. Implementation of Archives 2.0 provides multi-level connection among users and archivist, users and users, and users and archival resources (Ramsey-Tobienne, 2012).

Besides, interactive web technology especially Web 2.0 (user generated interactive and collaborative system) strongly recommended for value creation purposes. Considering the scope and function of Web 2.0, Theimer (2011) introduced archives 2.0 concept in archival practice that promotes openness and flexibility of archival resources. Archives 2.0 argues that archives must be user centred and embrace opportunity to use technology to share collections, interacts with users and improve internal efficiency. Theimer also pointed out that archives 2.0 should be:

- Open, not closed

- User centered, not record centered

- Facilitator, not gatekeeper

- Attracting new users, not relying on users to find them

- Shared standards, not localized practice

- Technology savvy, not technology phobic

- Value doing, not knowing

Many archival institutions of the world are using different social media technology for providing Archives 2.0 services. Some well used archives 2.0 tools used in different archive centers are described below.

Facebook

Though Facebook was founded in 2004, the first study on using Facebook in archives and special collections institution was reported through Nogueira study (Nogueira, 2010). Crymble (2010) study analysed the usages pattern of social media and found that 89% centers usages Facebook to post promotional activities. Chu & Du study identified that 62.9% of university libraries worldwide use Facebook and Twitter (Chu & Du, 2013).

Twitter

In 2008 Jewish Women's Archive introduced Twitter to promote content, raise questions and share success stories (Medina-Smith, 2011).

Flickr

Flickr is one of the most popular social media tools used to host, share, discuss and find digital images. The Smithsonian's Photographic Collection adopted Flickr to improve public awareness and access to their digital assets including engaging users in commenting, social tagging and other interaction. The project reported high engagement of users with greater number of interaction and accelerating 309% increase in daily views of content (Kalfatovic, Kapsalis, Spiess, Van Camp, & Edson, 2008).

Instagram

Instagram allow users to share photos and short videos. Archives and other cultural institutions usages Instagram for promoting collection and engaging more users in their archive services.

YouTube

YouTube is one of the most popular social media tools for hosting, viewing, and sharing audio-visual contents. Many archives centers create their documentary videos and upload to YouTube for greater public engagement. Library of Congress, Bringham Young

University Harold B. Lee Library, Iowa State University Library are some example who are using YouTube for marketing their content.

Different literature also described different issues of social media-based archive services. Table 4 illustrate some important finding from previous literature.

Table 4: Study on web-based archive service

Scholars and Year	Contribution to web-based archive services
Lemon (2018)	Demonstrate on how Twitter platform effects on archives and museum for organizations, education, curations and teaching engagement with institutions, key issues, innovation and objects.
Jimerson (2003)	Social media enable archival institution to provide products, services, and collections information.
Ferriero (2011)	Social media space and the digital technologies have made the archives' mission of providing access to its holdings more efficient, effective, easier and even fun.
Chaterera (2017), p. 71	Flickr and Tumblr enhance the access level of national archival holding as well as improve the quality of archival collection through providing open platform for users discussion.
Ketelaar (2008)	Archives 2.0 stimulate people to upload their stories, documents to the archival institutions to form communities of record.
Huvila (2008)	Web 2.0 encourage participatory archiving system which accelerate 'decentralized curation, radical user orientation, and broader contextualization of records'.
McKemmish (2011)	Virtual space can control and the exercise rights in records; allow community organisations to integrate government records into their own knowledge and records systems, and individuals to interact with public and community archives.

Web-based tool provides new and exciting service for presenting archival materials to public. Archival institution may have some limitations, but they should think out of box to address the issues and challenges. In this case, archival institution needs to be pro-active in providing web-based services to their holing. Otherwise, archival center

will be turned into an outdated and boring place in terms of public engagement. Adoption of Web 2.0 technologies can address new audiences and build new constituencies to archival center.

Archives center who are concerned with users' engagement in archives services must adopt Web 2.0 for staying relevant and reaching new audience continuously. Social media tool can serv as a convenient tool for staying connected with users and archive centers. However, the success of social media engagement depends on the types of social media used by the concerned centers. In general, archives center should consider their mission and vision, their users and available content to determine which tools may be most suitable for them. Mason (2014) stated that Twitter is comparatively more useful for increasing traffic to the institutions website and blog. Besides, Flickr and YouTube may be useful for engaging new users and enriching visibility of content, Instagram may be useful for attracting young people. However, institution can use multiple tools depending on their situation.

2.4   Value co-creation perspective

2.4.1 Value Co-creation

The concept of value co-creation (VCC) has been emerged in service science discipline and getting attention to academics and practitioners as a predominant research concept in the past twenty years. Since then, large number of studies have been investigated on the concept from the perspective of customers' relationship, co-production, co-creation, co-destruction, stakeholders' engagement, etc. The main purpose of the concept is to creating value as like as the central purpose of economic exchange (Lusch & Vargo, 2006). In service organization, value is created with the joint endeavour of service provider and recipients in a service system. Therefore, value is co-created jointly in interaction among service providers and customers through the integration of resources and application of competencies (Lusch & Vargo, 2006). The fundamental elements of the co-creation process in the service system are interaction, involvement and exchange of skill & experiences between the service provider and service receiver. Thereby, value can be co-created when service provider and service recipient both entities actively involve and apply their skill and knowledge in the co-creation activity for the benefit of each other.

2.4.2 Value co-creation process

Co-creation is about joint creation of value by the company and the customer. VCC allow customer to co-construct the service experience to suit service context. In other words, VCC aims to foster the discovery of users' interest and value, which can be turn into innovation and competitive advantage for service provider.

For clear understanding about value co-creation, we should have a look at value creation first. Prahalad & Ramaswamy (2004) defined value creation as the process of service flow from the service provider to service recipient. In this perspective, the value is created by the firm (value in exchange) where the interaction between firm and customers are not seen. In the alternative approach of value co-creation, value is created jointly with the interaction of service provider and service recipient through the integration of resources and application of competencies (Vargo & Lusch, 2004). In this co-creation process, customer is always act as co-creator of value. McColl-Kennedy, et al. (2012) defined customer value co-creation as benefit realized from integration of resources through activities and interactions with collaborators in the customer's service network. Therefore, value co-creation can be defined as an interactive process where two or more actors are involved and not only service provider but also customer can integrate resources to co-create value in the value co-creation process (Prahalad & Ramaswamy, 2004).

From the above discussion, it is clear that the value co-creation process involves three elements- provider, user and resources. The service provider plays the role of an arrangement of resources and propose value in the market through their skill and knowledge (Vargo, Maglio, & Akaka, 2008). Therefore, service provider facilitates the

value co-creation through integration and application of resources and offers customer to engage in the value co-creation activities. The user's involvement or active interaction is important in the value co-creation process to enhance user value (Prahalad & Ramaswamy, 2004). User interaction with service provider's resources may co-create value by utilizing their competencies. In this perspective, user could co-create value individually and collectively also.

2.4.3 Context of value co-creation

Value of products is determined by customers or actors who is the beneficiaries of the offering being used (Grönroos, 2011). This kind of value is known as value-in-use. Value co-creation is an integrated approach of interconnected relationships of interaction and resource integration. Service ecosystem is a social and economic actors interacting through institutions, technology, and language to (1) co-produce service offerings, (2) engage in mutual service provision, and (3) co-create value" (Lusch, Vargo, & Tanniru, 2010). Service Dominant Logic (S-D Logic) indicates that value is co-created with two approaches: networks and service system.

2.4.3.1 Network

Network exists with interactivity and relationship with actors. Akaka et al. (2012) stated that network is a complementary view for conceptualizing and measuring properties of service ecosystem. Besides, Akaka also told that value co-creation is best understood in the context of dynamic networks. Networks mediate value co-creation through enabling access to resources and shaping the social context of value co-creation.

2.4.3.2 Services system

Services system is a mechanism of dynamic value co-creation of resources (operand and operant) connected to other service system by value proposition (Maglio & Spohrer, 2008). Service system is a dynamic role played by actors and other resources during value co-creation process (Edvardsson, Skålén, & Tronvoll, 2012). Maglio & Spohrer (2008) stated that in service science service system not only explain the existing service system but also directs how service systems interact and evolve to improve the circumstance comparing to other system. In S-D Logic, service system can be individuals or groups of individuals that survive, adapt and evolve through service-for-service exchange and resource integration. Service ecosystem co-create value for their own system and for others (Vargo et al., 2008). Value co-creation in service ecosystems relates to behaviors driven not only by connections between (potential) resources but also by rules that govern resource exchange, combination, and, to some extent, the determination of value (Vargo & Lusch, 2012). The service system value co-creation process is illustrated in figure 3 below.
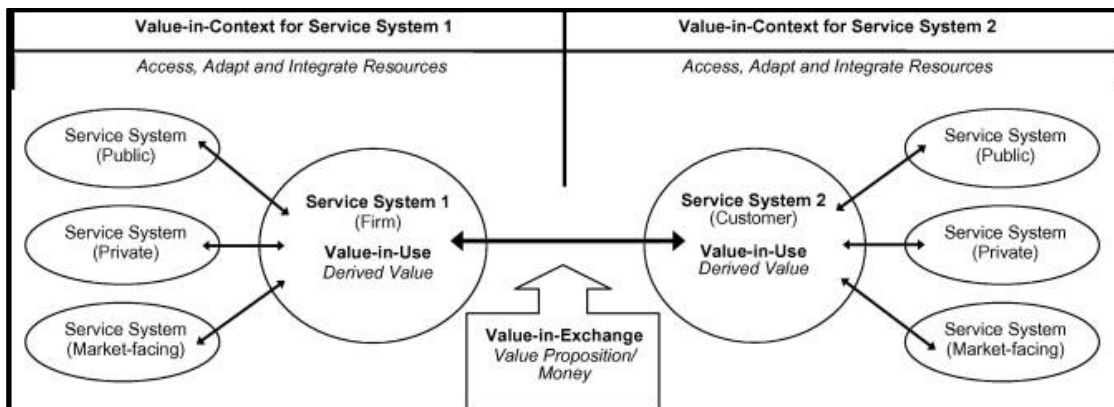
Figure 3 Value co-creation among service systems.

(Source: Vargo et al., 2008)

Vargo et al. (2008) describes that value co-creation is not limited to the activities of any specific systems. Rather VCC depends on other service systems by allowing integration of mutually beneficial resources, improving adaptability and survivability for all systems engaged in exchange.

2.4.4 Value co-creation in archives

The available literatures on value creation activities in the field of archive management services are very rare. However, some literatures described value creation in library and information services. Moorsel (2005) proposed client-value model to measure library users' attitude in library products and service offering. Islam, Agarwal, & Ikeda (2015) described value co-creation for service innovation in academic libraries. Besides, Fattahi and Afshar (2006) remarked that in library service field value is generated through reproduction, exchange, transfer, refinement, interpretation and regeneration by the library and informational professional. Einasto (2013) suggested to implement marketing strategy for analyzing user demand for value creation in libraries.

In case of archival materials, the value of contents is determined by users upon the availability and use of the same. In this case users have active role in value co-creation in archives. Archivists need to co-create values with the joint endeavor of user who seek to use them. Value creation of archives includes the activities associated with managing and transforming archival materials to any other suitable usable form maintaining the authenticity and quality so that user can use archival resources without any difficulty (Rahman et al., 2017). Value creation concept help archivists to co-create values in this regard. Figure 4 illustrates the value co-creation chain of archival resources.
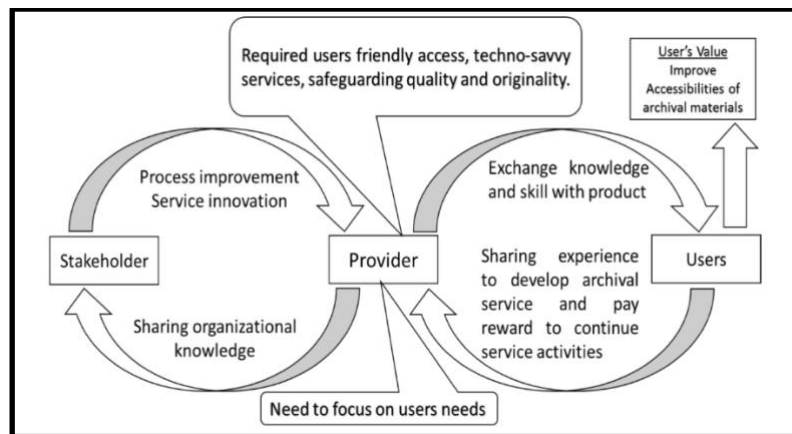
Figure 4 Archival value creation process

(Source: Rahman et.al., 2017)

In figure 4, the value creation process started from Government side by improving and innovating archival services focusing on user needs. The archive exchange knowledge and skills by itself to archival users. Users plays most important role in the value creation process. The user's active participation improves archival services, and pay reward to continue service activities (Rahman et al., 2017).

2.4.5 Archival value co-creation sphere

Value co-creation involves three elements namely – the provider's sphere, the customer's sphere and the joint sphere (Grönroos & Ravald, 2011). It is assumed that both customer and provider's positive involvement is very important in co-creating values. The provider plays their own role in their specific domain for creating their own value but co-create value in shared/ joint sphere. Following figure illustrates the value co-creation sphere in archives.
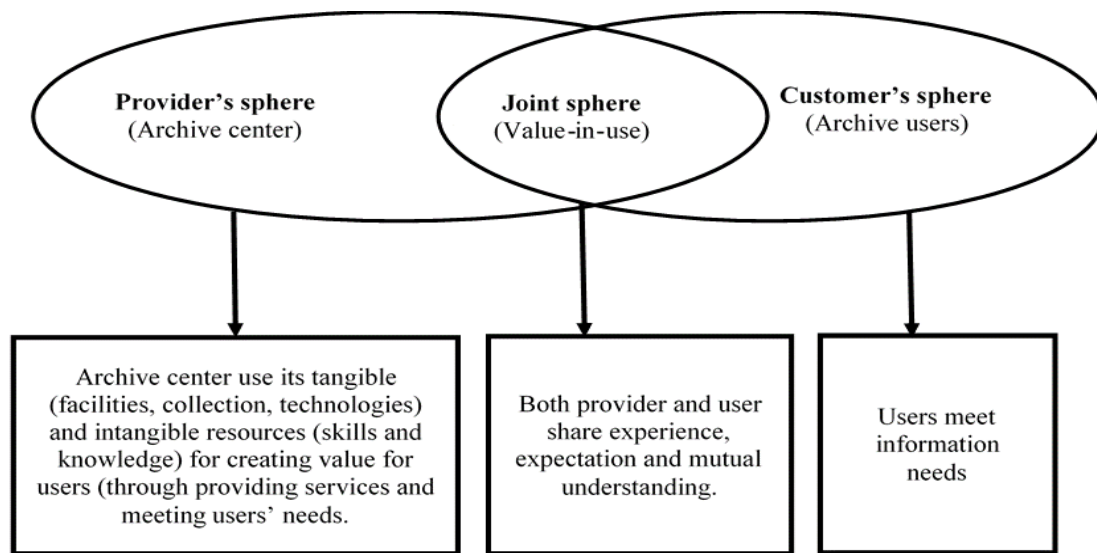
Figure 5 Archives value co-creation sphere

Considering an example of archives centre, user could co-create value by providing information about what more services are needed and how archive centres can improve its service offerings for users. In addition, user could co-create value collectively by interacting with other customers uses this service at the same time. Thereby, user always perform as a co-creator of values with the proper uses of resources that are provided by the service provider (Rahman et al., 2017).

In provider sphere, archive center uses their tangible (facilities, collection, technologies) and intangible (knowledge and skills) for creating values for users. In joint sphere archive administrator and users jointly discuss problem and find out solution. Co-creating an experience sharing environment is required where consumers can have active dialogue and co-construct personalized experiences. Value co-creation cycle involves with sharing information, getting/providing feedback, building new concept and applying the concept into new products/service design. Here, information sharing includes sharing personal information, knowledge and experiences in the community;

providing/getting feedback includes the judgments, comments, and suggestions offered

by the consumer. Archival research relating to VCC has been presented in table 5 below.

Table 5: Study on value co-creation perspective

Scholars and Year	Contribution to archives value co-creation
Huvila (2008)	Address the issues of communication and user participation in archival contexts.
Gilliland, Mckemmish, & Org (2014)	Discusses principles and approaches of participatory archives or the re-structuring of existing archives along participatory lines to further human rights agendas in relation to identity (including language, culture and religious practices).
Gilliland & McKemmish, (2014)	Participatory archive management can ensure rights, responsibilities, needs and perspectives with regard to records.
Roeschley & Kim (2019)	Personal contexts of community-based participatory archive contributors by unveiling the stories behind the objects the contributors donate to the archives.

2.5 Service ecosystem perspective

2.5.1 Service ecosystem

Service ecosystem is a configuration of people, technologies, and other resources that interact with other service systems to create mutual value (Maglio et al., 2009). Lusch & Vargo (2014) stated that service ecosystems are conceptualized as relatively self-adjusting systems of resource integrating actors connected by shared institutional logics and mutual value creation through service exchange. In management literature, ecosystems reflect the interdependent relationships between organizational direct and indirect entities. Frow et al. (2016) stated that ecosystem bounds actors and their resources with direct and indirect resource sharing activities influencing its well-being. A service ecosystem is a collaborative approach of actors and their respective resources aiming to create value propositions in a network of relationships (Frow et al., 2014). In terms of value co-creation, Vargo & Lusch (2011) stated that service ecosystem emphasizes the dynamic and systemic nature of value co-creation through the influence of social factors in service-for service exchange. Vargo & Lusch also remarked that service ecosystem systematically interplays among the actors in an interrelated system of reciprocal service provision. Service ecosystem approach helps to elaborate the relationship between the development of value propositions and the co-creation of values. Actors within a service ecosystems are attracted to share their resources, responding to value propositions that offer potentially beneficial outcomes (Frow et al., 2016).

Service ecosystems view recognizes two broad categories of resources that continually integrated to create value: operand (tangible assets) and operant resources (knowledge and skills). Value is determined through the integration of new technologies

with existing operant and operand resources (Vargo, Wieland, & Akaka, 2015). Frow et al., (2016) asserted that one actor can support co-creation practices within the ecosystem by providing resources that fit with and support the practices of other actors. Similarly, an actor can help another actor improving their own practices and assist in integrating new resources through shared practices. In service ecosystem approach the process of value creation includes the active participation of relevant actors in sequential creation, flow and destruction of value relatively co-create value. In service ecosystem each instance of resource integration and service exchange has the potential to change the nature of the system. Value co-creation continuously occurs as service is exchanged for service and actors integrate value propositions and enact various practices to adapt to contextual requirements (Vargo et al., 2015). Actors engage in value-creating activities, and interact with other actors, they simultaneously change social contexts (Chandler & Vargo, 2011). By this way value is always determined by service beneficiaries through the integration of resources in different social context (Chandler & Vargo, 2011).

2.5.2 Inter-organizational collaboration

In the knowledge-based economy, knowledge is considered as most effective tools to gain competitive advantages. But in ever changing information society, it is very difficult for a company to absorb all relevant knowledge and formulate business strategy accordingly. In this case, they need to collaborate other organization for survival. Accordingly, business organizations are forced to adopt corporate collaboration to adjust in the rapid change of business environment. Bititci et al. (2003) stated that collaboration is considered as an effective mechanism to creating and sustaining competitive

advantages of an organization. The ultimate goal of collaboration is to gain mutual benefits through building relationship between two or more independent organizations (Sheth & Parvatiyar, 1992).

But the approaches of organizational collaboration in archival centers are different. In the archival center, the aim of organizational collaboration is to develop archive management competency among different centers. The aim of all archive centers is to preserve archive and provide service accordingly. However, the nature of content and users may differ from one center to another. In this case, sharing inter-organizational success stories can improve mutual benefits to other centers. Information sharing is concerned as a part of inter-organizational collaboration and coordination (Wu, Chuang, & Hsu, 2014). Figure 7 illustrates how different archive centers can share their service experience to another with the help of web-based technology.
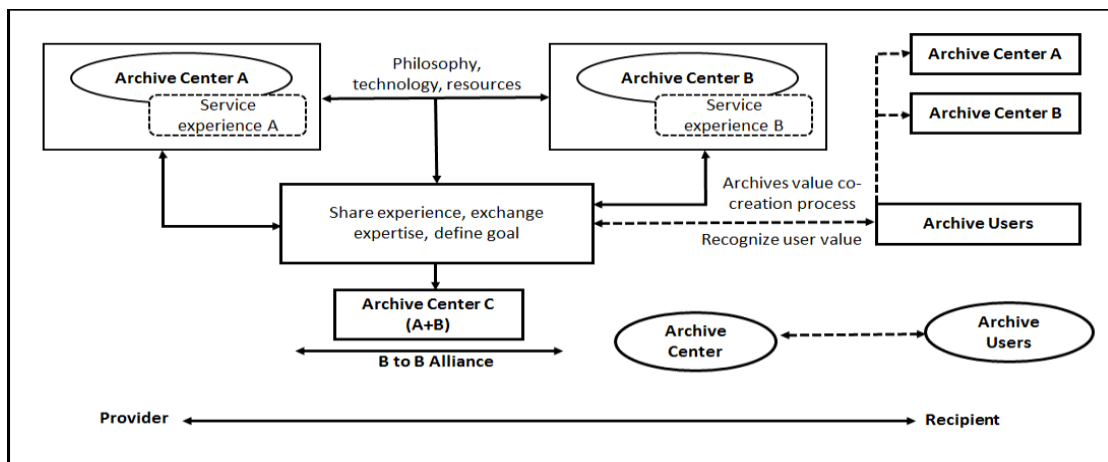
Figure 6 Inter-organizational collaboration for service development.

(based on Corporate collaboration of Nike-Apple for infrastructure innovation, by

Belal, Shirahada, & Kosaka, 2013)

In the figure it is observed that archive center A and archive center B have same resources, philosophy and services and same technological apparatus. But they have

different management strategy as well as service offering. Similarly, archive center A and archive center B may have different experience in terms of management and user service. In this case, if they share their experience with each other through B to B alliance, both archive center A and archive center B can be benefited. Besides, seeing their service experience, new archive centers (C) can easily adopt services relevant to users need. Besides, users also have same scope of sharing experience with archive 2.0 mechanism. Ultimately, both users and archive centers will be benefitted.

2.6 Summary of literature review

From the literature review it is observed that archive management practice witnesses many changes during several decades. Initially, archival resources were confined to specific place for preservation. People could hardly access and use archival contents for research and development. Besides, improper handling and physical degradation was major threat for archival resources. To come up such physical threat and to ensure usability, durability and intellectual integrity, archives enters throughout the world moved to digitization process. Later on, digitization of hard copy archival resources and providing access to them has received significant concern to the information professionals worldwide. The rapid acceptance of digital technologies motivated information professionals in digital preservation research and development (Rahman et al., 2017). Digitization offers many apparent accesses for preservation benefits. Digital files are suitable for enhancing access and usability, and for reducing handling of original materials (Eze Asogwa, 2011).

Many archives centers also maintain web-based service for archive users. However, with the development of Web 2.0, archive management system throughout the world incorporated interactive communication tool archives 2.0 in archives services. Adoption of archive 2.0 enabled archivist to move from simply digitizing content to capture user contribution and knowledge in participatory archive management. Adopting different social media tools help archive centers to reach archive service to individual door-step. Using social media archives centers and users are able to co-create values through discussion and feedback, following, commenting, sharing and so on. By discussion both users and archives center can solve problems on particular issues. Online discussions

through social media can be an excellent element for the socialization, externalization, and combination stages. Social media also enables a person to externalize their thoughts and refine them via feedback. The likes and follows feature of social media also help to determine the importance archival content among the user's community. For example, in Facebook *follows* allow information to be received passively and *likes* can indicate whether many people feel the particular information source is good or bad. A lack of these may indicate that it is not important to the community, although not necessarily a negative fact

However, with the ever-changing demands on archives and the information seeking and using behavior of archive users, archive centers need to redesign service frequently. Here, archives center alone cannot handle all issues relation to archive management and users' satisfaction. Archive centers need to create mutual relationship with other center for knowledge sharing and exchanging competency. Besides, the value co-creation concept help archive center to build sustainable services. Archives center need to involve stakeholders for managing archival content and involve users for design services appropriate for users.

Chapter 3:
Methodology of the study

3.1 Introduction

This chapter describes the methodology followed in the research. The research conducted two case study for determining value co-creation activities in archival services. The case study 1 includes two sub-cases: National Archives of Japan and National Archives of Bangladesh. The case study 2 was conducted in local archive centers in Japan. The research follows both qualitative and quantitative research methods for data collection and analysis. At first the research reviewed available literatures on different areas of the study. Secondly, based on the finding of the literature review the study developed a structural questionnaire for collecting primary data. The details of data collection and analysis methods were also discussed in this chapter. Finally, this chapter concludes with a summary.

3.2 Sample and data sources

The population of the study includes all government, semi-government and non-government organizations and their subsidiaries in Bangladesh and Japan relating to archives administration and management. However, the research conducted two case studies as below:

Case study 1: The case study 1 was conducted on: The National Archives of Japan (NAJ) and the National Archives of Bangladesh (NAB) for understanding the scope, function and strategy of archive management in a developed and developing country.

Case study 2: Case study 2 was conducted on local archive centers of Japan for data sources.

3.3 Research site

Case study 1: The research site of the case study 1 includes the National Archives of Bangladesh (NAB) and the National Archives of Japan (NAJ). Besides, data also collected from other national level archive centers in Japan.

Case study 2: The local archive centers in Japan are categorized as prefecture, city, municipal, and academic archive center. Each of the category of archival center have different level of management practice. NAJ official website lists all types of available local archive centers in Japan. Accordingly, for determining sample for the case study 2, the research followed the list of NAJ official website link related to local archive

centers in Japan (available at http://www.archives.go.jp/links/) and collected data accordingly.

The research collected sample from 38 prefectures, 9 cities, 30 municipal and 13 academic archive centers in Japan for primary data. Being qualitative in nature, primary data were collected only from the in-charge/head of archive centers. Table 6bdescribes the list of local archive centers in Japan which are participated in the research survey.

Table 6: List of surveyed archive centers in Japan

Sl.	Name of archives	Types
1.	Hokkaido Archives	
2.	Aomori Prefecture Archives Center	
3.	Miyagi Prefecture Archives	
4.	Akita Prefecture Archives	
5.	Yamagata Prefecture Archives Center	
6.	Fukushima Prefecture history museum	
7.	Ibaraki Prefectural Museum of History	
8.	Tochigi Prefectural Archives	
9.	Gunma Prefectural Archives	
10.	Saitama Prefectural Archives	
11.	Chiba Prefecture Archives	Prefecture archives
12.	Tokyo Metropolitan Archives	
13.	Kanagawa Prefectural document library	
14.	Niigata Prefectural Archives	
15.	Toyama Prefecture Archives	
16.	Fukui Prefecture Archives	
17.	Nagano Prefectural Museum of History	
18.	Gifu history museum	
19.	Aichi Prefecture Archives	
20.	Mie Prefectural Museum	

21.	Shiga prefectural historical records room	
22.	Kyoto Prefectural Kyoto University, Rekiirodorikan	
23.	Osaka Prefecture Archives	
24.	Hyogo prefectural government mission's museum	
25.	Nara Prefectural Library Information Center	
26.	Wakayama Prefectural Archives	
27.	Tottori Prefectural Archives	
28.	Shimane Prefecture Archives Center	
29.	Okayama Prefectural record museum	
30.	Hiroshima Prefectural Archives	
31.	Yamaguchi Prefecture Archives	
32.	Tokushima Prefectural Archives	
33.	Kagawa Prefectural Archives	
34.	Fukuoka Joint Archives	
35.	Saga Prefecture Archives	
36.	Oita Prefecture document library	
37.	Miyazaki Prefecture document Center	
38.	Okinawa Prefecture Archives	
39.	Sapporo document library	Major city archives
40.	Kawasaki document library	
41.	Sagamihara City Document Library	
42.	Nagoya City Archives	
43.	Osaka document library	
44.	Kobe City Archives	
45.	Hiroshima City Library documents	
46.	Kitakyushu Municipal Archives	
47.	Fukuoka City Public Library	
48.	Daisen Archives	Municipals archives
49.	Hitachiōmiya Archives	
50.	Oyama Archives	

51.	Haga-machi General Information Center	
52.	Nakanojo history and folklore museum "Musée"	
53.	Kuki City Library documents	
54.	Yashio Municipal Museum	
55.	Itabashi document library	
56.	Musashino Furusato History Museum	
57.	Furusato Fuchu History Museum	
58.	Fujisawa City Archives	
59.	Samukawa Archives	
60.	Joetsu City Archives Center	
61.	Toyama document library	
62.	Nagano City Library documents	
63.	Matsumoto City Archives	
64.	Suzaka Archives	
65.	Tomi City Archives	
66.	Azumino Archives	
67.	Obuse Archives	
68.	Takayama document library	
69.	Iwata History Archives	
70.	Moriyama document library	
71.	Amagasaki Municipal Area Studies Archives	
72.	Takamatsu City Library documents	
73.	Mitoyo Archives	
74.	Seiyo Shirokawa Archives	
75.	Dazaifu document library	
76.	Amakusa Municipal Archives	
77.	Chatan-cho Archives	
78.	Asia Economic Research Institute Library	
79.	National Institute for Educational Policy Research Education and Research Information Center (Education Library)	University archives
80.	Geographical Survey Institute	

81.	Kokubungakuken kyushiryokan	
82.	National Women's Education Center female archive center	
83.	Tax Information Center Tax historical records room	
84.	International Research Center for Japanese Studies	
85.	Disaster Prevention Research Institute of Science and Technology	
86.	National Museum of Ethnology	
87.	National Museum of Japanese History	
88.	Otaru University of Commerce Midorigaoka Archives	
89.	Shiga University Faculty of Economics, University Archives	
90.	Nara University of Education museum	

3.4 Data collection and Measurement

Case study 1

The data on case study 1 was collected from secondary sources like review of literature, visiting concerned archive centers website, and analyzing different published/unpublished documents/memorandum, brochure on the concerned centers.

However, in case of National Archives of Bangladesh (NAB) the researcher visited the NAB several times, discussed with concerned official, attended different seminars, etc. for collecting data. In case of National Archive of Japan (NAJ), data were collected from secondary sources including different gray literature and NAJ official webpages.

Case study 2

For case study 2, primary data were collected using questionnaire methods. In most cases, questions were adapted from previous empirical studies on social media in archives (Bountouri & Giannakopoulos, 2014; Mason, 2014; Milasenko, 2013; Whelan, 2011), preservation and management of digital archives (Chiang & Huang, 2012; Hsu, Chen, Fan, Lin, & Chiu, 2015; Rahman et al., 2017; Rahman & Mezbah-ul-Islam, 2012a; Sookprasert & Rungcharoensuksri, 2013), stakeholders involvement in archives (AccountAbility, 2008; Jeffery, 2009; Morris, Mykytiuk, & Weiner, 2015), organizational capabilities (Basu & Sengupta, 2007; Eze Asogwa, 2013; Holsapple & Joshi, 2000; Kamath, Rodrigues, & Desai, 2011), users involvement in archives (Battley, 2017; Eveleigh, 2015; Palmer, 2009; Robinson, 2007), etc. and modified to reflect the local situation on the basis of the findings and discussion of the studies. The questionnaire had been revised several times with academic advisors and also pre-tested before final

delivery. Questionnaire Booklet was distributed to the person in-charge/planning manager/manager/director of the center, who is familiar with the operation and management of the archive center during 1 March 2019 to 29 March 2019 in order to collect center specific data. The printed questionnaires were distributed to the selected organizations through postal mail. A total of 90 questionnaires had been distributed. Finally, 68 (75.56%) responses were collected for analysis. Following table represents the primary data collection scenario in case study two.

Table 7: Scenario of primary data collection

Type of center	Surveyed	Replied	Row Percentage	Colum Percentage
Prefecture archives	38	30	78.95	44.12
City archives	9	8	88.89	11.76
Municipal archives	30	22	73.33	32.35
University archives	13	8	61.54	11.76
Total	**90**	**68**	**75.56**	**100%**

From table 7, it is observed that majority of the respondents of the survey are prefectures archive centers (44.12%) followed by municipal archives (32.35%).

The questionnaire had both English and Japanese version. The questionnaire was consisted of 21 structural questions and 01 open-end question. The study measured value co-creation activities among local archive centers under four sub-themes. In the questionnaire booklet, a total 128 items were divided into four sections. The sections used in the questionnaire booklet includes organizational background information, status of stakeholders in archive management, status of users' involvement in archive services, and adoption of web-based services in archives. Details of questionnaire booklet are described below.

Section A: Background Information

Organizational background information relevant to the study has been collected by asking seven questions. Question 1 in section A of questionnaire booklet was related to identify different types of archival contents available in archival centers; question 2 identifies different sources from where archival centers receives archival content; and question 3 explores different types of users who generally use archival content. Archive centers had the options to choose of multiple response for question 1, 2, and 3 suitable to their context. In question 4, participants were asked whether they have any collaboration with other centers or not through a yes/no question. Next participants were asked to mention the factors they think important in affecting collaboration. Besides, tentative benefits of collaboration were also measured from archive centers point of view. Table 8 provides variables of background information collected for the study.

Table 8: Variables of archive center's background information

No of Question	Indicator	No of Variables	Type of Variables	Measurement
1.	Available archive content	14	Check box	Multiple option allowed
2.	Sources of archival resources	10	Check box	Multiple option allowed
3.	Users of archival resources	8	Check box	Multiple option allowed
4.	Status of collaboration	3	Radio button	Single selection
5.	Constraints of collaboration	6	Radio button	**5 Point Likert Type Scale** 1 = Unimportant to 5 = Important
6.	Perceived benefits of collaboration	8	Radio button	**5 Point Likert Type Scale** 1 = Disagree to 5 = Agree
7.	Organizational climate in adopting new services	4	Radio button	**5 Point Likert Type Scale** 1 = Disagree to 5 = Agree
	Total	**53**		

Section B: Stakeholders involvement in archive services

In section B of the questionnaire booklet data were collected about the center's management strategy. In the section first archive centers were asked whether they have any advisory committee or not for managing and coordinating archive services. Besides, type of people involved in advisory committee were also identified in case of having advisory committee. Responded had the option of selecting multiple response applicable to their respective archive centers. It is to mention here that considering the person involve and the function performs, in this study the term stakeholders is used as similar meaning of advisory committee. Table 9 describes the variables relating to stakeholders in archive management.

Table 9: Stakeholders involvement in archive management

No of Question	Indicator	No of Variables	Type of Variables	Measurement
1.	Availability of advisory committee	2	Radio button	Yes/No
2.	Member of advisory committee	9	Check box	Multiple option allowed
3.	Function of advisory committee	8	Radio button	**5 Point Likert Type Scale** 1 = Not Effective to 5 = Effective
4.	Center's decision-making strategy	4	Radio button	**5 Point Likert Type Scale** 1 = Never to 5 = Always
	Total	**23**		

The study also tries to understand the type of functions perform by the advisory committee. Respondents were asked to measure the level of effectiveness of advisory committee on eight pre-defined functions based on previous studies. In addition, as many archive centers do not have any advisory committee, data were also collected on how such archive center take decisions relating to formulating policies and strategies.

Section C: Participation of users in archive services

Users are considered as the main focus of any services system. Similarly, this research also measured different issues of users' involvement in archive services. First of all, the research identified different process of archive service delivery to users in archive centers. In that case respondent had the option of selecting multiple process available in their center for service delivery. Besides, archive centers were also asked to mention the process of getting users' feedback on services. In addition, archive centers were also asked to mention the number of approximate feedbacks received per month. This was an open-ended question where respondent able to mention their approximate number of feedbacks.

The research considers that only getting users feedback on service is not enough for value co-creation in archives. Rather, understanding how and for what purpose the feedback is used is important. Accordingly, respondents were asked to describe their position in using users' feedback in four value co-creating elements. There were options of marking frequency of using users' feedback from 5-point Likert type scale never to always. Respondents selected options better suited to their context. Table 10 describes variables of users' involvement in archive services.

Table 10: Users' involvement in archive management

No of Question	Indicator	No of Variables	Type of Variables	Measurement
1.	Process of service delivery	6	Check box	Multiple option allowed
2.	Process of getting users' feedback	6	Check box	Multiple option allowed
3.	Volume of users' feedback received	1	Free text	Open
4.	Use of users' feedback in value co-creation	4	Radio button	**5 Point Likert Type Scale** 1 = Never to 5 = Always
	Total	**17**		

Section D: Adoption of web-based services

In the final section of the questionnaire booklet, respondents were asked to describe their position relating to adoption of web-based archive service. In this section, there were seven questions. The first three questions were related to identify the centers remarks regarding the importance of using social media in archives, whether they use any social media or not, and what type of social media tool they used in archive centers. Besides, perceived benefits of adopting web-based services were also measured through seven benefits of social media. Respondents measured their level of agree or disagree on certain tentative benefits. Table 11 describes the variables of adoption of web-based services in archive centers.

Table 11: Adoption of web-based service in archives

No of Question	Indicator	No of Variables	Type of Variables	Measurement
1.	Importance of social media	5	Radio button	Single selection
2.	Adoption of social media	2	Yes/No	Single option
3.	Types of social media used	10	Check box	Multiple option allowed
4.	Benefits of social media	7	Radio button	**5 Point Likert Type Scale** 1 = Disagree to 5 = Agree
5.	Constraint of not using social media	6	Radio button	**5 Point Likert Type Scale** 1 = Disagree to 5 = Agree
6.	Scope of value co-creation of archives	4	Radio button	**5 Point Likert Type Scale** 1 = Disagree to 5 = Agree
7.	Suggestion regarding value co-creation	1	Free text	Open

Total   35

It is also observed that many archival centers don not have social media or web-based service. The study identified constraints of not providing web-based services from the archive centers' point of view. Respondents were asked to mark their level of agree or disagree on certain issues.

Finally, the study seeks archive centers' opinions relating to create more value on archives, and as well as suggestion on value c-creation in archives.

55

3.5 Data analysis methods

The collected data were analyzed by frequency count and percentage methods. Besides, descriptive analysis methods were followed using SPSS (version 17.0). In addition, SmartPLS were used for analyzing Structural Equation Modeling (SEM).

However, the following steps have been followed for data analysis and presentation:

i)   Prepared code manual and coding all the answers in the questionnaire.

ii)   Designed database using SPSS (version 17.0), impose variable labels and value labels, necessary constraints and validation check as per instruction of the code manual.

iii)   Input relevant data in the database.

iv)   Data cleaning and removing/correcting inconsistencies.

v)   Executed Pearson's correlation among factors.

vi)   Produced 31 tables and used them in text.

vii)   A total of 22 graphical presentations were made and presented.

Chapter 4:

Archive management case analysis

4.1 Introduction

This chapter describes two national level archive management practice in a developed country (Japan) and a developing country (Bangladesh) as case analysis. Considering the importance of archives, almost all the countries of the world developed their national archive center. Japan and Bangladesh established their own national archive center in 1971 and 1973 respectively. This chapter focuses on different function and issues of national archives. Finally, the research demonstrates the value co-creation activities in developing and developed country archival canters.

4.2 Archive Services in Bangladesh

Bangladesh emerged as an independent country in 1971. After the independence, newly born Bangladesh concentrated on reconstruction and development of its infrastructural and socio-economical organs. As a part of the reconstruction and preservation of the national cultural heritage the government of Bangladesh founded the National Archives of Bangladesh (NAB) in Dhaka in 1973. It was placed under the Directorate of National Archives and Libraries. Since then NAB is serving as a national custodian of archives of government of Bangladesh (Rahman et al., 2017).

4.2.1 Archival resources of NAB

Archival resources of NAB includes proceedings and official records of the governments of Bengal and Assam of the British period of the East India Company, the governments of East Pakistan (1947-1971) and Bangladesh since 1971 to on words. The NAB also has collection of the government of Assam records (1875-1947) which were handed over to the government of East Bengal at the time of partition in 1947. Around 20,000 official records including revenue records, judicial records, local self-government records etc. of the Divisional Commissioner of Dhaka dating back to 1890s are available in the NAB collection. Besides, around 3,000 volumes of rare books on Bangladesh's administration and life during the 19th and 20th centuries enriched the collection of NAB (Rahman et al., 2017). Some other important collection of NAB are old district records of British Bengle which are mentioned in Table 12.

Table 12: Collection of old District records of NAB

Type of records	Periods	Type of records	Periods
Dhaka City Corporation Records	1878-1966	Gazettes	1832-2008
Dhaka Zila Parishad records	1940-1990	District Gazetteers	1905-1996
Rangpu Zila Parishad records	1885-1990	East Pakistan & Bangladesh Period Records	1962-1975
Chittagong Port records	1907-1990	Press Clippings	1962-1997
Sylhet Proceedings/Files	1874-1947	Microfilms of old records	1874-1916
Purgunnah Maps	1849-1855	Estate Records	1820-1947
Government Publications	1836-2005	Cabinet Division Records	1971-1982
Government of Bengal Proceeding/File	1859-1964	Records of National Assembly of Bangladesh	1973-2001
Chittagong Divisional Commissioner's Records	1860-1960	Old maps	1854-1967

Source: http://www.nanl.gov.bd

NAB has gathered a large number of records, books, files, maps, oil paintings etc. of the Zamindar families of Dhaka and Bhawal and the history of East Bengal in the 19th and 20th centuries. NAB has been collecting the Bangladesh Gazettes date back to 1973 ("National Archives of Bangladesh (NAB)," 2006), and the daily radio monitoring reports from Radio Bangladesh since 1987. The resources serve as important source of contemporary national and international history. Other most valuable records which are preserved in the National Archives of Bangladesh are:

Table 13: Other miscellaneous collection of NAB

Type of records	Periods	Type of records	Periods
Dhaka City Corporation Records	1878-1966	Gazettes	1832-2008
Dhaka Zila Parishad records	1940-1990	District Gazetteers	1905-1996
Rangpu Zila Parishad records	1885-1990	East Pakistan & Bangladesh Period Records	1962-1975
Chittagong Port records	1907-1990	Press Clippings	1962-1997
Sylhet Proceedings/Files	1874-1947	Microfilms of old records	1874-1916
Purgunnah Maps	1849-1855	Estate Records	1820-1947
Government Publications	1836-2005	Cabinet Division Records	1971-1982
Government of Bengal Proceeding/File	1859-1964	Records of National Assembly of Bangladesh	1973-2001
Chittagong Divisional Commissioner's Records	1860-1960	Old maps	1854-1967

Besides, NAB has many records on Bangladesh Taxation Appellate Division, Private Collection, Medical Records, Old Educational Institution Records, Newspapers etc. ("National Archives of Bangladesh," 2011)

4.2.2 Management of NAB's archival resources

The management of archival resources of NAB goes through several steps from resource gathering to user services. NAB receives resources from government agencies, ministries, district headquarters and various local offices of Bangladesh government. After receiving records, the first work is to process them maintaining several steps. Very often the documents receive as fragile and detreated condition. NAB staff need to clean and make usable form of the resources. Sometimes those records need to repair. If needed fumigation is also done. The usable records are being classified and catalogued depending on the merit and content of each record. After the processing activities the records are sent to preservation and conservation department for permanent preservation.

Depending on the record quality the concerned staff decide them to convert as hardcopy, microfilming and scanning. Good quality hardcopy records are preserved in storage stack, microfilms are storage in roll and scanning documents are storage and preserve in CD/DVD or server. Archive delivery services are also provided as per user demand. In this case user can use those resources through manual operation, using microfilm reader and scanned copy (Rahman et al., 2017). Figure 8 illustrates the traditional record management system of NAB.
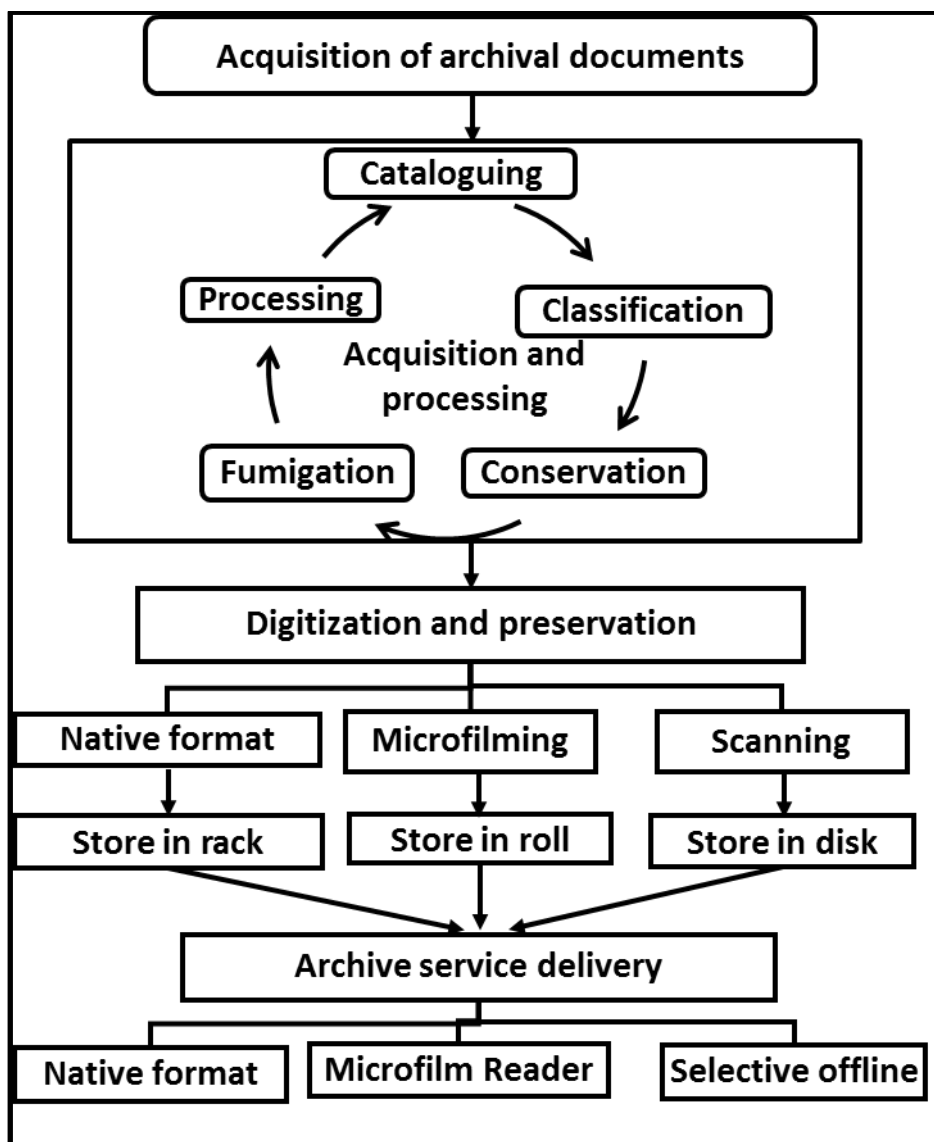
Figure 7: Traditional archival management system of NAB

4.2.3 Archives digitization in Bangladesh

For ensuring smooth operations and long term preservation, in 2002, NAB initiated a five year (2002-2007) digitization project entitled "Digitization of District Records Collected from 1760-1900" (Shuva, 2009). The project's primary aim was to carry out traditional resources into the long-term preservation center and viz-versa. But the project failed to achieve its success due to proper planning and other barriers. In 2012, NAB took another new initiative for digitization its resources and also to provide its resources through website. Figure 9 below illustrates the technical structure of NAB's archive digitization project.
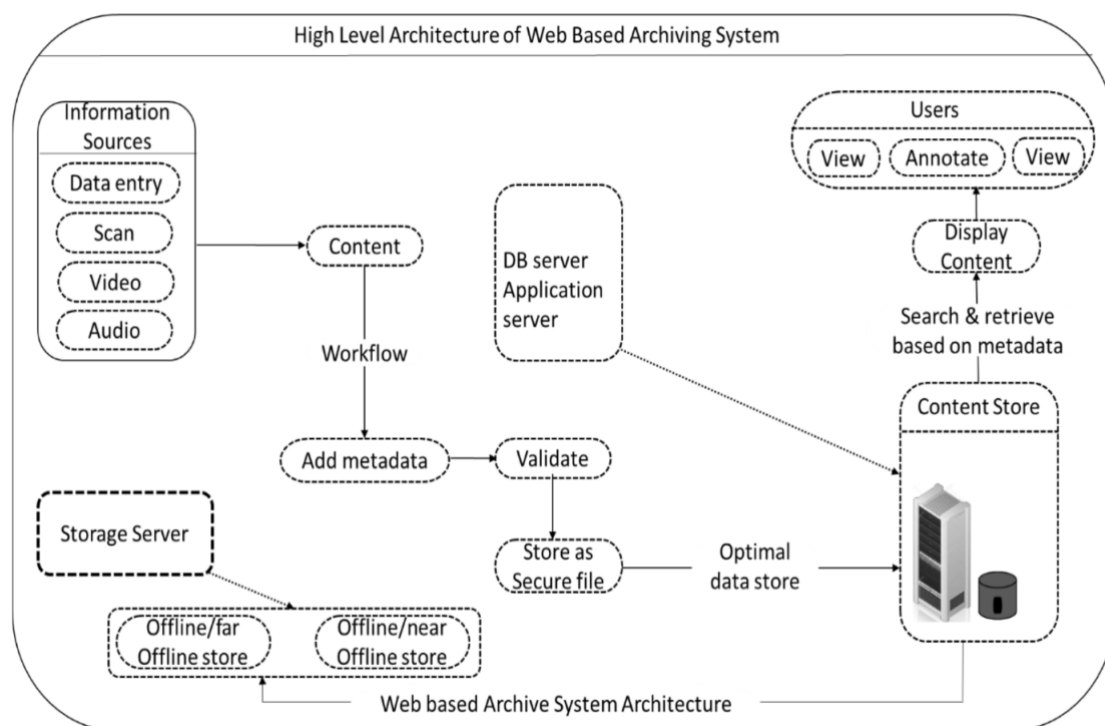
Figure 8: NAB's Web based archiving system flow

(Source: IBCS_PRIMAX Software Ltd.)

NAB's digitization system encapsulated the following workflow:

- **Input of Content-** Digitization activities of NAB resources starts from inputting raw data in the system cycle. The native documents are generally digitized with suitable media. Scanning interface is used to scan documents for uploading. Various audio and video files are uploaded in their native format. The uploaded contents are subject to tagging metadata input, validation of the tag and storage of the data in the content repository.

- **Assigning metadata with the content-** Assigning and tagging appropriate metadata for each content is one of the most important functions of content development cycle. The success of retrieval performance mostly depends on assigning appropriate metadata. In Web Based Archiving System of NAB, generally the system creates a unique system identifier for each physical and digital document and stores the identifier as metadata with the record. Besides, there are some predefined and elaborate metadata contents. The person associated with tagging metadata generally select/associate metadata from the tagging framework to make tagging process unique and to ensure intelligent retrieval function.

- **Validating the metadata-** To ensure whether the assigned metadata is appropriate or not- a checker function is used in place using workflow functions of *Web Based Archiving System.*

- **Archiving of old content –** National Archives of Bangladesh (NAB) possesses huge resources. It is assumed that not all resources are equally important. Moreover, there are some confidential records which are not opted for public access. Accordingly, all contents are not supposed to keep online. After the proper

categorization, non-priority contents are supposed to achieves and store in offline or near offline stores. Important resources are stored in online or near online store.

- **Search and retrieval content –** The system provides search facilities to meet the needs of users. There is also a help function to provide guideline on searching facilities. When a search is made the result displays a list of document and records meeting the search criteria. The query identifies the latest version of the record and all other versions are available to select and view. User can perform a range of search including complex search using any combination of metadata elements by using Boolean operators to identify any specific elements. Since the search is based on metadata associated with the content full text search is possible for all content. The underline Oracle RDBMS platform optimized the retrieval result.

4.2.4 Web-based archive service in Bangladesh

National Archives of Bangladesh adopted web based technology to automate their resources and services in different manure to get benefit of accurate information, reduce work pressure and provide dynamic services (Rahman et al., 2017). In this connection they introduced Web based Archiving System and Dynamic Website project. The coverage of the projects includes:

- ✓ Development of web-based archiving system for current and non-current administrative records, manuscripts, books, newspapers, maps, files etc.;
- ✓ Design and develop a dynamic website for providing web-based access;
- ✓ Publishing selected contents in the website;
- ✓ Protecting important resources from unauthorized access.

Finally, the archiving system integrated with the NAB website. But it has some limitations as below:

Network issues: NAB receives records from different ministries, government agencies and other sources including 64 district headquarters. But there is no direct depositing and handling mechanism in the existing system. Accordingly, strong network among different units are required to ensure transparency, smooth administration and management of archive.

User involvement issues: In the present system there is no option for interacting with users. But for providing user centric services interaction with users' community is must. The system should be incorporated with user's demand and feedback option.

4.3 Archive Service in Japan

The National Archives of Japan (独立行政法人国立公文書館) (NAJ) was established under the Prime Minister's Office on July 1, 1971 ("NATIONAL ARCHIVES OF JAPAN," n.d.). NAJ emerged for preserving historical materials, public records and important archives which are transferred from different state organs. Official documents and records created by the Government ministries and agencies for administrative purposes are preserved as historical evidence and references for posterity. NAJ holds the majority of important official documents of Japan. NAJ consider historical public records and archives as treasures of each concerned region which are related to individuals' attachment to their region, show and maintain the appeal of each region, and create new value. The NAJ intends to continue the development of digital archives to nationwide through information sharing. NAJ vision is to develop democracy through the preservation and use of public archives.

Along with NAJ there are several national level archives in Japan. Those are Diplomatic Record Office of the Ministry of Foreign Affairs, Archives of Imperial Household Agency, the Military Archives of the National Institute for Defense Studies of the National Defense Agency, the Modern Japanese Political History Materials Room at the National Diet Library, etc. Each of the archival organization follow their own preservation and management policy.

Besides, there are other regional archives center who are managing archival content under their jurisdiction. These regional centers are categorized as prefecture archives, government city archives, Municipal archives and academic archives.

4.3.1 Archival resources of NAJ

NAJ holds all ministry and agency`s government documents and records since the Meiji era except records concerning diplomacy, defense and the imperial family. Table 14-17 briefly mentioned the coverage of archival resources on NAJ.

Table 14: List of Corporate records

SL	Description of content	SL	Description of content
1.	National Archives of Japan	8.	Wakayama University
2.	Japan Science and Technology Agency (JST)	9.	Japan Housing Finance Agency
3.	Food and Agricultural Materials Inspection	10.	Japan National Tourism Organization
4.	Research Institute of Economy, Trade and Industry	11.	Japan Railway Construction, Transport and Technology Agency
5.	Public Foundation for Peace and consolation	12.	Management Organization for Postal Saving
6.	Information-technology Promotion Agency	13.	National Institute of Information and Communication Technology
7.	Urban Renaissance Agency.	14.	New Corporate Records

Table 15: List of Judicial records

SL	Description of content	SL	Description of content
1.	Judicial Administrative Records	3	Original Records of Civil Actions transfer
2.	Original Records of Civil Actions	4	Records of the Court-martials

Table 16: List of Administrative records

SL	Description of content	SL	Description of content
1.	Cabinet Secretariat	21	Ministry of Finance
2.	Cabinet Legislation Bureau	22.	Ministry of Education, Culture, Sports, …
3.	Cabinet/Prime Minister's Office	23.	Japan Sports Agency
4.	National Personnel Authority	24.	Agency for Cultural Affairs
5.	Cabinet Office	25.	Ministry of Education
6.	Transferred Records from the Reconstruction	26.	Science and Technology Agency
7.	Economic Planning Agency	27.	Ministry of Health, Labour and Welfare
8.	Okinawa Development Agency Records	28.	Ministry of Health and Welfare
9.	Imperial Household Agency	29.	Ministry of Labour
10.	Japan Fair Trade Commission	30.	Ministry of Agriculture, Forestry, and Fisheries
11.	National Police Agency	31.	Ministry of Economy, Trade and Industry
12.	Financial Service Agency	32.	Ministry of International Trade and Industry
13.	Consumer Affairs Agency	33.	Ministry of Land, Infrastructure, Transportation
14.	Ministry of Internal Affairs and Communication	34.	Ministry of Transport
15.	Management and Coordination Agency	35.	Ministry of Construction
16.	Ministry of Posts and Telecommunications	36.	Ministry of Environment
17.	Ministry of Home Affairs	37.	Environment Agency
18.	Environmental Dispute Coordination Communication	38.	Ministry of Defense
19.	Ministry of Justice	39.	Board of Audit of Japan
20.	Ministry of Finance	40.	New Administrative Records

Table 17: List of Donation/Deposited Records

SL	Description of content	SL	Description of content
1.	Aso Sato related documents	18.	Isle Yongnanjiucang instruments
2.	Kinmochi Saionji related documents	19.	Takatsuji Masami related documents
3.	Hiroshi Arai related documents	20.	Takasaki OyaAkira related documents
4.	Tatsuo Sato related documents	21.	Eisaku Sato related documents
5.	Tsuneharu Baba related documents	22.	Takeshita Noborikyu warehouse document
6.	Akira Nakajima two related documents	23.	Zenko Suzuki related documents
7.	Shunzo Kobayashi Kyuzo article	24.	Umea Omura old books
8.	Norio Iwakura related documents	25.	Hiroshi Kosugi Atsushi old books
9.	Days Gang Zhijiajiuzang instruments	26.	Light Jiro Yoshimoto old books
10.	Takahashi Kitaro old Zao instruments	27.	KDDI old Zao instruments
11.	Ide Narusan related documents	28.	Iwamatsu GoRyo related documents
12.	Masuo Ito related documents	29.	Eitaro Tomita holdings document
13.	Toshinori Fukuma old warehouse document	30.	Hiroshi Minami diary
14.	Shuichi Inada memoirs	31.	Uichi Noda diary
15.	Renpei Kuriyama related documents	32.	Toru Uematsu holdings document
16.	Lateral grooves HikariAkira related documents	33.	Yano machine related documents
17.	Yoshio Nagaoke related documents	34.	New Donated/Deposited Records

Source: **http://www.archives.go.jp/english/gettingstarted/faq.html** Accessed June 10,

2019

4.3.2 Archive digitization initiative in Japan

The development of digital archives started in Japan during mid-1990s (Koga, 2018). Since then, many government and public organizations, universities, libraries, museums and other organizations developed their own digital archives. In 1996, the Japan Digital Archives Association (JAAD) was formed to promote digital archives initiatives among stakeholders. In 2011, the 'Public Records and Archive Management Act' (PRAMA) came to effect for providing better services to archives (Yokaichiya, 2015). In 2012, the Japan Council for Strategic Planning on Cultural Resources was established to provide policy support on digital archives among librarians, information professionals and other stakeholders. In order to increase the efficiency and improving the quality of digital archives, the 'Optimization Plan of Services and Systems for the Digital Archives System on National Archives of Japan' was formulated in 2013. Later on, the Japan Council for Strategic Planning on Cultural Resources compiled the Archives Manifesto of Japan (アーカイブ立国宣言) in 2014. The Manifesto serves as a legal and operational tool for promoting cultural heritage, using technologies in managing archival content, managing intellectual property, and so for. Relating to promoting archival content 'Archives Manifesto' of Japan proposed four recommendations as: 1) establishing National Digital Archive Center (NDAC) in order to connect existing different archives in a digital hub and to act as a center and information window to all of Japan's digital archives; 2) establish a base of human resources to support digital archives, and foster archivists equipped with the appropriate legal knowledge; 3) make Cultural Resources Digital Archive Open Data following standards of a global open data initiatives, establish

publicly open data cultural digital resources that anyone can freely use; and 4) solving copyright, ownership rights, including ownership of unknown beneficiaries resources ("Archive Japan Manifesto," 2014). Besides, different initiatives were also taken by Intellectual Property Strategic Program of Japan's Intellectual Property Strategy Headquarters (IPS-HQ) and promoted digital archive service in Japan (Intellectual Property Strategy Headquarters, 2017).The major digital archives service providers are mentioned below:

4.3.3 Web-based digital archive service in Japan

4.3.3.1 Japan Center for Asian Historical Records (JACAR)

Japan Center for Asian Historical Records was opened on November 30, 2001, as a subsidiary institution of the National Archives of Japan. The purpose of establishing JACAR was to ensure access to digital content on the basis of "at any time, from anywhere, by anyone, freely" (Yokaichiya, 2015). Introduction of JACAR was a pioneering initiative of NAJ for providing digital archive services in Japan.

JACAR operates an online database for releasing Asian historical records, that are historical documents of Japan concerning to the modern Japanese relations with other countries, particularly those in Asia. The source of JACAR documents are the National Archives of Japan, the Diplomatic Archives of the Ministry of Foreign Affairs of Japan, and the National Institute for Defense Studies of the Ministry of Defense of Japan ("Japan Center for Asian Historical Records," n.d.). As of April 2016, the JACAR database have almost 30,000,000 from the early Meiji era to the end of the World War II.

4.3.3.2 National Archives of Japan Digital Archives

In addition to JACAR, NAJ launched its own web-based digital archives service 'National Archives of Japan Digital Archives (NAJDA)' in 2005. Since 2005, the NAJ DA provides access to holdings of NAJ through internet. The service provides both English and Japanese search interface for the convenient of users. Through this site user can access to administrative, judicial, corporate, donated/deposited records including cabinet library resources. Table 18 illustrates available collection of NAJ digital archives.

Table 18: Collection of National Archives of Japan Digital Archives

SL	Description	Number of Records
1.	Administrative Records	3,184,804
2.	Judicial Records	56,492
3.	Corporate Records	22,575
4.	Donated/Deposited Records	23,998
5.	Cabinet Library	400,346
	Total	**3,688,215**

Source: https://www.digital.archives.go.jp/DAS/meta/default-en Access June 10, 2019

4.3.3.3 The National Diet Library (NDL)

The National Diet Library of Japan is the leading provider and manager of digital archives/libraries in Japan. The NDL has been digitizing its collections since 2001. This program consists of digitized materials of the NDL's traditional collections as well as online (born-digital) materials, based on its legal deposit system. As of March 2019, NDL's collection contained 2,690,000 digital materials including books, periodical and other archival contents. Among the content 540,000 are available online while 2150,000 contents can be accessed through NDL building ("Digitization of library materials │ National Diet Library," n.d.)

4.3.3.4 Social media tool used in NAJ

National Archives of Japan has been taken initiative to promote the development of digital archives to public access and information sharing. Accordingly, NAJ uses different social media platform for the promotion, development and delivery of services. The social media strategy of NAJ aims to deepen users' understanding on the center and to improve the service quality by disseminating NAJ's information, operations and activities, holding materials, etc. The social media tools in NAJ are as below:

Facebook

This official Facebook page of the National Archives of Japan (https://www.facebook.com/JPNatArchives/) is for sharing archival stories and engaging users in archive communication. Here, the purpose is to have the users of NAJ deepen their understanding of the archival content available in NAJ as well as disseminate information about the NAJ's operations and activities, holding materials, etc. NAJ Facebook page has 1,412 followers and 1,167 people and organization likes the page. Upload photos and videos in social networking sites.

Twitter

National Archives of Japan joined micro-blogging and activity stream sites Twitter (https://twitter.com/JPNatArchives) on April 2014. As of July 2019, Japan National Archives has 45,600 Twitter followers. A total of 4801 tweets have been made in different issues ("National Archives of Japan (@JPNatArchives) / Twitter," n.d.). Each tweet has been presented with short description including graphical image to represent any content more interactive. Each tweet was retweets and replies, likes etc.

YouTube

National Archives of Japan joined video and photo sharing site March 2018. Uploaded different short videos in different topics. 102 subscribers, 3684 views as on July 2019.

RSS Feeds

NAJ also provides Rich Site Summary (RSS) services through its website (http://www.archives.go.jp/news/rss.rdf). RSS allows users to get update services in a standardized and computer-readable format. RSS always check the updates on a topic assigned by users. Accordingly, users can automatically get aggregated news on their specific topic through this system.

4.4 Comparative analysis

From the case study analysis, it is realized that archive management scenario in Bangladesh and Japan have huge differences. NAB tries to preserve government records which are already in weak and brittle condition. NAB's digitization and web-based archives management project set the ball rolling for major digitization effort for the convenience of user. The initiative also eliminated the backlog of unprocessed records, ensure longevity and safeguard originality allowing users to use and enjoy the value of archives. But the progress of NAB's digitization project is very slow. Besides, only digitization is not enough for attracting users in archives services. There needs organizational commitment and staff motivation for initiating user focused services which are invisible in NAB. On the other hand, the archive service in Japan is much advanced. The archive service of NAJ is much technology based. Besides, digital preservation and management system of JACAR, NDL, NAJDA and some other archival center indicates strong evidence of good quality archive management in Japan.

It is also observed that archive management in Japan follows specific goal for sustainable growth in archive services as well as enabling users as lifelong learners from past documents. NAJ mission is to 'contribute to the development of democracy and the realization of a high quality of life through the preservation and use of public archives as shared assets of the people'; goal is to 'become an accessible information service center that selects, preserves, and promotes civic use of public archives'; and commitment is to 'ensure mechanism for each and every person to have a stake in building nation's future through the use of public archives' ("Archive Declaration : National Archives of Japan," 2007). Accordingly, archives center in Japan always try to ensure 'people's right to know' through providing comfortable environment.

On the other hand, though NAB has a clear mission and vision of preserving public records, the service strategy is not always same. It is observed the whenever new government take in action, most of the case top management of NAB is changed. As a result, getting sustainable service from NAB is difficult. However, the basic difference from archive services among Bangladesh and Japan are summarized in following table.

Table 19: Comparison of archive services between Bangladesh and Japan

Measurement	Archive service in Bangladesh	Archive service in Japan
Policy	▪ **Mission**: Contribute to the development of democracy ▪ **Vision:** Providing better services environment ▪ **Goal:** accessible information service center ▪ **Commitment**: ensure user-oriented services	▪ **Mission:** Acquisition of archival content ▪ **Vision:** Providing information and knowledge ▪ No goal and commitment setting
Management	Subject specialists and professionals are involved in management team	Top management are deputed by Z political consideration
Infrastructure	Equipped with advanced technology and other support	Limited infrastructural facilities (technology, manpower)
Staff attitude	▪ Ready to accept change ▪ Dedicated to ensuring comfortable service to users in changing situation	▪ Accepting change and adaption towards change is poor ▪ Little interest in service encounter rather than assigned job
Service delivery	▪ Provide both physical and digital based services	▪ Deliver service based on physical based.

4.5 Summary and hypothesis

From the comparative analysis it is observed that to make the archive service more appealing to users, there must be strong collaboration among the stakeholders, archive centers and users. Archive management professionals also need to involve users in their service provisions. Users' demand and expectation must be considered in creating new services. Therefore, concerted effort should be made to build up a network of archives. More user involvement can co-create more values with existing resources. Policymakers need to set into motion programs and plans that focus on the widespread adoption and usage of digitization (Sabbagh et al., 2012)**.** Incorporating web 2.0 technologies with the existing system can involve more user attention which ultimately add additional value to the resources.

The study summaries that value co-creation in archives requires direct and indirect relationship with four entities: involvement of stakeholders, positive motivation of archive staff to adopt change relating to user focused services, involvement of users in archive services, and organizational capability and effectiveness to provide necessary support for initiating new services. Considering the national level archive management scenario of Bangladesh and Japan, this research assumes that for effective archive management system there must be presence and strong relationship among four constructs as mentioned in figure 10.
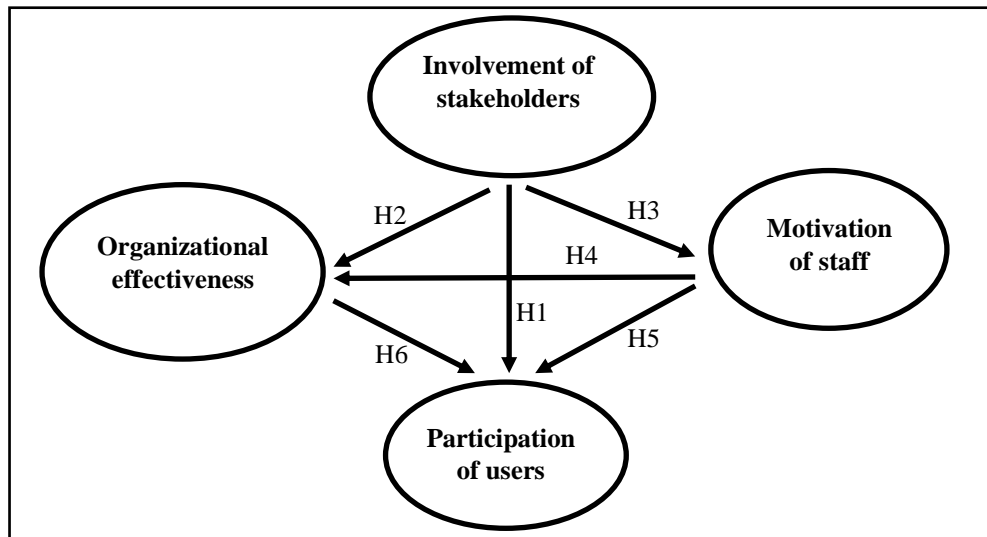
Figure 9: Hypothesis formation diagram

Depending on the diagram, the research formulated following hypothesis relating to value co-creation in archives.

Hypothesis

H1:   Involvement of stakeholders in archive management stimulate participation of users in archives services.

H2:   Involvement of stakeholders in archive management influence organizational effectiveness in archive center.

H3:   Involvement of stakeholders in archive management has influence on motivation of staff in archive center.

H4:   Motivation of staff in archive services influence organization effectiveness in archive center.

H5:   Motivation of archive staff have influence on participation of users in archive services.

H6:   Organization effectiveness in archives center motivate participation of users in archive services.

The formulated hypothesis has been applied in prefectures, city municipal and academic archives centers in Japan to measure the status of value co-creation in archives. Chapter 5 describes finding of hypothesis.

Chapter 5:

Value co-creation in local archives centers in Japan

5.1 Introduction

This chapter describes archive management practice in local archives centers in Japan. Focus were given to service delivery system, stakeholders involvement, user involvement, technology adoption and web-based services in archive management in local archive centers in Japan. The findings are based on primary data collected from prefectures, city, municipal and academic archive centers in Japan.

5.2 Service delivery system in archives center

Providing archives related services to users is one of the most important function of archive centers. There are different types of users who seeks archival information. Local archives centers in Japan reported that most of their users are researcher (94%) followed by general people (92.5%) and academic pupil (89.6%). Other important users who occasionally visit and use archival resources are: filmmakers (7.5%), mass media peoples (3%), government staffs, news agency staff, government officials, etc. Following figure illustrates the category of users use local archives in Japan.
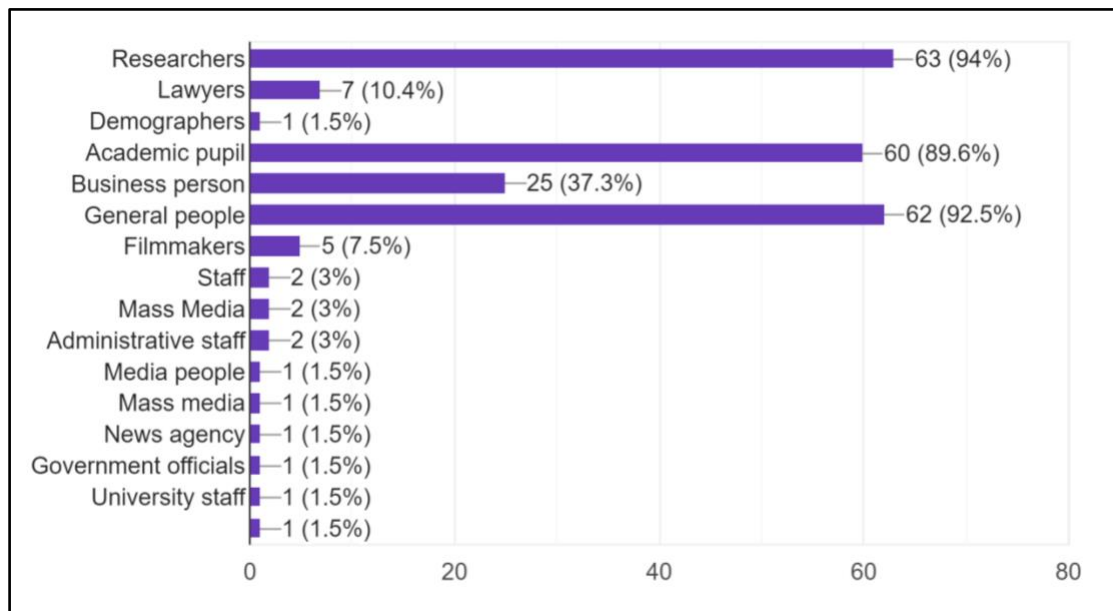
Figure 10: Users of local archives in Japan

The study identifies that local archives center of Japan provides users service through 1) Physical services space, and 2) Digital service space.

5.2.1 Physical service space

In traditional physical service space, users personally need to visit the concerned archive center for getting archival content. Users also have the opportunity to learn about specific archive or archive related information through contacting with archive staff with telephone or face-to-face contact. In case of local archive centers in Japan, 98% users directly visit archive center for getting archival services. Besides, archive centers also occasionally organize different archival exhibition for wider engagement of public. During the exhibition, users can get different archival services including different content, and some other relevant information about archival services.

5.2.2 Digital service space

In case of digital service space, archive centers usages different web-based service technologies. Some archival centers maintain their centers webpage where they upload different archival information. But in most case, archive centers provide only centers information and basic data like centers` opening hour, contact address, their aim, function etc. through the website. In this case, users have little scope to search the archive database through the website. Figure 12 illustrates how local archives centers deliver archives services to users.
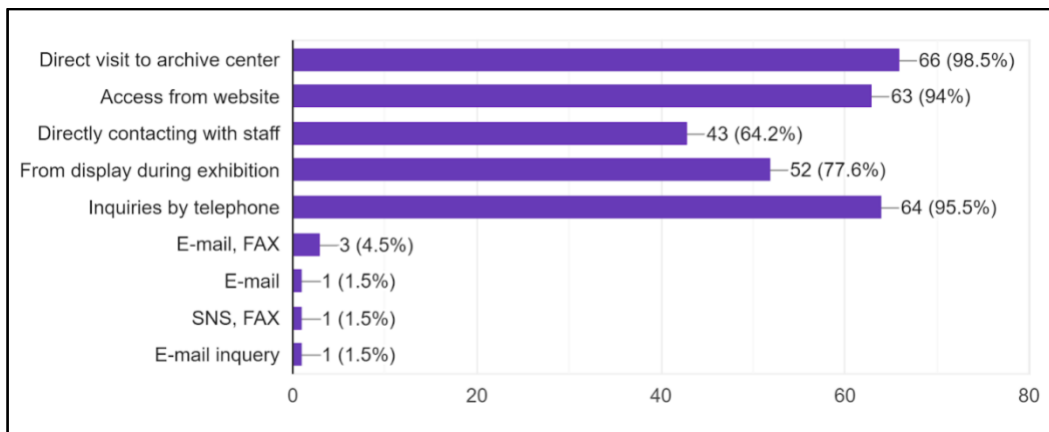
Figure 11: Service delivery process of archives center

However, as a part of digital service space some archive centers also usages different social networking tool to delivers service information. Figure 13 illustrates the available social media used in archives delivery services in local archives centers in Japan.
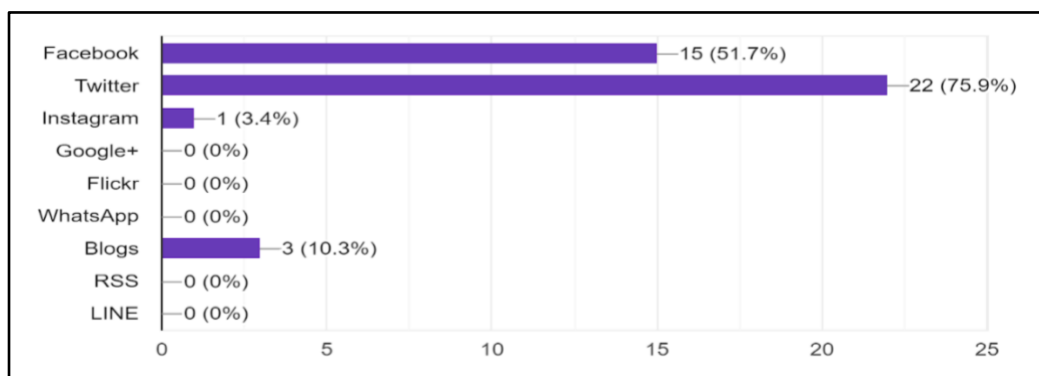
Figure 12 Types of social media tools used in archives center

It is found that most widely used social media tools in archive centers are twitter followed by Facebook and Instagram.

Social media have many apparent advantages in proving archive services to individual doorstep. Table 20 illustrates the perceived benefits of using social media in archive centers.

Table 20: Perceived benefit of using social media (n=29)

#	Benefits	Disagree	Slightly disagree	Neither	Slightly agree	Agree	Std. Deviation	Mean
1	Able to advertise archival information	0.00	0.00	3.45	34.48	62.07	.568	4.59
2	Able to build trust in archival center	6.90	0.00	34.48	34.48	24.14	1.072	3.69
3	Reduce communication gap among archive center and users	0.00	3.45	34.48	44.83	17.24	.786	3.76
4	Reduce users' dependency on staff	20.69	27.59	37.93	10.34	3.45	1.056	2.48
5	Receive users' feedback easily	3.45	20.69	41.38	31.03	3.45	.900	3.10
6	Improve the recognition of center	0.00	0.00	3.45	41.38	55.17	.574	4.52
7	To be useful for users discover of new content	6.90	3.45	24.14	48.28	17.24	1.045	3.66

Note: Disagree = 1, Slightly Disagree = 2, Neither = 3, Slightly Agree = 4, Agree = 5

From the table it is observed that social media provide many benefits for archive center in terms of building trust in center (mean 3.69 out of 5), reduce communication gap between users and archive centers (mean 3.76 out of 5), able to receive users' feedback easily (mean 3.10 out of 5), etc. However, the most important benefits of social media are the capacity of advertising archival information (mean 4.59 out of 5) as well as improving the recognition of archive centers (mean 4.52 out of 5).

In the survey it is found the most (56.7%) of the local and prefecture archive centers of Japan do not have any social media tools. But archive centers also face difficulty in initiating social media services in their center. The study identified constraints of not implementing social media tools in archives center. The findings were presented in Table 21 below.

Table 21: Constraints of not using social media (n=39)

#	Affecting issues	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Std. Deviation	Mean
		Valid Percent (%)						
1	Digital content	4.55	18.18	15.91	43.18	18.18	1.141	3.41
2	Lack of related technologies	4.55	15.91	22.73	40.91	15.91	1.121	3.49
3	Confidentiality issue	9.09	20.45	22.73	36.36	11.36	1.128	3.21
4	IT support stuff	2.27	4.55	34.09	47.73	11.36	.838	3.67
5	Lack of interest	20.45	27.27	31.82	9.09	11.36	1.239	2.69
6	Official policy	13.64	40.91	25.00	0.00	20.45	1.329	2.85

Note: Strongly Disagree = 1, Disagree = 2, Neither = 3, Agree = 4, Strongly Agree = 5

Table 21 shows that the most important constraints of local archives center in Japan are lack to IT support staff (47.73% agree and 11.36% strongly agree) followed by unavailability of digital contents (43.18% and 18.18% respectively). Besides, resource security and confidentiality (agreed 36.36% and strongly agreed 11.36%) are also major concerns for not integrating social media in archive services. In addition, many archive centers do not have official policy (mean 2.85 out of 5) to integrate such tool in their archive services.

5.3 Availability of advisory committee in archive management

Stakeholders are groups of entities who can affect or already affected by the influence of an organizational process. Similarly, in archive service there are many entities who are directly or indirectly related with different archival issues and services. In archive management, representative from different stakeholders' groups serve as the advisory committee. Hence, the presence of advisory committee in archive center provides opportunity to comment and input into the development of decision of the organizational activities. However, from the survey it is found that out of the 68 participating archives centers majority (52.94%) of local archives centers do not have any advisory committee in their archive management process. On the other hand, 47.06% archives centers have advisory committee who came from different professional group. Figure 14 illustrates the types of professionals involved in advisory committee in archive management.
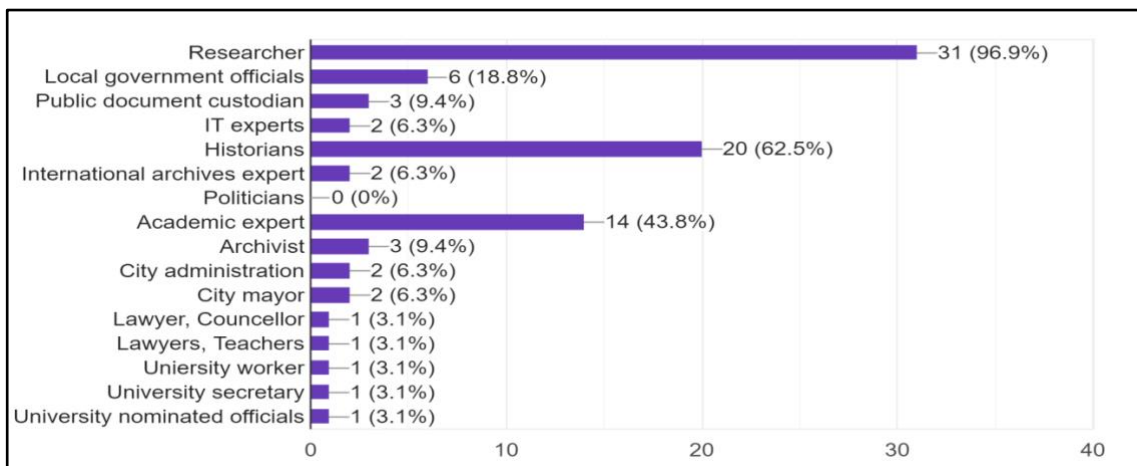
Figure 13: Members of advisory committee in local archive centers in Japan

It is found that researcher (96.9%), historians (62.5%), and academic experts (43.8%) are the most common figure in advisory committee in local archive centers in Japan. However, in some cases there are other type of professionals involve in advisory committee which includes local government officials, public document custodian, IT experts, international archives experts, etc. Besides, there are also other types of professionals namely politicians, city administrators, lawyers, local archivists who are involve in archive management.

5.3.1 Advisory committee's role in archival value co-creation

Advisory committee are mainly responsible for giving direction to archive center regarding the operations and management procedure towards meeting the desired goal. They serve as an advisory body for prefectures, city, municipality as well as academic archive centers. However, the function of advisory committee in local archives centers includes policy planning, solving problems, consider future direction of the centers, etc. Table 22 demonstrate the functions performed by advisory committee in local archives centers in Japan.

Table 22: Effectiveness of advisory committee in archive management (n=32)

#	Function	Not effect.	Slightly not effect.	Neither	Slightly effective	Effective	Std. Deviation	Mean
		Valid Percent (%)						
1	Planning administrative policy	15.63	6.25	34.38	25.00	18.75	1.295	3.25
2	Determining the acquisition policy of new records	3.13	12.50	25.00	40.63	18.75	1.043	3.59
3	Initiating new service idea	3.13	9.38	12.50	53.13	21.88	.998	3.81
4	Making new service implementation guideline	6.25	18.75	31.25	28.13	15.63	1.143	3.28
5	Improving existing service	0.00	0.00	6.25	68.75	25.00	.535	4.19
6	Consider about disclosure of historical records	3.13	6.25	28.13	37.50	25.00	1.016	3.75
7	Solving existing problem	3.13	3.13	21.88	56.25	15.63	.870	3.78
8	Consider the future direction of the center	0.00	3.13	6.25	53.13	37.50	.718	4.25

Note: Not effective = 1, Slightly not effective = 2, Neither = 3, Slightly effective = 4, Effective = 5

From the table 22, it is observed that the most important function of advisory committee is to consider future strategy of archive centers (4.25). Besides, advisory committee also plays vital role in solving different problems relating to archive management and improving existing services (4.19). Other function includes provide guideline for improving service (3.28), considering and giving direction about the disclosure of archives based on security and importance (3.75), making service implementation guideline (3.28), determining acquisition policy (3.59), etc.

5.4 Users' involvement in value co-creation in archives

Users also can play vital role in designing archive services by sharing their service experience and giving suggestion and comment towards their expected services. Archive administrator should have the patience to listen to users' opinion. In this case, archive center should have mechanism to get users opinion/comment. In the survey, the study identified that all of the archive centers have procedures of getting users' feedback on services either physical space or digital space. Figure 15 illustrates the scope of getting users' feedback on archives services.

Methods of getting users' feedback
66 responses
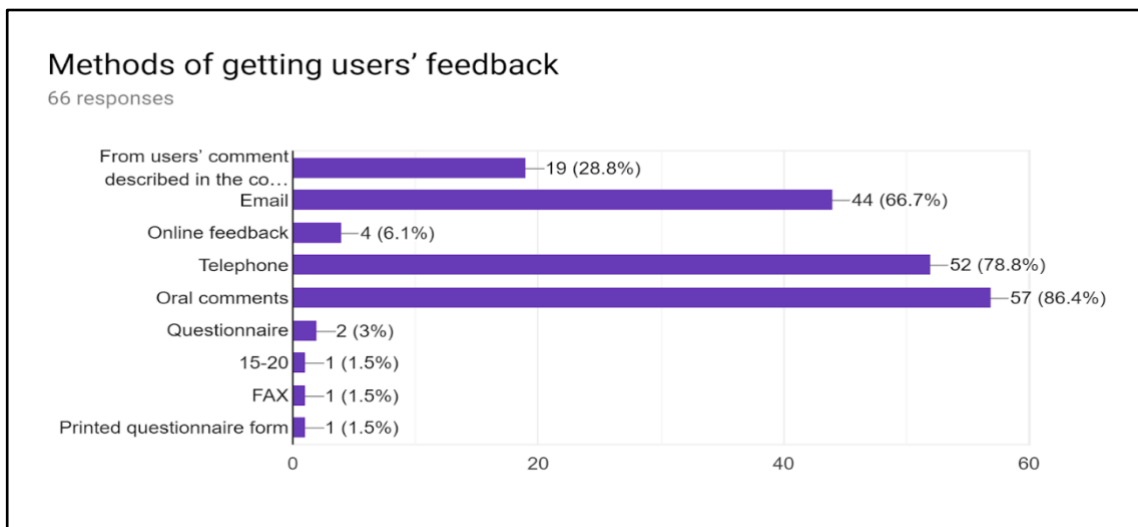
Figure 14: Methods of getting users' feedback on services

From the graph it is seen that most of the local archives centers in Japan get to know users' comment/ feedback through oral conversation (86.4%) followed by telephone conversation (78.08%). Other methods include email (66.7%), comment written on center's comment sheet available in the center (28.8%), online questionnaire, and service feedback printed questionnaire.

5.4.1 Usages of users' feedback on services design

Only getting feedback from users is worthless if archive centers do not utilize them for redesigning archive services. Rather, archives centers need to transform the feedback into services. The study collected data on how local archive centers usages users' feedback in archive services. Table 23 illustrates the usages of users' feedback on archives services in local archive centers in Japan.

Table 23: Use of users' feedback (N **=**68)

#	Use of feedback	Never	Seldom	Sometimes	Very often	Always	Std. Deviation	Mean
				Valid Percent (%)				
1	Developing ideas for new archive services	8.8%	17.6	39.7	32.4	1.5	.962	3.00
2	Improving services quality	1.5%	7.4	32.4	50.0	8.8	.816	3.57
3	Strengthening collaboration with users	14.7%	23.5	39.7	20.6	1.5	1.008	2.71
4	Create new services for more user's interaction	13.2%	20.6	36.8	26.5	2.9	1.055	2.85

Note: Never = 1, Seldom = 2, Sometimes = 3, Very often = 4, Always = 5

From the table 23 it is seen that archive centers tend to use users' feedback for developing new service ideas (3.00) and for improving quality of existing service (3.57).

Besides, archive centers also apply users' feedback for creating new services for more users' interaction (2.85) and strengthening collaboration with users and archive centers (2.71).

5.5 Staff Motivation of Using Technology Based Services

Motivation of staff is much important for providing technology-based users' services. If the archive centers' staff bear positive attitude, archive administrators can easily develop services for users' satisfaction. This research explored the level of staffs' motivation regarding initiating technology-based users service design. Results shows that 53% archives centers' head think that it is important to introduce web-based services in their center while 35% respondent think introducing web-based service is neither important nor unimportant. At the same time around 11% archives centers head thinks that introducing web-based services have no importance at all.

Table 24 illustrates the motivation of staff towards introducing technology-based archive services in local archive centers in Japan.

Table 24: Motivation of staff towards technology adoption

#	Motivation	Disagree	Slightly disagree	Neither	Slightly agree	Agree	Std. Deviation	Mean
		Valid Percent (%)						
1	Awareness towards potential change	1.5	2.9	14.7	38.2	42.6	.897	4.18
2	Attitude towards cooperation and collaboration	8.8	14.7	32.4	32.4	11.8	1.121	3.24
3	Attitude towards adopting change	0	1.5	10.3	57.4	30.9	.668	4.18
4	Willingness towards initiating web-based services	4.4	7.4	27.9	41.2	19.1	1.027	3.63

Note: Disagree = 1, Slightly Disagree = 2, Neither = 3, Slightly Agree = 4, Agree = 5

Archive centers believe that staff should be aware about the potential changes relating to technology and users' expectation (4.18) as well as should have positive

attitude towards accepting the change (4.18). Besides, staff must have willingness to initiate and adopt technology-based services (3.63) and eagerness to extend cooperation and collaboration with other center and users (3.24).

Staff motivation for providing technology-based archive services, organizational effectiveness is also important. If the organizational environment positively supports, it will be easy for initiating web-based services in archive management. Table 25 presents organizational creativity and effectiveness of local archive centers in Japan towards integrating technology-based services.

Table 25: Organizational effectiveness in adapting technology-based services (N **=**68)

#	Organizational effectiveness	Disagree	Slightly disagree	Neither	Slightly agree	Agree	Std. Deviation	Mean
1	Staff have a culture of adopting new services	1.5	7.4	55.9	25.0	10.3	.824	3.35
2	Management always ready to accept new services	4.4	14.7	39.7	33.8	7.4	.952	3.25
3	Well supported in adopting new technology	2.9	14.7	45.6	33.8	2.9	.833	3.19
4	Decision making speed for new initiatives is fast	4.4	14.7	35.3	38.2	7.4	.963	3.29

Note: Disagree = 1, Slightly Disagree = 2, Neither = 3, Slightly Agree = 4, Agree = 5

From the table 25, it is observed that for effective archive management, archive staff should have positive attitude in adopting new services (3.35), management should appreciate new ideas (3.25) and service including necessary technology support (3.19).

Staff motivation towards adapting of web-based technology in archive management also influenced by perceived benefits of using technology. The benefits may be measured through different parameters. The study measured perceived benefits of introducing web-based services in archives. Table 26 illustrates the archive centers opinion regarding perceived benefits of adopting web-based services in archives.

Table 26: Perceived benefits of technology-based service (N =68)

#	Perceived benefits	Disagree	Slightly disagree	Neither	Slightly agree	Agree	Std. Deviation	Mean
		Valid Percent (%)						
1	Other centers collections can be easily understood	1.5	4.4	16.2	42.6	35.3	.912	4.06
2	Sharing document management knowledge among centers	2.9	4.4	14.7	41.2	36.8	.984	4.04
3	Can reduce monetary cost	13.2	20.6	39.7	16.2	10.3	1.148	2.90
4	Ensure long term preservation of materials	22.1	16.2	42.6	11.8	7.4	1.167	2.66
5	Promote local archives to wider audience	0.0	4.4	14.7	48.5	32.4	.805	4.09
6	Encourage scholarly communication	4.4	2.9	25.0	44.1	23.5	.986	3.79
7	Reduce overlapping work between centers	17.6	16.2	38.2	23.5	4.4	1.123	2.81
8	Reduce communication gap among archive centers	10.3	5.9	36.8	41.2	5.9	1.031	3.26

Note: Disagree = 1, Slightly Disagree = 2, Neither = 3, Slightly Agree = 4, Agree = 5

From the table it is observed that with the implementation of technology-based services promotion of local archive centers will be easy for them (48.5% slightly agree and 32.4% agree). Besides, archive center staff also think that as a result of technology-based service sharing archive management knowledge among centers will be easy and other centers resources can be easily understood. Some other benefits that motivate archive staff in using technology-based archive service are reduce communication gap among archive centers and users, promote scholarly communication, reduce overlapping works, etc.

5.6 Proof of Hypothesis

The hypothesis formulated in chapter 4 has been analyzed and checked with the primary data collected from local archives centers in Japan. The details of hypothesis test result are described as below:

5.6.1 Variable and construct

Value co-creation in archives is a joint effort of constructive performance of advisory committee, participation of users in archive services, organizational creativity and effectiveness and motivation of staff. Here, advisory committee is independent variable in the value co-creation procedure. They can easily influence to other variables. Here, the function of stakeholders includes policy planning, initiating new services, improving existing services, solving problems, considering future strategy of archive center, etc. In archival service ecosystem, archive administrator needs to adopt with new changes, initiating new services, making collaboration and cooperation with other organizations and users, accepting new services in their existing service domain. At the same time, users' function is to use archival content, share the content with peers, interact with archive administrator, etc. But the function of archive center depends on different organizational issues including organizational creativity and effectiveness for adopting new services, staffs' attitude for accepting new ideas, wiliness to adopt new technologies in archive management and the fairness and speedy decision-making approaches. Organizational effectiveness also influenced by attitude and behavior of staff towards different organizational issues.

To understand the complex relationship among different value co-creation entities in archive services, this study examined 18 variables under 4 constructs. Table 27 illustrates the value co-creation variables and constructs relating to value co-creation in archival service ecosystem.

Table 27: Construct and variables of hypothesis measurement

Construct	Variable
Stakeholders involvement in archive management	- Planning policy - Determining acquisition policy of center - Initiating new services - Improving existing service quality - Consider record disclosure - Solving problems relating to archive management - Consider future strategy of the center
Organizational creativity and effectiveness	- Staff have a culture of adopting new services - Management always ready to accept new ideas - Centers infrastructure support adopting new technology - Decision making relating to new initiative is fast
Motivation of Staff	- Ready to create awareness among users' community - Willing to adopt change in technologies and services - Willing to adopt web-based services - Ready to collaborate and cooperate with users and other centers
Participation of users in archive services	- Developing new ideas relating to archive services - Improving service quality - Strengthening collaboration and cooperation - Creating user focused services

5.6.2 Reliability and validity among constructs

To understand the relationship among constructs, it is important to assess the reliability of the measurement scales. In this study, the internal consistency analysis was measured through calculating Cronbach's alpha, rho_A, Composite reliability and Average Variance Extracted (AVE). Figure 16 illustrate the result of validity analysis.
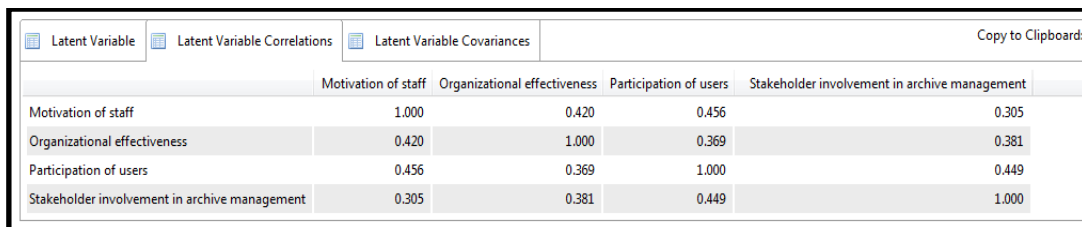
Matrix Cronbach's Alpha rho_A Composite Reliability Average Variance Extracted (AVE)	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Stakeholder involvement in archive management	0.850	0.856	0.886	0.529
Participation of users	0.725	0.798	0.827	0.555
Organizational effectiveness	0.810	0.869	0.873	0.638
Motivation of staff	0.728	0.804	0.826	0.546

Figure 15 Reliability and Validity matrix

In general, the Cronbach's alpha is used to measure the internal consistency and dimensionality among constructs. However, the there are differences in accepting satisfaction level of alpha among different researchers. Van de Ven & Ferry (1980) consider that coefficient 0.55 and higher is acceptable while Oosterhof (2001) suggest the acceptable level is 0.6 or higher. On the other hand, Tavakol & Dennick (2011) consider alpha level 0.7 or higher is acceptable. However, as demonstrated in the Figure 16, the reliability coefficient is 0.7 or higher which seems acceptable. The overall Model fit summary Chi-Square is 246.410.

5.6.3 Latent Variable Correlations

In addition to Alpha analysis, the Latent Variable Correlations were also measured to explain the correlations among the observed variables by making assumptions about the hidden (latent) cause of those variables. Figure 18 illustrates the result of Latent Variable Correlations analysis.

	Motivation of staff	Organizational effectiveness	Participation of users	Stakeholder involvement in archive management
Motivation of staff	1.000	0.420	0.456	0.305
Organizational effectiveness	0.420	1.000	0.369	0.381
Participation of users	0.456	0.369	1.000	0.449
Stakeholder involvement in archive management	0.305	0.381	0.449	1.000

Figure 16 Latent variable correlations

5.6.7 Hypothesis test result

After checking the validity and reliability result, hypothesis testing was done using linear regression. In principle, linear regression was used to attempt the relationship between independent and dependent variables by fitting a linear equation to observed data. Besides, it is observed that the loading on hypothesis factor in this study are significant and substantial. The measurement of 68 responses yielded the Saturated and Estimated Model fit as: SRMR fit index 0.097, d_ULS fit index 1.801, d_G fit index 0.714, NFI fit index 0.611, and Chi-Square fit index 246.410.

The assessment of convergent validity is supported by the confirmatory factor analysis model. It is found that all the composite reliability values of the study are larger than 0.80 which is higher than acceptable fit 0.50.

After the above assessment, this study compared Standard Deviation, Confidence Intervals, T value and P value (level of significance) of the hypothesis. Table 28 demonstrate the summary of hypothesis test result.

Table 28 Summary of hypothesis test result

Hypothesis	Coefficient	Standard Deviation	97.5% Confidence Intervals	T Value	P Value	Status
H1: Stakeholders involvement in archive management stimulates participation of users in archives services.	0.308	0.113	0.508	2.759	0.007	Supported
H2: Stakeholders involvement in archive management influence organizational effectiveness in archive center.	0.279	0.119	0.495	2.311	0.012	Supported
H3: Stakeholders involvement in archive management has influence on motivation of staff in archive center.	0.305	0.143	0.526	2.683	0.009	Supported
H4: Motivation of staff in archive center influence in organization effectiveness in archive services.	0.335	0.137	0.608	2.397	0.012	Supported
H5: Motivation of archive staff have influence on participation of users in archive services.	0.311	0130	0.557	2.311	0.013	Supported
H6: Organizational effectiveness influence participation of users in archive services	0.121	0143	0.389	0.852	0.391	Not Supported

From table 28 it is observed that hypothesis 1, 2, 3, 4, and 5 have been supported with significance level (P Value) 0.007, 0.012, 0.009, 0.012, and 0.013 respectively. But the P value of hypothesis 6 exits the acceptable level 0.05. Hence, hypothesis 6 are rejected.

5.6.8 Theoretical construct among hypothesis

Finally, the Structural Equation Model (SEM) was done using Smart PLS. The SEM was used to view the theoretical construct of the model. SEM represents the confirmatory factor analysis, regression or path analysis. Figure 18 below shows the SEM of the hypothesis.
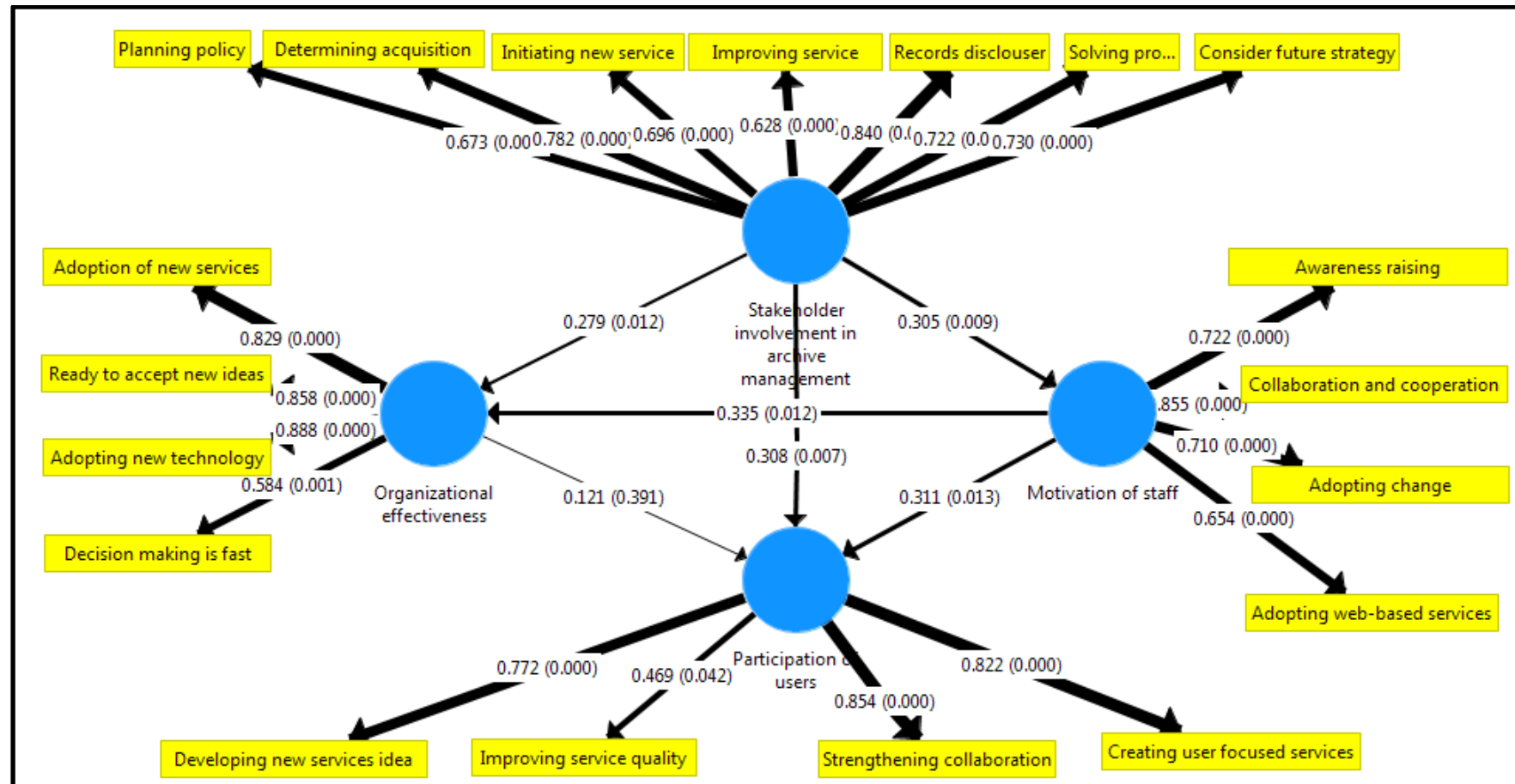
Note: Bootstrapping Internal Model Path = Coefficient and P-Value, Outer Model = Weights/Loadings and P-Value, Highlight Paths = Relative values

Figure 17 Structural Equation Model of hypothesis

5.6.9 Assessment of Structure Equation Modeling

Figure 18 shows that hypothesized model seems to provide a reasonable fit for the observed covariance. Model fit analysis is required to describe how well the observed sample match with the expected value. Model fit can be assessed in two non-exclusive ways: i) by means of inference statistics (tests of model fit), and ii) through the use of fit indices (approximate model fit). Partial Least Square (PLS) path modeling's tests of model fit rely on the bootstrap to determine the likelihood of obtaining a discrepancy between the empirical and the model-implied correlation matrix (Dijkstra & Henseler, 2015). SmartPLS SEM can be measured through following parameters ("Fit measures in SmartPLS," 2014):

- SRMR
- Exact fit criteria d_ULS and d_G
- NFI
- Chi²
- RMS_theta

Standardized Root Mean Square Residual (SRMR) Index

The Standardized Root Mean Square Residual (SRMR) is an index that calculate the average of standardized residuals between the observed and the hypothesized covariance matrices (Chen, 2007). SRMR measures the approximate fit of the researcher's model. Henseler et. al.(2014)introduce the SRMR as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. In SmartPLS fit measurement, the SRMS index value of less than 0.10 or of 0.08 are considered as acceptable (Cangur & Ercan, 2015; Hu & Bentler, 1998). However, the value lower than 0.05 indicates good fit (Kline, 2015).

Normed Fit Index (NFI)

One of the first fit measures proposed in the structure equation model (SEM) literature is the normed fit index by Bentler & Bonett, (1980). NFI computes the Chi² value of the proposed model and compares it against a meaningful benchmark. Since the Chi² value of the proposed model in itself does not provide sufficient information to judge model fit, the NFI uses the Chi² value from the null model, as a yardstick. The acceptable NFI value is between 0 and 1 (Byrne, 2008). However, the closer the NFI to 1, the better the fit. NFI values above 0.9 usually represent acceptable fit ("Fit measures in SmartPLS," 2014).

R Square (R^2)

Another important criterion for assessing the structural model in PLS-SEM is the R^2value. R^2value also known as the coefficient of determination (Hair, Ringle, & Sarstedt, 2011; Henseler, Ringle, & Sinkovics, 2009). The R^2value represents the proportion of variation in the dependent variables that can be explained by one or more predictor variable(Elliott & Woodward, 2007). Hair et. al. (2010)stated that the acceptable level of R^2value depends on research context. Falk & Miller(1992)propose minimum acceptable R^2value is 0.10. However, Chin (1998) suggest that the R^2values of 0.67, 0.33, and 0.19 in PLS-SEM can be considered as substantial, moderate, and weak fit respectively.

Exact fit criteria d_ULS and d_G

The exact model fit tests the statistical (bootstrap-based) inference of the discrepancy between the empirical covariance matrix and the covariance matrix implied by the composite factor model (SmartPLS, 2014). In PLS-SEM, the discrepancy can be presented through d_ULS (the squared Euclidean distance) and d_G (the geodesic distance). The d_ULS and d_G you usually consider the inference statistics. SmartPLS uses an adapted Bollen-Stine bootstrapping procedure (Dijkstra & Henseler, 2015) to create confidence intervals for the d_ULS, d_G, and SRMR criteria. For the exact fit criteria (i.e., d_ULS and d_G), it is required to compare the original value against the confidence interval created from the sampling distribution. The confidence interval should include the original value. Hence, the upper bound of the confidence interval should be larger than the original value of the exact d_ULS and d_G fit criteria to indicate that the model has a "good fit". To determine the exact fit criteria in SmartPLS, the upper bound is at the 95% or 99% point of the confidence interval should be greater than the values of d_ULS and d_G(SmartPLS, 2014).

Root Mean Square (RMS_theta)

The RMS_theta is the root mean squared residual covariance matrix of the outer model residuals (Lohmöller, 2013). The RMS_theta assesses the degree to which the outer model residuals correlate. The measure should be close to zero to indicate good model fit. The RMS_theta builds on the outer model residuals, which are the differences between predicted indicator values and the observed indicator values. For predicting the

indicator values, it is necessary in PLS-SEM to have the latent variables scores. Hence, even though RMS_theta computation is used for assessing common factor.

Table 29: PLS-SEM Model fit summary

Measurement tool	Acceptable value	References/Base value	Values of sample
SRMR	<0.10	Cangur & Ercan, 2015; Hu & Bentler, 1998	0.091
d_ULS (SM)	**d**_ULS<95% bootstrap quantile (HI95 of **d**_ULS)	1.569 (**d**_ULS)	2.345*
d_ULS (EM)	**d**_ULS<95% bootstrap quantile (HI95 of **d**_ULS)	1.569 (**d**_ULS)	2.357*
d_G (SM)	**d_G**<95% bootstrap quantile (HI95 of **d_G**)	0.819 (**d_G**)	1.771*
d_G (EM)	**d_G**<95% bootstrap quantile (HI95of **d_G**)	0.819 (**d_G**)	1.746*
R^2	>0.10	Falk & Miller (1992)	0.325
NFI	Between 0 and 1	Byrne, 2008 Lohmöller, 2013	0.611
RMS_Theta	close to zero		0.185

95% Confidence Interval, SM - Saturated Model, EM - Estimated Model, CI - Confidence Interval

Table 29 illustrates that the SRMS of the proposed model is 0.091 (<0.10) which is an acceptable range. The d_ULS value is smaller than 95% confidence interval. The model value of d_ULS saturate model is 2.345 (>1.569) and d_ULS estimated model is 2.357 (>1.569) which indicates the good fit of the model. The d_G value of the model also well supported. The d_G value of saturated model and estimated model is 1.771 and 1.746 which is greater than d_G value 0.819. In the proposed model, the R^2 value is 0.325 which meet the minimum acceptable range (>0.1). Besides, the NFI value 0.611 (acceptable between 0 and 1) and RMS_Theta value 0.185 (close to zero is acceptable) also support the Structure Equation Model (SEM).

Besides, the associated fits either meet or exceed recommended levels. In addition, the path coefficients of the estimated model support the theoretical relationship of the model in direction and magnitude. Strong links of the model are the paths among the measured infrastructure constructs among stakeholders and organizational climate, stakeholders and value co-creation, organizational climate and motivation of staff, and motivation of staff and value co-creation. The loading values of these four elements is larger than 0.3. However, the path link between organizational climate and value co-creation, and stakeholders and motivation of staff provides weak signals.

5.7 Summary

The research conducted deep analysis of archive management system in local archives centers Japan from service ecosystem perspective. It is found that most of the local archives' centers are used by researchers, academic pupil, general people, businessman and other types of professionals. But majority of the centers do not have web-based services. For using archival resources, users have to go to archive center or contact with archive staffs through telephone call or email. But some archives centers have multiple option for users to get archive services. Majority of local archives centers (56.70%) do not have any web-based service for delivering archive services. Local archives centers think that major problem of not using web-based service in archive centers are: lack of digital content, lack of IT support staff and confidentiality issues. However, some archives centers use Facebook and Twitter for interacting with users. Archives centers who use social media think that with the integration of social media in archives services they are able to publicize their content easily. Besides, such archive centers also think that with the help of social media the recognition of the center is increased.

The study also revealed that all most 53% of the local archive centers do not have advisory committee to run the archive centers' activities smoothly. The remaining 47% archive centers have advisory committee which includes researchers, historians, academic experts, and local government officials. The major roles performed by stakeholders in local archives centers in Japan are initiating new services, solving existing problem, improving service quality, determining records acquisition policy, etc.

The study identified that local archive centers in Japan have little scope of integrating users in archive services. This is because most of the archive centers follow physical based services. Most of the case users can give their feedback through oral comments, over telephone and writing comments on comments book available in archive centers. Though there are scope of commenting through email, but it does not meet the demand of users like social media comment. At the same time, utilization of users' comment on designing user focused archive services is not praiseworthy.

On the basis of above fact, the study summaries that being a developed country national level archives centers on Japan enjoy much technological support, competent management and other support for archive management. As a result, archive services in NAJ and other big centers are very good. However, local archive centers in Japan faces shortage of human resources, inadequate technological apparatus, shortage of consultation and guidelines. As a result, local archive centers of Japan cannot create much users' impact in terms of users' satisfaction on services. This is similar case of Bangladesh. Accordingly, in the next chapter the study proposed a value co-creation model integrating resources from different entities of archival service ecosystem for local archives centers in Japan.

Chapter 6:

Conclusions, Implications and Limitations

6.1 Introduction

This final chapter summarizes the overall finding of the research and highlighted the major finding of the study to provide the answers to the research questions which were formulated in Chapter 1. The overall structure of the chapter includes four sections. The first section covers the introduction, the second section include the answer to three SRQs and one MRQ, section three pointed out the proposed value co-creation model and research implication, and section four describes the limitation of the study followed by scope of future research.

6.2 Answer to the research questions

6.2.1 Subsidiary Research Questions (SRQs)

SRQ1: What are the strategies of existing archive management and services?

Based on the available data and reviewed literature, the study identifies that the process of archive management and service differs from one center to another depending on the nature of archive center and available tools for this purpose. However, in general there are two mechanisms of archive management and services: physical space service and digital space services i.e. web-based services. However, many big archives centers throughout the world have both digital and physical based services.

Physical-based management and services

In physical-based archive management and services majority of the archive related functions are done manually or little help of technology. In such centers, all types of archive services are provided by physically. As a result, information seekers need to go to the archival content physically. Most of the developing country archive management system follows this type of management strategy. In Japan 57% local archive centers provide physical based archive services. There are two reasons behind physical based archives services: 1) archive centers do not have adequate infrastructural (digital content, technology and supporting staff) facilities for providing technology-based services, and 2) there are confidential resources which are not allowed in public access through web.

Digital-based management and services

Many archive centers nowadays implemented different type of technological apparatus and relevant software package in archive management and services. In case of digital-based services, information seekers can search and browse archival content through website. In some cases, full text documents are available on the web. However, web-based access does not allow to access confidential documents and the resources related to national security cannot be accessed unless having appropriate permission. However, information seekers can know the bibliographic information of archival content. In case of NAJ Digital Archives, many documents are marked as 'Required Examination' or 'Private'. Users cannot directly access those content through web. Users need to take permission for using the resources. However, as part of web-based services, many archives centers also utilize the scope of social media and other networking technology to deliver their archival services. Common social media tools used in archive service delivery includes Twitter, Facebook, YouTube, RSS, etc. Any users can freely access archival content available on social media tool.

Archive management and service in practice

In Bangladesh, archive services are mainly physical based. Users need to visit National Archives of Bangladesh premises for using archival resources. Though NAJ maintains an official website, users can hardly get access to archival content through it. Besides, though there are some social media tools in NAB, the content of the tool does not relate to archival issues rather than some organizational publicity information and so on. Besides, there are some local archive centers in Bangladesh, but they have no web-based service at all.

On the other hand, archives enter in Japan have strong physical and digital service space. Though majority of local archive centers' service is physical based, they have also web-based information service. It is observed that city and municipal archives centers who do not have their own website. However, they provide archive service information through its mother organization's website. In case of archive service in national level, the National Archives of Japan Digital Archives (NAJ DA), Japan Center for Asian Historical Records (JACAR), and Japan Diet Library (JDL) plays vital role in web-based service delivery. In addition, NAJ has strong social media presence for archive service delivery towards potential users. NAJ's Twitter have approximately 5000 followers who can instantly get update about the service in their mailbox.

Besides, archive centers also deliver service through centers' webpage, responding over telephone, email, etc. Sometimes, archive center also organize exhibition for informing users about their content.

SRQ2: What are the factors involve value co-creation in archives?

This research distinguishes archival value co-creation factors from users, archive centers, and co-creation platform (technology) point of view.

Users point of view

In physical based archive management system very often, users cannot use archival content when they need. Even sometimes they do not know what type of resources are available on their research area. This is because getting relevant document from the large number of resources through physical access is difficult and time consuming. Besides, in some cases staffs' poor motivation also slowdown the interest of users for not getting expected services. In this case, archives users grow negative attitude towards archive centers and their services. As a result, users do not come forward to contribute to archive services. Accordingly, for active involvement of users in value co-creation activities archive centers must create positive environment in terms of facilities and services for users. Otherwise, users may not actively be involved in archival value co-creation activities.

Considering these issues, the study summaries factors of value co-creation in archival service ecosystem as below:

    I. Ease of access to archival content

   II. Attitude of archive center staff

 III. Willingness of users

 IV. Content specific subjective knowledge of users

   V. Awareness regarding archival services

 VI. Commitment to society for promotion of cultural heritage.

Archive centers point of view

In service ecosystem process, archive centers must have favorable organizational environment for successful value co-creation in archives. Organizational environment also reflects with some internal factors in adapting service ecosystem. In archive centers point of view, the basic factors involved in archives value co-creation are: i) organizational creativity and effectiveness to adopt change, integration of new and user-friendly technologies in archive services, adequate infrastructural facilities to adopt new services, etc.; ii) Motivation of archive staff in terms of awareness regarding users' changing demand, adoption of using new technologies and services process, wiliness to collaboration with other center for exchanging and developing expertise and skills, and cooperative attitude to listen to users need, etc.; iii) active involvement of stakeholders in archive management serves as a guide for making strategy, policy making and implementation relating to uplifting change of archival values.

Platform point of view

In case of value co-creation platform, there must be an interactive space for sharing and developing ideas between different actors of archival services. The platform may be either web-based space i.e. social media space for discussion or physical space in the archival centers, etc. However, whether physical or web-based, the platform must be convenient for both users and archival staffs.

It is found that, in National Archives of Bangladesh, there is little scope of sharing users' ideas through website. Users have to go to the archive center for sharing experience and giving service feedback and suggestion. In this case user's active participation in value co-creation framework in the archival service ecosystem is difficult.

On the other hand, NAJ maintains digital space for users' feedback and idea sharing. For example, NAJ's twitter pages has more than 45 thousand followers. Whenever NAJ post anything in their twitter page, followers interact the posts through likes, retweets and reply. Same to NAJ's Facebook, YouTube, and RSS also. By this way NAJ can understand the importance of service as well as importance of content.

SRQ3: How to integrate resources from different actors in archival value co-creation?

The concept of resource integration offers a distinct perspective on product/service use. This concept relates to shifting the focus from using a *single* offering from one firm to how such offerings are used in combination with a diversity of other resources (Vargo & Lusch, 2014). Researcher revealed that resource integration is a collaborative interaction among the actors (Gummesson & Mele, 2010) to institutional logic and share understanding of norms to meet common goal (Edvardsson, Kleinaltenkamp, Tronvoll, McHugh, & Windahl, 2014). For sustainable archive management system archive center needs to integrate resources (knowledge and skills) from different actors. In general, archive services are associated with three actors: archive center staff, stakeholders, and archive users. Each actor is composed with different level of people as below:

Stakeholders: Many big archive centers throughout the world formed advisory committee for smooth operations and management of archival activities. The advisory committee also known as stakeholders who are form with different classes of people. The advisory committee of the US National Archives and Records Administration is formed with historians, archivists, political scientists, users, and caretakers of legislative records ("Advisory Committee | NARA," n.d.). In this study, members of stakeholders in archive service includes researcher, academic expert, historians, IT experts, politicians, government officials, local representatives, etc. They have also different level of expertise and knowledge like systematic knowledge, subjective knowledge, historical knowledge, technical skills, political expertise, diplomatic knowledge, etc.

Archive center: Archive center also are being managed by different types of people as a teamwork. The management team includes archivists, documentarists, IT expert, technical staff, support staff, curator, etc. Each of them have different types of knowledge and expertise.

User: Like advisory committee members, archive users also includes a wide variety of people who generally user archival content. Most common archive users include researcher, academic pupil, historians, filmmakers, demographers, lawyers, etc. each of the category of people have different level of expertise. Figure 19 below describes the resources of different actors on archival services.
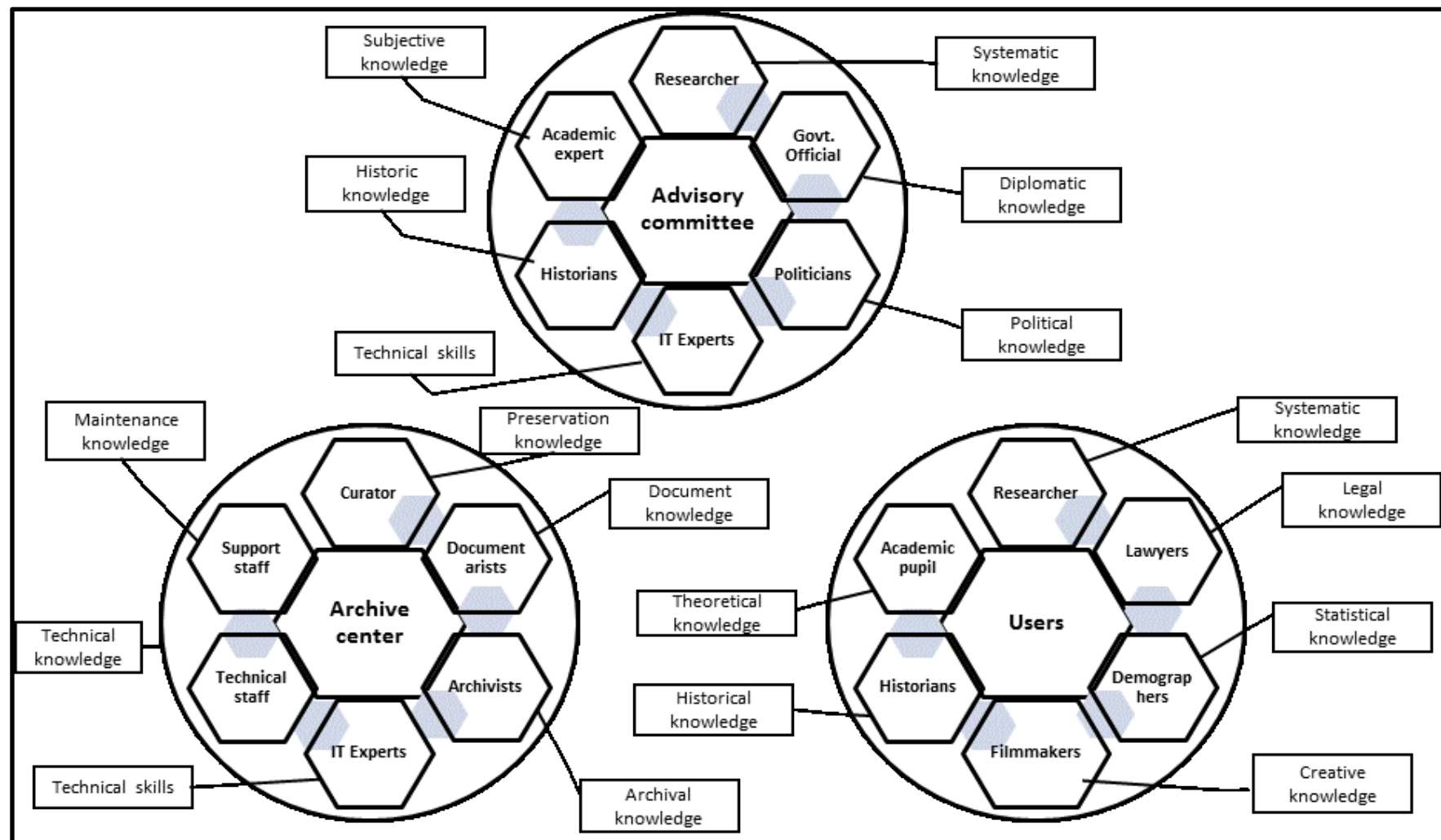
Figure 18: Operant resources of actors of archive services

As archive service actors have different level of skills and knowledge, they can easily share their expertise to make a common archive management goal. Figure 20 illustrates how actors of archive services can share their expertise for uplifting archival value.
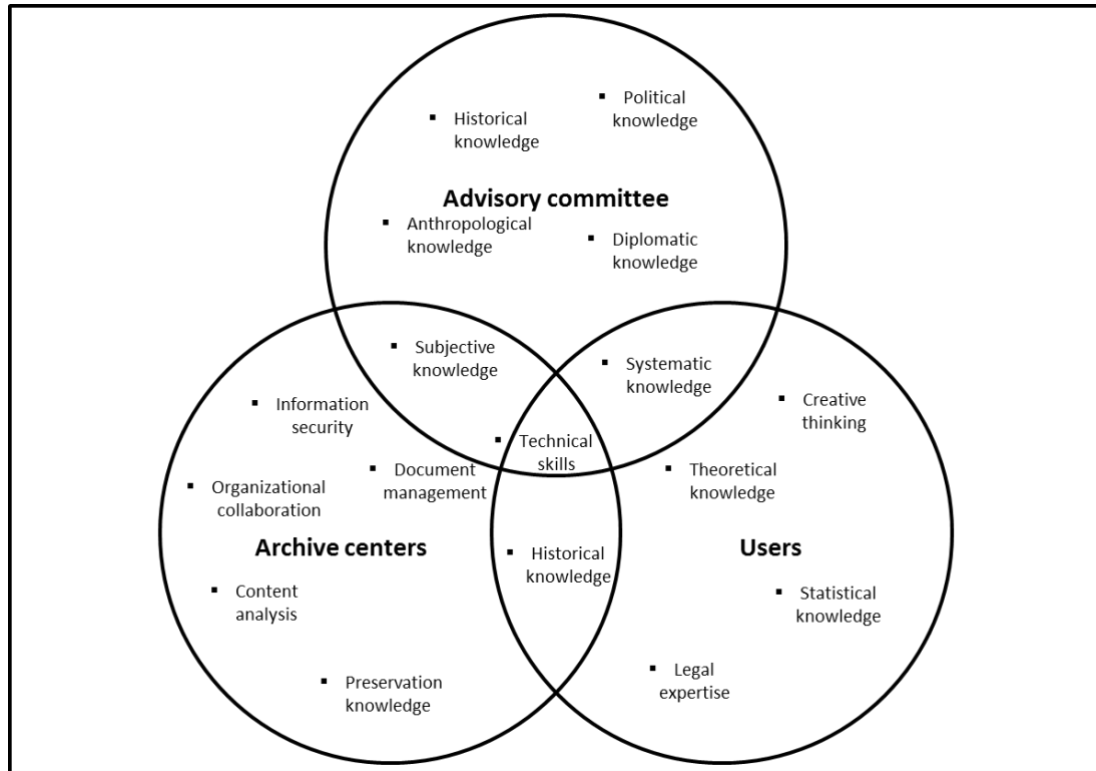
Figure 19: Actors' resource integration in archive service

Resource integration requires participation of co-creation activities to share ideas and experience among different actors. This co-creation may be took place between archive administrator and stakeholderss as well as archive administrators and users. Figure 21 illustrates resource integration process in archival value co-creation activities.
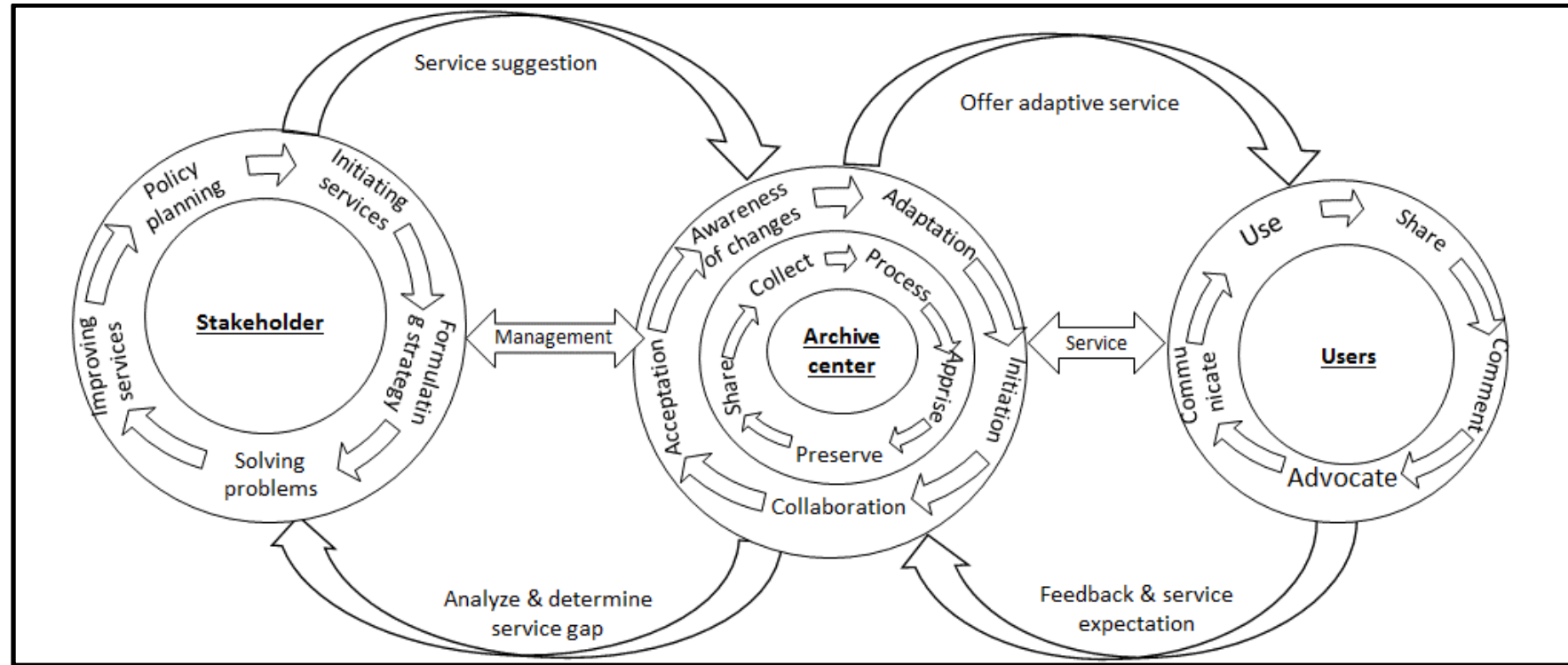
Figure 20: Process of resource integration among actors

Figure 21 illustrates that there should be mutual understanding and cooperation among stakeholders, archival centers, and users. In this case, archive centers have to play duel role in value co-creation in archives: archive centers and users, and archives center and stakeholders as below:

Resource integration between Archive centers and users

The relationship between archive users and archive center is service. The main job of archival center is to collect, process, apprise, and provide archival services to users. In this case, archive centers have to aware about the changes of technology and users demand, adoption of new technology, maintain collaboration and innovate service in different context. Through these activities archive center analyze their service gap, design new service and offer the updated services to the users.

On the other hand, the main role of users is to use archival resources. Besides, users can share comment and interact with archive staff and other users. While use and interaction, archive users share their expectation and demand to archive staff. Users also motivate other users for using important archival content. By this way user can provide valuable information for service development. If archival center implements such users' expectation relating to service, user will be able to get better content and improved services as required. But in this case, archive centers have to carefully listen to users' feedback, opinion, suggestion and remarks regarding archival services and users should provide constructive criticism and arise lawful demand.

Resource integration between archive centers and stakeholders

Stakeholders of archive centers are mainly deal with policy planning, formulating strategy, solving major problems, etc. The relationship between archive center and stakeholders are related to management. While regular business archive centers determine different service gap. Archive center than discuss the issues with stakeholders meeting for taking necessary measurement. Stakeholders member consider different issues in relation to new services adoption or improving existing services. Besides, advisory committee also provide necessary guideline for process improvement. Archives centers need to follow the guideline and strategy derived by stakeholders for service improvement.

For effective and integrated archive management, all entities of archival issues (users, archives centers and stakeholders) must work together. As a result, archive users will get improved services with better archival content, advisory committee members will be satisfied with better management of archives and the archive centers will be happy with improved users' satisfaction on archives services as well as both advisory committee members and users trust on archive center.

6.2.2 Major Research Questions (MRQ)

MRQ: How to develop an integrated archive management framework for promoting archival value?

Archives resources are valuable considering the content bearing in it. But the values depend on how effectively they can be used and for what purpose. This means if researcher or other users cannot use the content for their research or meeting information need, archival document is nothing rather that an old wastepaper. At the same time usages of archival content relates to many issues like how archival resources are preserve and manage, what are the access opportunity of them, what type of contents are need by the users, how they can use the content, what are the attitude of archive staff regarding service offering, and what are the involvement of stakeholders for managing and directing archive activities.

Considering these issues, this research explored that there are several separated but vital entities linked together for uplifting archival value. In other words, effective archive management systems require direct or indirect relationship among different actors. From the literature review and finding on archive management case analysis, the study identified five key component of archival value co-creation. Table 30 illustrates the components and essence.

Table 30 Key components of archives value co-creation model

Components of value co-creation framework		Essence	Data evidence
Involvement of stakeholders	E1	Stakeholders improve quality of archive services through considering of the future direction of archive center.	Table 22 #5 and #8
Motivation of staff	E2	Staffs have attention to potential changes regarding users' expectation as well as have positive attitudes toward the changes.	Table 24 #1 and #3
Co-creation platform	E3	Social media platform promotes easy access to archival content for users.	Table 20 #1, #6, and #3
	E4	Social media platform improves recognition of archive center.	
	E5	Social media reduces communication gap between archive center and users.	
Participation of users	E6	Users provide feedbacks on services which help archive administrator to develop new service ideas.	Table 23 #1 and #2
Organizational creativity and effectiveness	E7	Staffs' positive attitude in adopting new services is the basis of functioning archive management ecosystem.	Table 25 #1, #3, and Table 24 #3 and #4
	E8	Organization cultivates creative climate by appreciating new ideas and services as well as providing technological supports.	

Table 30 illustrates that archival value co-creation involves with the components like stakeholders' involvement, motivation of staff of archive centers, co-creation platform, participation of users in knowledge sharing, and organizational creativity and effectiveness. Each of components of archival value co-creation have different essence which act upon another component for value co-creation. Based on the data analysis, this research identified 08 essences for effective archive management framework. Each essence acts upon another essence and components for value co-creation in archives. Figure 23 illustrates how these components and essence related to each for archival value co-creation.
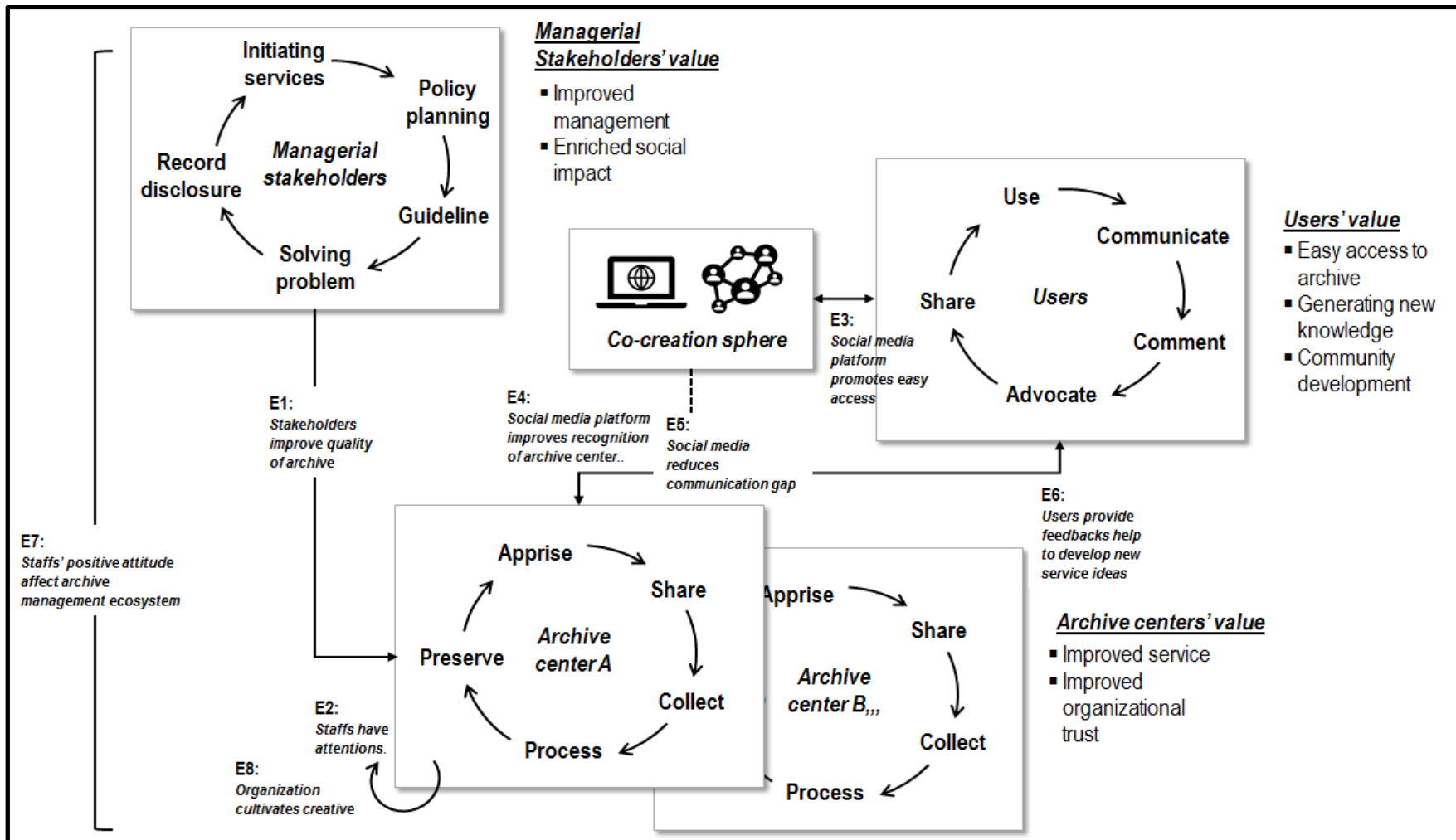
Figure 21: Value co-creation in archival service ecosystem

As illustrated in the figure 23, functions and relationship between different components of archival value co-creation are described below.

Managerial Stakeholders

Stakeholders in archive services performed the role as an advisory body of archival center. Advisory committee generally discuss professional and technical problems being faced by archive center. Besides, advisory committee also coordinate and implement clause relating to archive in cultural exchange programme ("Coordination | National Archives of India | Govt. of India," 2019). In archive management, advisory committee has also pre-defined activities. Among the activities, the most important function of stakeholders is to consider future direction of the center as well as improving existing service quality of the center. Other function of stakeholders includes planning administrative policy, initiating new services idea, determining the acquisition policy of new records, making service implementation guideline, consider resource security and discloser of historical records, and solving existing problem of archive center. In value co-creation of archival service ecosystem, managerial stakeholder contribute essence 1 as below:

> *Essence 1: Stakeholders improve quality of archive services through*
> *considering of the future direction of archive center*

In archival value co-creation framework, stakeholders generally improve quality of archive services through considering of the future direction of archive center. Besides, stakeholders also cultivate organizational creative climate by appreciating new ideas and service as well as providing technological support to archive center. In addition, stakeholders also monitor the activities of other archive center including co-creating activities of own center relating to value co-creation.

Archive center staff

Archive centers have their own system of activities for managing archival resources. The regular job of archival center is to collect/receive archival resources from different sources. After receiving resources archive center needs to process the resources depending on the physical condition. Archive centers also need to apprise the content considering the intellectual value contained herein. After appraisal and processing, archival contents are preserved in suitable media. Archive staff disseminate/share content from the preserved resources.

In addition to regular job archive center staff need to maintain collaboration and cooperation with users and other archive centers. Besides, archive staff must aware about potential change of technological apparatus as well as changing expectation of users' community. To meet such change, archive staff initiate and adopt different strategy in archive management. Accordingly, archive center staff perform following essence in archival service ecosystem.

Essence 2: Staffs have attention to potential changes regarding users' expectation as well as have positive attitudes toward the changes.

Archive services in the 21st century have been changed radically to keep pace with the changing users' expectations and way of information seeking behavior. Archive centers are forces to adopt participatory and collaborative approach of using different web technologies. Accordingly, archive staffs must aware with changes in terms of management, technological apparatus, and users' expectations.

Motivation of archive center staff is much important for effective archive management system. Staff motivation is strongly required for initiating new service as well as continuing existing services. Measuring staff motivation is a complex process. However, as per archive center head, staff motivation can be measured through staff's awareness toward potential change, attitude towards cooperation and collaboration, attitude towards adopting change, and staff's willingness towards initiating new services. Accordingly, this study draws following essence relating to staff motivation in value co-creation in archival service ecosystem.

Essence 7: Staffs' positive attitude in adopting new services is the basis of functioning archive management ecosystem

Lyons (2002) stated that the increased growth of digital technologies presents archivists with an opportunity to broaden and deepen their public service and community ties while reducing the wear and tear on the original documents. Now users expect digital content in virtual space where they can easily access and interact for their research and engagement (Daines and Nimer, 2009). Hence, archive staff must have to be aware about the changes of technology and users demand, adoption of new technology, maintain collaboration and innovate service in different context. Through these activities archive center analyze their service gap, design new service and offer the updated services to the users.

Users

The value of archive is determined by the users who like to use them. The primary job of users is to read and use archival content for their own sake. However, users not only use the archival resources but also share the content to other co-users. They also promote archival information through social tagging and other sharing tools. In this case, social media tool helps users to easily access archival content as well as reduce communication gap between users and archive center. Besides, users also put their opinion relating to archival content which enable other users as well as archive administrator to know the important of archival content and services. Hence, participation of users in archive management is important.

In archival value co-creation, users also can contribute archival center in service-related idea generation process. While using archival content for meeting information need users can communicate, share/comment and interact with other users in their network. Besides, users provide feedbacks on services which help archive administrator to develop new service ideas. Hence, the study determines following essence of users in archival value co-creation.

Essence 6: Users provide feedbacks on services which help archive administrator to develop new service ideas

Users share, comment and interact with archive staff and other users. While use and interaction, archive users share their expectation and demand to archive staff. Users also motivate other users for using important archival content. By this way user can provide valuable information for service development.

Organizational effectiveness

Archives value co-creation mostly depends on organizational capabilities and effectiveness. For effective archive management adequate infrastructural support for initiating modern services are required. Besides, willingness of archive staff as well as proper guideline from advisory committee is important for integrated archive management system.

In case of favorable organizational capabilities, users can exchange their ideas including feedback relating to service. If the organization is capable enough, they can offer adoptive services to the users. Favorable organizational capabilities also can integrate new technologies for archive preservation and access. The study concludes following essence for organization effectiveness in archival value co-creation.

Essence 8: Organization cultivates creative climate by appreciating new ideas and services as well as providing technological supports.

For effective integration of resources, archive center must ensure positive environment in terms of infrastructure and human resources. Archive staff have to be aware about the change and expectation of users. Archive staff must have supportive in adopting new technologies for improved services. They must be creative in users focused service design. At the same time, stakeholders have to provide necessary infrastructure support and direction for initiating new service or improving existing services. Archive staff will adopt new service or improve existing to users for greater value.

Co-creation platform

For value co-creation in archives, there needs a co-creation platform where different actors meet together for exchanging knowledge and skills for other actors. In archival value co-creation framework, the 'co-creation sphere' serve as web-based hub for archive staff, users and stakeholders for increasing archival value. In archive service ecosystem, user can tell their service expectation as well as propose new service idea to archive staff through web-based co-creation sphere. Archive staff can be aware about the change and expectation of users. Archive staff can determine the gap in their existing service and discuss with stakeholders. At the same time, stakeholders also able to monitor the users' activities in the co-creation sphere and evaluate the users' demand and existing service gap. Accordingly, stakeholders will provide necessary infrastructure support and direction for initiating new service or improving existing services. Archive staff will adopt new service or improve existing to users for greater value. In case of proposed model, social media can perform following essence in archival value co-creation.

Essence 3: Social media platform promotes easy access to archival content for users.

In case of proposed framework, the components of co-creation sphere (social media) can promote easy access to archival content for users as well as reduce communication gap between users and archive centers. Besides, social media platform can improve recognition of archive center.

Essence 4: Social media platform improves recognition of archive center

Nowadays, archival institution throughout the world have been using social media tools for content delivery, promotion of their work, improving public relations, enriching

social networking. Archives centers consider social media as a 'community hubs' for strengthening relationships with the users' community as well as other organizations for better access of content, increasing visibility of collection, promoting reputation of the center and advocating for the value of the archives resources and services (Terras, 2011).

Essence 5: Social media reduces communication gap between archive center and users

Many archive centers of the world use different social media tools for easy interaction with users. National Archive of Japan (NAJ) has strong social media presence for archive service delivery towards potential users. NAJ's Twitter have approximately 5000 followers who can instantly get update about the service in their mailbox. Besides, users also able to post their comment as well as share content to other users through social media tool. Hence, both archive center and users come close to each other in service-related issues.

Value outcome of the framework

The proposed value co-creation model will deliver multiple values for each actor. After implementing the framework, the relationship among the actors will be develop. Besides, the research expects following benefits after the implementation of value co-creation in archives.

*Value for users***:** User can share ideas, problem faced, and request expected services to archive center. As a result, users can have easy and wider access to archival content which will increase archival value-in-use.

Value for archive centers: Archive center will be able to generate new service idea from users, and implementation guideline from stakeholders. As a result, archive center can improve their management process as well as build trust to both users and stakeholders.

Value for stakeholders: Effective preservation and management is the main concern of stakeholder. Through value co-creation dialogue with archive center, stakeholders can be benefitted by effective management of archival content.

6.3 Research implications

6.3.1 Implications for archives centers

Archive centers throughout the world serve as a custodian of archival resources. They are bound to preserve archival content as well as provide access to meet information need of users. Earlier archive professionals were focused on physical and intellectual control on archival resources. Accordingly, archive professionals used different technology for preservation and management. They adopted different strategies for meeting users' demand on archive maintaining resource confidentiality and security. Now with the changing approach of users' expectation on archives, archivist are forces to adopt interactive, flexible and transparent archive service. In view of initiating user focused services, archivist need to consider who are their users, how they want to use archival content, and how archive centers can meet such demand. Accordingly, archivists need to 'think out of box' for increasing values of archives in terms of both management and services.

This research address different issues of interaction between users and archives center for know each other service system and develop mutual understanding for designing better services. Stakeholders involvement in archive management addressed in this research provides new opportunity for archive centers in sharing risk and getting direction from other concerned crossing boundaries of archive management staff knowledge. The research also addressed technological issues for connecting archives centers and users for value co-creation. By implementation of the proposed value co-creation model provided in this research, both archive centers and users can create better

understanding and improved facilities for archival education, entertainment, and participation. Archive centers can be turned as user center approach. In addition, the proposed value co-creation model can be helpful tool for archive administrator who are struggling to build up archival values to re-design their archive services.

In case of suitability of the proposed model in archive center, it is observed that the administration and management procedure of archives centers have differences depending on nature of center. In Japan, the local archive centers i.e. prefecture, city, municipal and academic centers is administered and govern by their own policies and procedures. It is difficult to implement same value co-creation procedure for all types of archive centers. However, to justify the suitability of the proposed value co-creation model, the study analyzed probability value (P Value) of each hypothesis in each category of archive center. Table 31 demonstrates the summary of suitability of proposed model in local archive centers in Japan.

Table 31: Model adoption in archive center

Hypothesis		Probability level (P Values)			
		Prefecture	City	Municipal	Academic
H1	Stakeholders involvement in archive management stimulates participation of users in archives services.	**0.006**	0.404	0.504	0.873
H2	Stakeholders involvement in archive management influence organizational effectiveness in archive center.	**0.000**	**0.008**	0.281	**0.000**
H3	Stakeholders involvement in archive management has influence on motivation of staff in archive center.	0.250	0.458	0.508	0.409
H4	Motivation of staff in archive center influence in organization effectiveness in archive services.	**0.012**	0.437	**0.025**	**0.050**
H5	Motivation of archive staff have influence on participation of users in archive services.	**0.011**	**0.005**	0.382	0.591
H6	Organizational effectiveness influence participation of users in archive services	0.389	0.413	0.155	**0.000**

* acceptable P-Value 0.05 or less

From the table 31 it is observed that prefecture, city, and academic archive centers can adopt the model for increasing stakeholders' efficiency towards enhancing organizational effectiveness. Besides, the functional relationship between the organizational effectiveness and motivation of staff also encourage prefecture, municipal, and academic archive center to adopt the proposed model.

Table 31 also indicate that the proposed model is best suited for prefecture archive center. Here, four hypotheses out of six are supported. Academic archive centers also have good possibility of implementing the proposed model. In case of academic archive center three hypothesis are supported out of six. Besides, city archive centers can implement the model for developing staff motivation relating to value co-creation and engaging stakeholders for enhancing organizational effectiveness.

6.3.2 Implications for Knowledge Science

The concept of value co-creation has been emerged in service science discipline and getting attention to academics and practitioners as a predominant research concept in the past twenty years. In service organization, value is created with the joint endeavor of service provider and recipients in a service system. Archival contents have their own value. But the value depends on how effectively, and efficiently those resources are treated. To generate more values on archival resources, archivists are supposed to adopt user focused services. Value co-creation concept help archivists to co-create values in this regard. Value creation of archives includes the activities associated with managing and transforming archival materials to any other suitable usable media maintaining the original physical form and quality. Archivists need to co-create values with the joint

endeavor of user who seek to use them. Accordingly, value co-creation in archival resources includes joint endeavor among stakeholders, users and archive staff. In case of archival resources' user could co-create value by providing information about which additional services are needed and how archive centers could improve its service offerings for users. In addition, user could co-create value collectively by interacting with other users who uses this service at the same time. Thereby, user always perform as a co-creator of values with the proper uses of resources that provided by the archive center. At the same time, stakeholders can provide their knowledge and skills for better management and services in archives. This study is an example of how co-creation framework can serve as important initiative for accelerating use and creating values in archives.

Knowledge science discuss creation, sharing, using and managing knowledge for getting maximum output from knowledge resources. Application of knowledge management theories and methods can strengthen archive services to users as well as stakeholders. The study treats archival management from the service science and knowledge management perspectives. The study applies the dynamics of knowledge management in archival institution. Very few studies have been found on archives management from value co-creation point of view. Hence, this kind of approach is relatively new in knowledge science research.

6.4 Research Limitations

While completing the research work, the researcher faced some limitations which are as follows:

Firstly, the research is done through sampling of the local archive centers in Japan. Representation from other countries with different perspective may produce different results. More representation would give better reliability of the research.

Secondly, some respondents partially filled the questionnaire knowingly or unknowingly. Those responses were rejected objectively. More accurate response could help to produce more weighted finding.

Thirdly, some literatures on the topic were available in Japanese language which could not be properly utilized by the researcher. Access and use of those literatures could help to produce more enriched research foundation.

Fourthly, the theoretical model is done based on literature review and logical concept. The research could not test the model for verification.

6.5 Scope of future works

So far, the research provided theoretical model of value co-creation in individual archives centers. Future research can be conducted on developing an integrated archive management platform combining all local, prefectures, city, and municipal archives center in a single hub. Besides, social media plays vital role in knowledge sharing and idea generation. Further research may be conducted on analyzing and evaluating social media data relating to archival value co-creation.

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Appendix

Appendix A: Questionnaire booklet (Japanese)

アーカイブ資源管理・活用における組織間知識共創に関する調査
ご協力のお願い

御担当者様　御中

　私は，国立大学法人・北陸先端科学技術大学院大学（石川県能美市），博士後期課程のエムディラホマン・ムクレスルと申します．バングラデシュ・ダッカ大学出身で，図書館情報学を専攻し，<u>北陸先端大では図書館組織同士の知識共創を通じた新サービス創出に関して</u>博士課程研究として取り組んでおります．その一環で，「アーカイブ資源における価値の共創：日本とバングラデシュにおけるアーカイブ管理実務の比較」をテーマにしたプロジェクトを推進しています．

　私は，アーカイブの価値を高めていくために，アーカイブ管理者とユーザー含む様々な関係者との知識の共創が必要だと考えております．本研究プロジェクトでは，貴アーカイブセンターの他機関との連携状況や，ユーザーとのコミュニケーションの取り組みが，アーカイブサービスとどのような関係があるのかについて分析することで，今後の知識共創の在り方について考えていきたいと思っております．

　このプロジェクトの推進にあたり，<u>日本の都道府県および市営と大学のアーカイブセンターからデータを収集する必要があります</u>．同様に，バングラデシュ国立公文書館（NAB）からデータを収集する予定もあります．したがいまして，本アンケートは貴アーカイブセンターの組織運営等について知識のある，**<u>アーカイブセンターの責任者/企画課長/主事/ディレクター様,</u>** にご回答いただければ幸いです．

　回答結果は，貴組織の匿名性を保ったうえで，本研究の目的のみに使用します．研究成果は回答者様に不利益が被らないように匿名化したうえで，学会報告や論文として発表していく所存で御座います．上記ご理解のうえ，誠に勝手ながら，アンケートは

<div align="center"><u>2019 年 3 月 29 日まで</u></div>

にご返信いただければ幸いです．何卒アンケートへのご協力をお願い賜りますよう，改めてお願い申し上げます．質問等ございます場合は，下記連絡先にご遠慮なくしていただければ，幸いです．どうぞ宜しくお願い申し上げます．また，回答結果について御関心ある場合も併せてご連絡いただければ幸いです．

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貴アーカイブセンターの実際の状況を考慮し，以下の質問に回答してください．

I. 基本情報についてお聞きします

1. あなたのアーカイブセンターではどのような種類のコンテンツが利用できますか?
   該当するもの全てにチェックしてください．

☐	行政文書	☐	写真撮影
☐	司法記録	☐	写本
☐	企業記録	☐	ニュースの切り抜き
☐	歴史的文書	☐	政府出版物
☐	歴史的地図	☐	官報
☐	戦争記録	☐	書道に関するもの
☐	音楽レコード	☐	その他：お書きください． （　　　　　　　　　　）

2. あなたのセンターは，通常どのソースから資料を集めていますか？
   該当するもの全てにチェックしてください．

☐	政府機関	☐	労働組合
☐	裁判所および司法機関	☐	民間の非営利団体
☐	大学および大学	☐	軍人
☐	任意団体	☐	コミュニティー
☐	家族/個人	☐	その他：お書きください． （　　　　　　　　　　）

3. どのタイプの人があなたの機関に所蔵されているアーカイブを使っていますか?
   該当するもの全てにチェックしてください．

☐	研究者	☐	会社員
☐	弁護士	☐	一般の人々

☐	人口統計学者	☐	映画製作者
☐	学生	☐	その他：指定してください （　　　　　　　　　　　　　　　）

4. あなたのセンターでは他機関とアーカイブ管理についての連携をしていますか？
   当てはまるものを<u>1つのみ</u>選択してください.

   - ○　他のアーカイブセンターと連携をしています
   - ○　連携はありません
   - ○　現時点で連携はしていませんが、今後実施するつもりです

5. 一般的に，<u>連携をするうえで生じるであろう，下記の課題</u>について，それぞれどの程度重要であると考えますか？
   各項目に関し，それぞれ最も当てはまる項目に1つずつ○をつけてください.

要因	重要ではない	あまり重要ではない	どちらともいえない	やや重要である	重要である
法的問題	1	2	3	4	5
技術的な問題	1	2	3	4	5
人的資源の不足	1	2	3	4	5
連携に関するビジョンの欠如	1	2	3	4	5
情報セキュリティ上の課題	1	2	3	4	5
管理上の複雑さ	1	2	3	4	5

6. <u>アーカイブ管理を共同で行うことの利点</u>について，各項目に関しそれぞれ最も当てはまる選択肢に1つずつ○をつけてください

要因	そう思わない	あまりそう思わない	どちらともいえない	ややそう思う	そう思う

他センター所蔵物が容易に理解できる	1	2	3	4	5
センター間で資料管理知識を共有できる	1	2	3	4	5
金銭的コスト削減ができる	1	2	3	4	5
資料の長期保存ができる	1	2	3	4	5
より幅広いユーザーへの宣伝ができる	1	2	3	4	5
学術コミュニケーションを促進できる	1	2	3	4	5
センター間での作業重複を減らせる	1	2	3	4	5
センター間の意思疎通ギャップを減らせる	1	2	3	4	5

7. あなたの<u>アーカイブセンターの組織風土</u>についてお聞きします．
   項目ごとに，最もふさわしいと思える数字に1つずつ〇をつけてください．

組織風土	そう思わない	あまりそう思わない	どちらともいえない	ややそう思う	そう思う
スタッフには新しいサービスを採用する風土がある．	1	2	3	4	5
経営陣は常に新しいアイデアを受け入れようとしている．	1	2	3	4	5
組織全体として新技術を積極的に活用する風土がある．	1	2	3	4	5
新しい取り組みに対しての意思決定速度は速い．	1	2	3	4	5

II．アーカイブ管理での関係者の関与についてお聞きします

8. あなたのアーカイブセンターには，アドバイザリー組織・委員会はありますか？

   ○　はい
   ○　いいえ

9. 「はい」と答えた場合，どのカテゴリーの人々がその組織・委員会に含まれますか？
   該当するもの<u>全て</u>にチェックしてください．

□	研究者	□	歴史家

☐	地方自治体職員	☐	国際的な専門家
☐	公文書保管人	☐	政治家
☐	IT の専門家	☐	学術専門家
☐	その他：指定してください （　　　　　　　　　　　　　　）		

10. 設問 8 で「はい」と答えた場合にお聞きします.

　アドバイザリー組織・委員会は下記項目に関してどの程度有効だと思いますか？

　項目ごとに，最もふさわしいと思える数字に 1 つずつ○をつけてください.

対象活動	有効ではない	あまり有効でない	どちらともいえない	やや有効だ	有効だ
行政政策の立案	1	2	3	4	5
記録すべき情報の取得方針を決定すること	1	2	3	4	5
新サービスアイデアを得ること	1	2	3	4	5
新サービス実施ガイドラインを作ること	1	2	3	4	5
既存のサービスを改善すること	1	2	3	4	5
歴史的記録の開示について検討すること	1	2	3	4	5
既存の問題を解決すること	1	2	3	4	5
将来のセンターの在り方を検討すること	1	2	3	4	5

11. 質問 8 で「いいえ」と答えた場合にお聞きします.

　あなたのセンターは下記に示す関係者がアーカイブサービスの方針をどの程度決めていますか？項目ごとに，最もふさわしいと思える数字に 1 つずつ○をつけてください.

	全く決めていない（0％）		決めるときもあればそうでないときもある（50％）		常に決めている（100％）
アーカイブセンター長	1	2	3	4	5
関係課長	1	2	3	4	5
関係課スタッフ	1	2	3	4	5
センターの全スタッフ	1	2	3	4	5

III．ユーザーとの関わりについてお聞きします．

12. どのようにしてユーザーはあなたのセンターに属するアーカイブリソースについて知ることができますか？
該当するもの全てにチェックしてください．

☐	アーカイブセンターへの直接訪問	☐	展示から
☐	ウェブサイトからのアクセス	☐	電話による問い合わせ
☐	スタッフと直接連絡をとる	☐	その他：以下にお書きください（　　　　　　　　　）

13. あなたのセンターは、通常どのようにしてサービスに関するユーザーのフィードバックを得ていますか？
該当するもの全てにチェックしてください．

☐	センターが用意したコメントシート・ブック等への記載事項から	☐	電話
☐	Eメール	☐	口頭で
☐	オンラインフィードバック	☐	その他：指定してください（　　　　　　　　　）

14. 貴アーカイブセンターは，毎月，ユーザーから何件程度のフィードバック（設問13でお答えになったチャネルから得られるユーザーの意見総数）をもらっていますか．
概ねの数を書いてください．

（　　　　　　　　　　　　　　　）件程度

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15. 以下の項目について，<u>どの程度ユーザーのフィードバックを活用できている</u>と思いますか？
    項目ごとに，最もふさわしいと思える数字に 1 つずつ○をつけてください．

ユーザーフィードバックの活用対象	活用できていない	あまり活用できてない	どちらともいえない	やや活用できている	活用できている
新しいアーカイブサービスアイデアの開発	1	2	3	4	5
サービス品質の向上	1	2	3	4	5
他アーカイブセンターを含む他組織との連携強化	1	2	3	4	5
より多くのユーザーと対話していくための仕掛けづくり	1	2	3	4	5

Ⅳ．<u>ソーシャルメディアの活用状況</u>についてお聞きします．

16. 貴アーカイブセンターにおいて，ソーシャルメディアの<u>活用は重要</u>ですか．
    あてはまるものを 1 つだけ選択してください．
    - ○ 非常に重要である
    - ○ 重要である
    - ○ どちらともいえない
    - ○ 重要ではない
    - ○ まったく重要ではない

17. 貴アーカイブセンターはソーシャルメディアを活用していますか？

    - ○ はい
    - ○ いいえ

18. **設問 18 で「はい」と答えた場合にお聞きします.**

どのソーシャルメディアプラットフォームを使用していますか.

該当するもの<u>全て</u>にチェックしてください.

☐ Facebook	☐ WhatsApp
☐ Twitter	☐ Blogs
☐ Instagram	☐ RSS
☐ Google+	☐ LINE
☐ Flickr	☐ Others
	☐ その他：以下にお書きください
	（　　　　　　　　　　　）

19. **設問 17 で「はい」と答えた場合にお聞きします.**

<u>ソーシャルメディアを使用することの利点</u>は何ですか.

各項目に関し，それぞれ最も当てはまる数字に 1 つずつ○をつけてください.

利点	そう思わない	あまり	どちらともいえな	ややそう思う	そう思う
アーカイブ情報が宣伝できること	1	2	3	4	5
アーカイブセンターへの信頼感を醸成できること	1	2	3	4	5
アーカイブセンターとユーザーとのコミュニケーションギャップを減少できること	1	2	3	4	5
スタッフの労力を緩和できること	1	2	3	4	5
ユーザーからのフィードバックを受け取れること	1	2	3	4	5
センターの認知度を高めることができること	1	2	3	4	5
ユーザーのコンテンツ探索に役立てられること	1	2	3	4	5

20. **質問 18 で「いいえ」と答えた場合にお聞きします.**

<u>ソーシャルメディア活用を消極的にする可能性のある以下の点</u>について，それぞれ最も当てはまる数字に 1 つずつ○をつけてください.

懸念	そう思わない	そう思わないあまり	どちらともいえない	ややそう思う	そう思う
デジタル化コンテンツの不足	1	2	3	4	5
ソーシャルメディア関連技術の不足	1	2	3	4	5
機密が保持できなくなる可能性がある	1	2	3	4	5

IT に関するサポートの不足	1	2	3	4	5
そもそもあまり興味がない	1	2	3	4	5
組織としての公式の方針にはない	1	2	3	4	5

21. アーカイブの価値を高めていくために，あなたは<u>何が重要</u>だと思いますか？

　　各項目に関し，それぞれ最も当てはまる数字に１つずつ〇をつけてください.

活動	そう思わない	そう思わない	あまり	どちらともいえない	ややそう思う	そう思う
潜在ユーザーに向けた啓発キャンペーン	1	2	3	4	5
ソーシャルメディアを活用したユーザーとの交流	1	2	3	4	5
ウェブによるサービスの改善	1	2	3	4	5
アーカイブセンター間の連携	1	2	3	4	5

22. アーカイブ内での価値の共創に関するその他の提案/意見がある場合は、以下に記載してください.

_____

_____

ご協力誠に有難う御座いました.

記入が終わりましたら，このアンケートを同封しました封筒に入れてご返送ください.

Appendix B: Questionnaire booklet (English)

Survey on value co creation in archives

Please cooperate

The person in-charge,

This is Md. Mukhlesur Rahman, a doctoral student in the Japan Advanced Institute of Science and Technology (JAIST), Japan. I have been graduated in Information Science and Library Management from the University of Dhaka, Bangladesh. I am conducting doctoral research on creating new services in library and information centers through knowledge co-creation. As part of that, I am conducting a project on "**Co-creating values in archival resources: a comparative**

study of archive management practice in Japan and Bangladesh" under the supervision of Associate Professor Dr. Kunio Shirahada, School of Knowledge Science, JAIST, Japan.

I believe that knowledge co-creation is required between the archive administrator and various stakeholders including users in order to increase the value of the archive. In this research project we will identify the process of knowledge co-creation by analyzing the relationship with the archive centers and stakeholders along with the status of collaboration with other Archives Centers and the users. The findings will be used to develop a value co-creation framework integrating stakeholders, archive center and users for uplifting values of archives.

In order to promote this project, it is necessary to collect data from the prefectural, municipal and academic archival centers in Japan. Similarly, the research also plans to collect data from National Archives of Japan (NAJ) and National Archives of Bangladesh (NAB). Therefore, it would be appreciated if this questionnaire could be answered by the **person in-charge/planning manager/manager/director of the center**, who is familiar with the organization operation of the archive center.

The answers will be used only for research purpose and maintaining the anonymity of your organization. The research results will be anonymized so as not to cause any disadvantage to the respondents and will be presented as a conference report or a dissertation. Based on the above situation it would be highly appreciated if you fill the below questions and

<div align="center">

send back by March 25, 2019

</div>

Thank you very much in advance for your kind cooperation.

If you have any questions, please do not hesitate to use the following contact information. Besides, if you are interested in research results, please contact us.

Researcher,	Supervisor,
Md. Mukhlesur Rahman	**Kunio Shirahada**
Shirahada Laboratory	Associate Professor, School of Knowledge
Japan Advanced Institute of	Science　Japan Advanced Institute of Science
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(JAIST)	1-1 Asahidai, Nomi, Ishikawa, JAPAN 〒923-
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Japan 〒923-1292	TEL: 0761-51-1747
Cell: 070 4095 5499	FAX: 0761-51-1149
E-mail: mukhles@jaist.ac.jp	E-mail: kunios@jaist.ac.jp

Please consideration the actual situation of your archive center and answer the following questions.

I.   Background information

1. **What type of archival contents are available in your archival center?** (*Please <u>check all that apply</u>*)

☐	Administrative document	☐	Photographs
☐	Judicial records	☐	Manuscripts
☐	Corporate records	☐	News Clipping
☐	Historical document	☐	Government publications
☐	Historical maps	☐	Gazettes
☐	War documents	☐	Calligraphy
☐	Music record	☐	Others (please specify) ( )

2. **From which sources your center usually collects archival resources?** *[Please <u>check all that apply</u>)*

☐	Government agencies	☐	Trade unions
☐	Courts and judicial bodies	☐	Religious organizations
☐	Academic organizations	☐	Military bodies
☐	Voluntary organizations	☐	Communities
☐	Families/individuals	☐	Others (please specify) ( )

3. **What Which type of people are generally use archival resources available in your center?** (*Please <u>check all that apply</u>*)

☐	Researchers	☐	Businessperson
☐	Lawyers	☐	General people
☐	Demographers	☐	Filmmakers
☐	Academic pupil	☐	Other (please specify) ( )

4. **Does your center have collaboration with another archive management center?**
(Please <u>select only one</u> applicable from the following options.)

   o   We have collaborations with other archival centers
   o   We do not have any collaboration
   o   We do not have collaboration at present but have intention in future

5. **In general, how important do you think each of the following issues that affect you in collaborating with other institutions?** *(Please circle the most appropriate number from each item)*

Factor	Unimportant	Slightly unimportant	Neither	Slightly Important	Important
Legal issue	1	2	3	4	5
Technical issue	1	2	3	4	5
Shortage of human resources	1	2	3	4	5
Lack of vision relating to cooperation	1	2	3	4	5
Information security issue	1	2	3	4	5
Administrative complexity	1	2	3	4	5

6. **Regarding the benefits of collaborative archive management system, what is your assumption in following points?** *(Please circle the most appropriate number from each item)*

Perceived benefits	Disagree	Slightly Disagree	Neither	Slightly Agree	Agree
Other centers' collections can be easily understood	1	2	3	4	5
Sharing document management knowledge among centers	1	2	3	4	5
an reduce monetary cost	1	2	3	4	5
Ensure long term preservation of materials	1	2	3	4	5
Promote local archives to wider audience	1	2	3	4	5
Encourage scholarly communication	1	2	3	4	5
educe overlapping work between centers	1	2	3	4	5
Reduce communication gap among archive centers	1	2	3	4	5

7. **Please tell the organizational creativity and effectiveness of your archive center in adapting new services/system.** *(Please circle the most appropriate number from each item)*

Organizational effectiveness	Disagree	Slightly Disagree	Neither	Slightly Agree	Agree
Staff have a culture of adopting new services	1	2	3	4	5
Management always ready to accept new ideas	1	2	3	4	5
Well supported in adopting new technology	1	2	3	4	5
Decision making speed for new initiatives is fast	1	2	3	4	5

II.   Advisory committee in archive management

8. Is there any advisory organization/committee in your archival center?
- o   Yes
- o   No

*9. ***[If yes] What category of people are included in the advisory organization/committee?**
(Please check all that apply)

☐	Researcher	☐	Historians
☐	Local government officials	☐	International archive expert
☐	Public document custodian	☐	Politicians
☐	IT experts	☐	Academic expert
☐	Other (please specify) ( )		

10. If you answered question 8 [Yes]

Do you think that the advisory organization/committee performs the following activities?

(Please circle the most appropriate number from each item)

Activities	Not effective	Slightly not effective	Neither	Slightly effective	Effective
Planning administrative policy	1	2	3	4	5
Determining the acquisition policy of new records	1	2	3	4	5
Initiating new service idea	1	2	3	4	5
Making new service implementation guideline	1	2	3	4	5
Improving existing service	1	2	3	4	5
Consider about disclosure of historical records	1	2	3	4	5
Solving existing problem	1	2	3	4	5
Consider the future direction of the center	1	2	3	4	5

11. If you answered [No] to question 8

How does your center decide policies and strategies of archive services? *(Please circle the most appropriate number from each item)*

	Never	Seldom	Sometimes	Very often	Always
Decision by the head of archival center	1	2	3	4	5
Decision by the concerned section head	1	2	3	4	5
Joint decision of concerned section staffs	1	2	3	4	5
Discussing with all staff of center	1	2	3	4	5

III. Participation of users in archive services

12. **How can users know about the archival resources belonging to your center?** (*Please check all that apply*)

☐	Direct visit to archive center	☐	From display during exhibition
☐	Access from website	☐	Inquiries by telephone
☐	Directly contacting with staff	☐	Others （ ） そ

13. How does your center usually get users' feedback on services? (*Please check all that apply*)

☐	From users' comment described in the comment sheet / book prepared by the center	☐	Telephone
☐	Email	☐	Oral comments
☐	Online feedback	☐	Other (please specify) ( )

14. How much feedback do you receive from users every month (total number of users' opinions obtained from the channel answered in question 13)? *(please write approximate number)*

（   ） about

15. To what extent do you think you can use user feedback for the following items? *[Please circle the most appropriate number from each item]*

Usages of social media	Never	Seldom	Sometimes	Very often	Always
Developing ideas for new archive services	1	2	3	4	5
Improving services quality	1	2	3	4	5
Strengthening collaboration with users	1	2	3	4	5
Create new services for more user's interaction	1	2	3	4	5

Adoption of web-based service

16. How IMPORTANT it is to have web-based service in archive center? *[Select only one applicable answer]*
- o   Very Important
- o   Important
- o   Neither important nor unimportant
- o   Less important
- o   Not important at all

17. Does your center use social media to provide archive services? *[Select only one applicable answer]*

- o   Yes
- o   No

18. If you answered [Yes] in Question 17.

   Which social media platform do your center use? (*Please check all that apply*)

☐ Facebook	☐ WhatsApp
☐ Twitter	☐ Blogs
☐ Instagram	☐ RSS
☐ Google+	☐ LINE
☐ Flickr	Other (please specify) ( )

19. If you answered [Yes] in Question 17.

   What are the perceived advantages of using social media in archive center? *[Please circle the most appropriate number from each item]*

Advantage	Disagree	Little disagree	Neither	Little agree	Agree
Able to advertise archival information	1	2	3	4	5
Able to build trust in archival center	1	2	3	4	5
Reduce communication gap among archive center and users	1	2	3	4	5
Reduce users' dependency on staff	1	2	3	4	5
Receive users' feedback easily	1	2	3	4	5
Improve the recognition of center	1	2	3	4	5
To be useful for users discover of new content	1	2	3	4	5

20. If you answered [No] in Question 17.

   Why your center does not use social media? *[Please circle the most appropriate number from each item]*

Constraints	Disagree	Little disagree	Neither	Little agree	Agree
Lack of digitized content	1	2	3	4	5
Lack of social media related technologies	1	2	3	4	5
Fear of confidentiality	1	2	3	4	5
Lack of IT support stuff	1	2	3	4	5
Lack of interest of the decision makers	1	2	3	4	5
No official policy	1	2	3	4	5

21. **How do you evaluate overall staff motivation in following issues?** [*Please circle the most appropriate number from each item*]

Activity	Disagree	Slightly disagree	Neither	Little agree	Agree
Ready to create awareness among users	1	2	3	4	5
Willing to adopt change in technologies and services	1	2	3	4	5
Willing to adopt web-based services integration	1	2	3	4	5
Ready to collaborate and cooperate with users and other centers	1	2	3	4	5

22. **If you have any other SUGGESTION/OPINION on value co-creation in archives, please describe below:**

_____

_____

_____

_____

_____

Thank you very much for your time and help.
When complete please return this questionnaire through the attached envelop.

Appendix C: List of Publications

Journal article

Rahman, M. M., Ahmed, T., & Shirahada, K. (2017). Value Co-Creation in Archival Resources: Exploring the Feature of National Archives of Bangladesh (NAB)'s Open Access Project. *International Journal of Library and Information Services (IJLIS)*, *6*(2), 37-56.

Conference proceeding paper

Rahman, M. M., & Shirahada, K. *Revitalizing archive literacy service using social media: case of prefecture and municipal archive centers in Japan*. Vietnam:14th International Conference on Knowledge, Information and Creativity Support System. On submission, November 21-23, 2019,

Rahman, M. M., Islam, M. S., & Shirahada, K. *Value creation in scholarly community: The role of open access publications*. Taiwan: Joint International Conference of Service Science and Innovation and Serviceology. pp. 60-67, November 13, 2018.

Rahman, M. M., Akter, Rowshon & Mezbah-ul-Islam Issues and Challenges for Sustainable Digital Preservation Practices in Bangladesh. International Seminar on 'Digital Libraries for Digital Nation'. (2014, March).

Rahman, M. M.& Mezbah-ul-Islam, M. Issues and Challenges for Sustainable Digital Preservation Practices in Bangladesh. International Seminar on 'Digital Libraries for Digital Nation'. (2012, October)

Poster

Rahman, M. M., & Islam, M. N (2019). Adopting Archives 2.0 in archival information literacy services: case of archives services in Japan and Bangladesh. *1st International Conference on Information and Knowledge Management*. Dhaka: Bangladesh, Abstract (pp. 193)