How Organizational Structure Facilitate Pedagogy Knowledge Sharing in Online and Distance Higher Education

Xueying Liu

Supervised by:

Dr. Widin Bongasu Sha'ven

Dr. Millissa Cheung

Submitted in partial fulfilment for the award of the degree of

Doctor of Business Administration

University of Wales Trinity Saint David

2024

Declaration

This work has not already been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed.....(Candidate)

Date.....20 November 2024

STATEMENT 1

That the thesis, if successful, may be made available for inter-library loan (subject to the law of copyright), and that the title and summary may be available to outside organizations.

As English is not my first language, I have used translation and grammar assistance tools including DeepL and Grammarly to help me express my ideas accurately in English. These tools were employed solely to overcome language barriers and improve readability while maintaining the originality and academic integrity of the research

Signed.....(Candidate)

Date.....20 November 2024

STATEMENT 2

I hereby give consent for my thesis, if accepted, to be available for deposit in the University's digital repository.

Signed.....(Candidate)

Date.....20 November 2024

Dedication

I would like to dedicate my thesis to my wonderful grandparents, my amazing father and mother. Your unconditional love, endless support, and deep understanding have helped me achieve my academic dreams.

To my kind husband and my lovely daughters, who have provided invaluable support during challenging periods and played a pivotal role in achieving this accomplishment: profound gratitude and enduring affection.

Acknowledgements

I would like to express my sincerest gratitude to all those who have contributed in many ways to my doctoral research. Your support has been invaluable, and I am profoundly grateful for all your help in making my doctoral journey pleasant and enjoyable. Without your assistance, I would not have been able to complete my thesis today.

Firstly, I am grateful to my supervisors, Dr. Widin Bongasu Sha'ven and Dr. Millissa Cheung, for ensuring that my doctoral journey proceeded without interruption. I am indebted to you both for your commitment and will ensure that I continue to develop my career in accordance with your advice. I would also like to thank Dr. Alex and Dr. Caroline for their continued support throughout my time studying and researching in the UK.

Second, I would like to express my gratitude to the Open University of China, the Open University in the UK, the Centre for Online and Distance Education, University of London, and the Sino-British Fellowship Trust Foundation, as well as their generous staff, for their unwavering support in ensuring the success of this research. They provided me with the necessary time to study, gave me the opportunity to participate in research and in-depth practice, and assisted me in completing my dissertation, thereby making my doctoral studies more fulfilling and memorable.

Finally, I would like to express my gratitude to my grandmother, my parents, my husband, and my daughters for your unconditional sponsorship, support, and guidance throughout my academic life. Without you, it would have been impossible to complete. I love you all and thank you for all your efforts.

Abstract

Pedagogy knowledge sharing represents a significant area of interest within the field of online and distance higher education. It represents a crucial strategy for online and distance education higher institutions aiming to retain a competitive advantage in digital transformation. The research adopts a constructivism paradigm and uses the research strategy of grounded theory to explore the boundaryless organizational structure that facilitates pedagogy knowledge sharing among academics of online and distance higher education. This research fills a gap in the research of knowledge sharing processes from an organizational structure perspective. Based on knowledge creation theory, this qualitative study aims to explore what and how organizational structure forms and dimensions facilitate the process of knowledge sharing from individuals to teams and from teams to organizations. The data is collected using semi-structured interviews, observations, and documents. This research analyzes the data, and findings show that boundaryless organizational structure, cross-functional team, community of practice, organizational integration, organizational formalization, and organizational incentives facilitate sharing pedagogy knowledge in online and distance higher education. This research examines the impact of organizational structure on knowledge sharing practices and enriches the theory of organizational knowledge creation, thereby expanding the application of the SECI model and Ba theory and reflecting the integration of research from both management and education disciplines.

Keywords: Organizational structure, Knowledge sharing, Online and distance higher education

Table of Contents

List of Figures

List of Tables

Abbreviations

CoP- Community of Practice

ISTO- Individual, Society, Technology and Organization

KM- Knowledge Management

KS- Knowledge Sharing

OS- Organizational Structure

ODHE- Online and Distance Higher Education

SECI- Socialization, Externalization, Combination, and Internalization

SCT- Social Capital Theory

SET- Social Exchange Theory

TPB-Theory of Planned Behavior

TRA-Theory of Reasoned Action

TOKC- Theory of organizational knowledge creation

Appendices

CHAPTER ONE: INTRODUCTION

1.1 Chapter Introduction

This chapter presents research from a holistic perspective. The research focuses on the organizational structural dimensions that drive pedagogy knowledge sharing in online and distance higher education, explored through the academic staff's perspective and experience. The context of the research is first provided by presenting an overview of online and distance higher education and its organizations, its history and trends, and the importance and problems of pedagogy knowledge in online and distance higher education, thus raising questions about the current state of existing organizations. Then, we state the research problem, purpose, and objectives. Next, we outline the theoretical underpinnings of the research, research design, research limitations, and research contributions. Finally, we present clear research structure and chapter summaries.

1.2 Research Significance

1.2.1 Knowledge sharing and digital transformation

The digitalization of society, with the phenomenon of digital transformation being a prominent trend, is what defines the 21st century. A set of profound and well-coordinated changes in workforce, culture, and technology that allow for the development of new operational and educational models as well as a shift in an institution's business model, strategic direction, and value proposition is known as digital transformation (Brown et al., 2020). Openness, compatibility, and sharing are the cornerstones of the digital transformation process; they ease information storage, transmission, and interchange and encourage the standardization and normalization of information (Liu, H, 2021).

Enhancing knowledge exchange, communicating and disseminating important organizational information, encouraging cooperation and community involvement from all partners and stakeholders, and encouraging knowledge sharing among teams and organizations are all components of digital transformation (JISC, 2023). Digital technologies will change the way education is delivered to students, and increased global mobility will bring together students, researchers and universities, while universities will work more closely with businesses (Bengoechea and Bell,2022). As a result, knowledge sharing between universities and businesses, universities and research institutes, and universities and universities will become more widespread and important.

One essential component of the digital transformation of education is the administration and exchange of knowledge. To adapt to today's complex, dynamic, and uncertain socioeconomic environment, organizations must adopt a continuous improvement and innovation approach based on ongoing learning and efficient knowledge management (Spyridonidis et al., 2016).

The development and application of information as a resource that gives an organization strategic, important, and valuable knowledge at the right time and location is known as knowledge management (Grant, 1996). Organizations can generate, identify, acquire, choose, arrange, distribute, and preserve crucial information, knowledge, and skills through knowledge management and then use them to their advantage (Tajpour et al., 2022). Executive team members are increasingly aware that a lack of thorough comprehension of knowledge-related dynamics and poor knowledge management can turn strategic assets into liabilities and lead to serious disadvantages (Giau et al., 2020). 75% of firms regard knowledge management as a critical component of corporate success. Furthermore, 82% of these firms believe a better alignment between information and action is necessary. Only 9% of these companies, nevertheless, are

sufficiently equipped to deal with this development (Deloitte, 2020).

The primary source of value creation, the cornerstone of knowledge management strategies, and the essential component of knowledge management activities is the exchange of knowledge, which is a challenging undertaking (Anwar, 2017). Not only is knowledge sharing important for achieving organizational goals (Yook et al., 2022), improving performance and innovation (Iqbal et al., 2020), and making a business more competitive (Lo and Tian, 2020), but it's also important for long-term sustainable development (Hussinki et al., 2017).

All stages of the knowledge management process regard these factors as determinants of success (Wang and Noe, 2010).Knowledge sharing is the foundation of educational work because it not only helps educators grow professionally (Shi, 2016), but it also makes it possible to apply this knowledge to research, teaching, and practice, which in turn drives changes in teaching behavior (Zhang, 2018). Educators must understand the nature and types of knowledge that have emerged in the digital era, considering the ongoing digital transformation. Additionally, they need to learn about the traits, regulations, and constraints of the new knowledge creation techniques that have surfaced currently. This will necessitate reconsidering the conventional understanding of knowledge and developing a fresh conceptual framework that satisfies the needs of the digital era (Li, 2019).

1.2.2 Organizational structure and digital transformation

Along with a change in the leadership styles and organizational management models in existence for some time, the arrival of digital transformation has also brought about changes in the way people work and live (Qi et al., 2022). According to some academics, the success of digital transformation depends 30% on technology and 70% on organizational elements (Mao, 2022).

In the framework of the lengthy history of humanity, the idea of organization is a very modern phenomenon. One of the most important developments in human history is considered the emergence of big corporations. The concept of modern companies first emerged approximately 150 years ago (Robert and Stephen, 1996). Organizational structure dominated the theoretical framework in the 1960s and 1970s. Research on organizational structure has, however, stagnated since then and there has been societal amnesia about the function of formal organizational structure (Lawrence & Allan, 1976). The digital age has brought fresh enthusiasm for organizational structure. Organizations will move from conventional pyramidal systems to flatter network architectures during digital transformation (Chen, 2022).

With a move away from a hierarchical structure towards a flatter, more networked one, the advent of digital transformation has caused a change in university organizational management models. This change is meant to provide more direct interaction and direct communication between the levels of leadership and the executive. One interesting trend is the rising frequency of management models free of hierarchies and distributed rather than scattered (Lu, 2024). Examining the effects of organizational structure in the digital age and investigating strategies for encouraging digital transformation and knowledge sharing in education is therefore relevant.

1.2.3 Online and distance higher education and pedagogy

The internet's increasing popularity and the rapid speed of technical innovation are driving a major shift in the way we learn. On a global level, the introduction of online and distance education has generated a lot of discussion and interest in the educational community. Online and distance higher education (ODHE) institutions have established their legitimacy and are increasingly educating millions of people worldwide (Aishe, 2015; Allen and Seaman, 2017). One can choose the speed and subject matter of learning based on one's own schedule and strike a balance between their research, employment, and family obligations. The flexibility to select a research location,

unrestricted by geography, distance, or space, reduces learning expenses. By giving students, a sense of ownership and responsibility over their education, interaction in the classroom can increase their drive to learn and help them gain new skills and knowledge.

Particularly, the 2020 “COVID-19” coronavirus pandemic has compelled governments and decision-makers to integrate internet technologies in most companies. According to Dwivedi et al. (2020), educational institutions have also experienced significant digital transformations. Most higher education institutions have forced online learning models on their student body, which they have embraced. The emergence of online and distance education has both drawn more attention and prevented the educational system from collapsing. It is becoming more and more clear how useful and essential online and remote learning are as teaching tools. Global participation in online and distance learning is increasing (Palvia et al., 2018), with projections indicating that 220 million students will enroll in massive open online modules (MOOCs) by 2021. UNESCO (2023) predicts that over one billion people will be eligible for online and distance education by 2025, with a global market value of $325 billion for these programs (The Open University, website).

Correspondence education, multimedia (radio and television), and open universities are the three primary eras that have shaped the development of online and distance learning. Online learning is regarded as the newest type of remote learning and distant education has become a distinctive mode of higher education by offering a vast array of formal and informal learning options (Anderson, 2008). It has also made tremendous progress in promoting educational fairness and lifelong learning for everyone (Courtney and Wilhoite-Mathews, 2015; Edwards, 2015).

Combining educational underpinning with technological developments has changed the organization and delivery of online and distance learning. The separation of the teacher, the student, and the educational institution; the development of instructional materials

and student support services; and the continuous iterative updating of educational technology define three main characteristics of online and distance learning (Desmond, 1980). Referred to as module resources, the content basis for online distance education modules, the environment in which these modules are taught, and the conditions under which teaching management depends on all points back to each other. One important approach to helping module materials grow in the context of online and distance education is applying pedagogy knowledge. In this regard, pedagogy is the concepts, methods, tools, and practices applied to enhance the teaching and learning environments (The Open University, 2022). Especially regarding the implementation of technology-enabled pedagogy innovation, this kind of pedagogy could influence the evolution or creativity of educational practices (Feng, et al., 2023).

Pedagogy in online and distance learning is even more important since it helps to support the emphasis on high degrees of interaction, social exchange, and teamwork on synchronous and asynchronous information and communication tools (Calvert, 2006), facilitates teaching and learning theory and practice, and creates relationships between students and teachers, students and module materials, and students and learning tools. Scholars of online and remote higher education are continuously including the newest technology to develop pedagogies fit for the classroom and use them into module design to raise student satisfaction and learning outcomes. (Sosa Díaz and Valverde-Berrocoso, 2022).

1.2.4 Knowledge sharing in online and distance higher education

Higher education relies heavily on knowledge (Al-Kurdi et al., 2018), and one of its main goals is to encourage the creation and transmission of knowledge (Howell and Annansingh, 2013). Knowledge sharing at higher education institutions assists administrative services and strategic planning, improves teaching and learning, and

enables collaboration across research disciplines (Khilji, Duan, and Tehrani, 2021). Since it significantly affects both the long-term viability of organizations and the overall success of higher education, the topic of knowledge sharing in higher education is pertinent in the current environment (Cormican et al., 2021; Bejinaru et al., 2018).

In online and distance education, knowledge sharing is more common and significant than in traditional higher education.

The teamwork model comes first. The teaching team model embodies online teaching activities and calls for several combined activities, including platform technology support and full process learning support and services, in addition to professional teaching-level research. In the process of collaboration, educators in various professions constantly exchange knowledge and fill in each other's knowledge gaps.

Pedagogy knowledge comes in second. Homophily increases the likelihood of a connection and sharing between two participants (Wasserman and Faust, 1994). Online and distance education share fundamental similarities in their teaching settings, methodologies, and ways of interacting with students, despite differences in their disciplines and professional backgrounds.

Multi-skills come in third. Teachers in online and distant learning retain a somewhat permanent distance from their students, and their duties and methods of operation extend beyond those of traditional higher education institutions. They also serve a variety of purposes, including team building, teaching, and module creation. Teachers must constantly enhance their pedagogy knowledge and abilities and take part in a variety of information-sharing activities (Li, and Zhu, 2022).

Combination of technology and knowledge in fourth. Online distance education produces interactive, high-quality modules. To properly plan and coordinate learning

activities, pedagogy in the field of education must be constantly innovated considering the Internet's updates and iterations, big data, artificial intelligence, blockchain, and even the metaverse (Christine et al., 2015).

1.3 Problem Statement

New knowledge is always initiated at the individual level, yet the act of knowledge sharing does not occur spontaneously (Cabrera, 2002). Knowledge sharing is a process that relies on interpersonal interactions and is influenced by the discretion of knowledge contributors (Yao et al., 2021). Individuals possess autonomy to determine the extent to which they choose to share or conceal their knowledge (Friedrich et al., 2019). An organization can be conceptualized as a social community that creates, shares, and transfers explicit and tacit knowledge. However, organizations encounter difficulties in enforcing knowledge sharing (Chow, and Lai, 2008). Consequently, the primary objective of knowledge management is to transform individual knowledge into organizational knowledge (Li and Yuan, 2006). Knowledge sharing bridges individual and organizational knowledge, improving the absorptive and innovation capacity and thus leading to sustained competitive advantage of companies as well as individuals (Ipe, 2003).

Nguyen (2020) proposed individuals, society, technology and organizations, which named ISTO model that affects knowledge sharing. Yeboah (2023) proposed individual or personal factors (mutual trust and reciprocity, reward and motivation), organizational factors (leadership, organizational culture, organizational reward systems, and organizational structure) and information communication and technology are factors that improve knowledge sharing. However, research on the factors influencing knowledge sharing has generally focused on individual factors such as social and personal cognition, language, external and internal motivation, psychological differences, and human resource management practices (Malik and Garg, 2020). Especially in terms of organizational factors, organizational culture/climate, leadership

support, and trust are often considered as key factors in predicting knowledge sharing, while organizational structure is rarely investigated (Fan & Beh, 2024).

Higher education institutions have been less researched in terms of knowledge sharing compared to commercial organizations (Al-Kurdi et al., 2018). An analysis of research on knowledge sharing in HEIs in Asia over the last 20 years shows that although factors affecting knowledge sharing are mainly individual aspects, there are few studies on organizational aspects and technology. In addition, most of the studies used quantitative research methods, and qualitative research methods were rarely used. (Fan & Beh, 2024).

This research investigates how organizational structures in higher education institutions help with instructional information exchange and addresses gaps in the following areas. First, it investigates the organizational structure components that influence knowledge sharing by examining them from a team and organizational standpoint. Second, it examines the organizational structure aspects that influence knowledge sharing through the dynamic lens of the knowledge sharing process. Third, it investigates knowledge sharing in higher education industry.

1.4 Research Questions

Considering the discussion above, the research questions that need to be answered are:

Q1: How can organizational structure forms and dimensions facilitate the knowledge sharing process from individual knowledge to team knowledge?

Q2: How can organizational structure forms and dimensions facilitate the knowledge sharing process from team knowledge to organizational knowledge?

1.5 Research Aim and Objectives

1.5.1 Research aim

The research aims to investigate how the organizational structure can facilitate pedagogy knowledge sharing in online and distance education.

1.5.2 Research objectives

The objectives of the research are:

O1: To explore how organizational structure forms and dimensions can encourage academics to share pedagogy knowledge in teams.

O2: To explore how organizational structure forms and dimensions can promote the transformation of pedagogy knowledge from team to organization.

O3: To advise practitioners on organizational structures to facilitate pedagogy knowledge sharing in higher education.

1.6 Research Scope

The scope of this research is three online and distance higher education institutions and they are all notable members of UNESCO's International Council for Open and Distance Education. They are the pioneers of online and distance higher education institutions, with a benchmarking role and wide influence in the world, and all of them provide knowledge and experience related to online and distance education, expert advice, new teaching methods, and a variety of innovative pedagogy, and are committed to promoting the dynamic development of distance and open education, online

education, and flexible learning.

1.7 Statement of Research Methodological Choice

Qualitative research methodology is deemed the most suitable approach for addressing the research questions. An examination of research methodological literature revealed a preference for Grounded Theory, as the findings derive from the collective understandings and practical experiences of individuals about pedagogy knowledge exchange inside companies. The researcher chose to distinguish this research from prior methodologies by employing Strauss and Corbin's Grounded Theory, as it enables participant expression (Strauss and Corbin, 1990; Glaser, 1992) while permitting the researcher to maintain certain preconceived notions. This technique enables the researcher to discern critical issues, essential success factors, and more research inquiries.

This research selected 18 senior academics from online and distance education institutions for semi-structured interviews. They had extensive teaching, research, and management working experiences in this industry. Three academics hold senior management positions in their respective universities, and other academics serve as heads of departments or teams. All these individuals have transitioned from contributing knowledge to sharing it in their careers. All interviewees were able to draw on their wealth of experience to generate valuable discussions about how organizations can support pedagogy knowledge sharing. Each semi-structured interview lasted approximately one hour, and the findings enabled the researchers to identify a set of best practices and provide constructive input to online and distance higher education organizations worldwide.

This research used semi-structured interviews, observation methods, and document analysis to collect data, which increased the validity and reliability of the research through a triangulated validation approach. The data were analyzed using a three-stage

coding approach of grounded theory, after open coding, axial coding, and selective coding to obtain the research findings.

This research attached great importance to research ethics and thought about how to protect the research data from the beginning of the research, during the research, and after the results of the research Potential harm to the participants was avoided, and confidentiality and anonymity were strictly enforced to keep the data safe at the end of the research.

1.8 Limitations of Research

This research concentrated exclusively on the online and distance higher education institutions. The subsequent stage should involve expanding to additional organizations to achieve a more comprehensive integration of digitization. The sample size for this research may appear small; however, to thoroughly investigate the experiences inside the ODHE field, especially in contrast to co-located education, participants must possess considerable maturity and experience. This clearly indicates a reduction in sample size; however, in research of this nature, the investigator prioritizes the depth and quality of each participant's experience over the number of participants.

Furthermore, the fact that the research took place mainly in the UK and China means that the conclusions drawn from the data collected may not be applicable to other countries. However, due to the representation of the UK and China in the field of online and distance higher education, it can be argued that the understandings of online and distance scholars in these two countries may, to some extent, be a good representation of the actual state of knowledge sharing in the field of online and distance higher education today.

1.9 Research Contributions

Literature contribution. To enrich the literature on knowledge management and organizational management in the field of online and distance higher education. Knowledge sharing is an important part of knowledge management, and a large amount of previous literature on knowledge sharing focuses on individual factors. This research analyzes the organizational structure factors of knowledge sharing from the perspective of the dynamics of the knowledge sharing process, proposes the organizational structure forms and dimensions to promote knowledge sharing, enriches the content of the Knowledge Creation Model, and explores the practical application of knowledge sharing in the field of higher education, which enriches the literature of theory and practice of knowledge sharing. Meanwhile, along with the wave of digitalization, the type of organizational structure is also actively or passively changing, and various new organizational structure models are emerging. While there is very little literature on the type of organizational structure from the perspective of online and distance higher education, this research analyzes the change of organizational structure models under the demand of digital transformation and explores the characteristics of new dimensions of organizational structure that emerge, so as to provide new thinking for the literature on the research of digital organizational structure.

Theoretical Contribution. Expanding the Application Scenarios of SECI Model. This research selects scholars engaged in online and distance higher education in China and the UK as research subjects and extends the SECI model in the higher education industry, which was originally used for enterprise knowledge management. Furthermore, it enriched this SECI model for knowledge management in the field of education by analyzing the process of transforming the individual’s knowledge to the team's knowledge and to the organization's knowledge. Researchers also explore the knowledge sharing process within the context of cross-functional teams and community of practice. Then the SECI model is applied beyond organizational boundaries, and organizational structure dimensions that facilitate knowledge sharing are identified.

Practical contribution. Providing practical experience for the organizational design of online and distance higher education institutions in the digital era. As a complex system that is both knowledge-intensive and labor-intensive, online and distance higher education must have an efficient and rational organizational structure, a clear and explicit distribution of power, and a coordinated and communicative operational mechanism. The research proposes organizational structure dimensions that foster knowledge sharing, enable educators to actively participate in school decision-making and operations through various effective methods, and establish a balance of power between academics and administrators while also addressing their respective responsibilities. It is recommended that knowledge sharing be promoted by forming cross-functional teams and communities of practice across organizational boundaries and by means of organizational formalization, integration, and incentive.

1.10 Structure of Thesis

Chapter One

The introduction section provides an overview and a description of the research background, followed by a brief review of digital transformation in education and pedagogy knowledge sharing in the field of online and distance education. It also outlines the scope of the research, the research question, its aims and objectives, potential limitations, relevant literature, and the theoretical and practical contributions of the research.

Chapter Two

The literature review section covers several subjects, such as knowledge sharing and organizational structure. In addition, the knowledge creation theory, SECI model, and Ba theory, based on which a conceptual framework was developed.

Chapter Three

Discussing the research methodology and research design used in this research. The main stages of the research process, data collection, and data analysis techniques are then described step by step. The presentation also encompasses issues of validity, reliability, and ethics.

Chapter Four

Data Analysis Section. The research questions of this research guided the analysis of the results, and the literature review provided the references.

Chapter Five

Discussing the results of the data analysis, compares them with the literature review, and then makes recommendations for improving the knowledge sharing model.

Chapter Six

Conclusion and recommendation. This chapter concludes how the research has answered the research questions and achieved the research aims and objectives. It then describes the contributions to literature, identifies limitations, and suggests areas for future research.

1.11 Chapter Summary

This chapter provides a comprehensive overview of the research, encompassing the background of the issues and the trajectory of current investigations. The subsequent chapter will provide a comprehensive analysis of the pertinent literature about organizational structure and knowledge sharing that established the foundation for the current research.

CHAPTER TWO: LITERRATURE REVIEW

2.1 Chapter Introduction

This chapter presents a review of the literature on the concepts of knowledge sharing, knowledge sharing process, organizational structure, types, and dimensions of organizational structure and examines the prior research on the association between organizational structure and knowledge sharing to identify the concepts and content relevant to this research. Next, the focus reviews the application of the theory of organizational knowledge creation and the associated SECI model and Ba theory in the field of knowledge sharing, while also comprehensively comparing the Theory of Planned Behavior, Social Exchange Theory and Social Capital Theory. In conclusion, the literature review is summarized, and the research conceptual framework is demonstrated.

2.2 Definition of Key Concepts

2.2.1 Definition of knowledge sharing

2.2.1.1. Four views of knowledge sharing

From a range of research viewpoints, scholars have significantly contributed to the notion of knowledge sharing (Zhang and Venkatesh, 2017). The four viewpoints on knowledge sharing that this research attempts to summarize are the process view, the transaction view, the interaction view, and the creation view.

The process view. This point of view highlights how all the links in the knowledge-

sharing process are interrelated and cohesive. The process through which people and organizations contribute, take in, integrate, and alter knowledge is known as knowledge sharing. According to Nonaka and Takeuchi (1995), knowledge is produced by socialization, externalization, combination, and internalization. Through the four phases of initiation, implementation, adaptation, and integration, knowledge sharing is a dynamic and gradual process of information and knowledge transmission between knowledge suppliers and demanders (Wijnhoven, 1999). Making pertinent information easily accessible to coworkers inside a company is known as knowledge sharing (Grant, 2016). According to Sedighi et al. (2016), knowledge sharing is not an event but rather a process or procedure that is dependent on the communication medium. According to some, knowledge sharing includes several additional procedures in addition to the acquisition and transfer of knowledge between parties, such as the processing and exchange of knowledge in a way that makes it possible to successfully integrate one piece of knowledge into another (Szulanski, 2000; Willem and Buelens, 2007).

The transaction view. This view emphasizes knowledge sharing as a transaction in an organization's internal knowledge market. The usefulness and scarcity of knowledge mean that it can be exchanged and traded within an organization. Knowledge sharing can be defined as a transaction in the internal knowledge market of an organization. In this transaction, the knowledge contributor acts as the seller, while the knowledge acquirer acts as the buyer. The seller may also benefit from the knowledge contribution in this transaction (Davenport and Prusak, 1999). Knowledge sharing takes place when people need the knowledge of others to solve their own problems (Intezari et al., 2006). Knowledge sharing is seen as the exchange of knowledge between two parties in a reciprocal process (Bircham-Connolly et al., 2005).

The interaction view. This perspective views the concept of knowledge sharing as a multidimensional, interactive, and dynamic process. Knowledge sharing is the interaction between providing individual knowledge and receiving individual

knowledge. It is a two-way activity aimed at achieving the same strategic goals (Bartol et al., 2009). This perspective emphasises the dissemination and diffusion of knowledge, with the goal of enabling other individuals in the organization, or the organization, to master this knowledge. According to Lee, et al. (2021), knowledge sharing is viewed as a social interaction in corporate settings when individuals share their experiences, knowledge, and abilities with one another. Active communication with those who possess the necessary information is necessary for knowledge sharing (Kwahk and Park, 2016).

The creation view. This perspective sees knowledge sharing as the co-creation of new knowledge. Knowledge must be learned, and it is a process of creating learning (Senge, 1997). Through a variety of communication channels, employees exchange knowledge with other members of the organization, turning knowledge into knowledge assets (Wei and Wang, 2004). The innovative flow of information and skills between people in different roles within an organization is known as knowledge sharing (Dong, 2017). It quickly turns other people's experience, expertise, and abilities into one's own. When one's prior knowledge and new information collide, new ideas are generated and previously undiscovered knowledge is produced (van den Hooff & Ridder, 2004). Knowledge sharing provides people with the information and knowledge to work with others to solve problems, develop and implement new ideas, and enforce policies or procedures (Santos et al., 2015).

2.2.1.2. Knowledge sharing definition in this research

In this research, we use the following definition of knowledge sharing:

Knowledge sharing is the continuous process of translating experiences and organizational knowledge into business processes via communication channels among individuals, groups, and organizations (Sedighi et al., 2016). Knowledge sharing can be defined as exchanging task-related information, advice, and expertise with others,

helping others, and collaborating with others to perform daily tasks, solve problems, and develop new ideas (Ahmad, 2017).

This definition combines a process view and an interaction view of knowledge because this research is based on a knowledge sharing process perspective, which focuses more on the participation and interaction of individuals in teams and organizations during knowledge sharing and on the sharing process from individual knowledge to team knowledge and from team knowledge to organizational knowledge. The transaction view is mainly used to study knowledge sharing in the business field, while this study focuses on the higher education field. The knowledge creation view is mainly used to study knowledge creation brought about by knowledge sharing, focusing on the innovation management field, which is not relate to this study.

2.2.2 Definition of organizational structure

2.2.2.1 Key elements of organizational structure

The organizational structure determines the formal reporting relationships in the organization (the number of levels of authority and the span of control of managers), how individuals are grouped into departments and how departments are grouped into the wider organization, and the organization design for cross-departmental communication, collaboration, and integration of strengths (Child, 2015). Specifically, the first two elements define the structural framework of the organization, while the third element concerns the interactions between members of the organization.

The organizational structure is the permanent configuration of activities required for the effective functioning of the organization. Organizational structure can be defined as a formal model of how work is distributed among individuals and units, how communication processes are structured, and how hierarchical relationships among

individuals are linked (Noorderhaven, 1995).

The organizational structure defines how people are organized, how work processes are conducted, and how goals are achieved (Lewis, 2003). It is expressed in the regularity of procedures and roles and the regularity of interactive processes such as goals, rules, roles, and normative relationships (Bryson, 2006). The organizational structure determines where decision-making power lies (Galbraith, 2002) and affects the efficiency of information communication and processing in the organization (Mintzberg, 2003). Organizational structure is a form of relationships established between the various components within an organization and has a direct impact on the organization's ability to function efficiently (Zhen et al., 2019).

2.2.2.2 Organizational structure definition in this research

In this research, we use the following definition of organizational structure:

Organizational structure represents the enduring configuration of activities that are necessary for the effective operation of an organization. It can be conceptualized as the outcome of a combination of approaches to the division of work into discrete tasks, as well as the management mechanisms that integrate and control these activities (Pugh, 1990; Robbins, 1990).

This research understands organizational structure from an organization design perspective, with organizational structure being one of the most studied aspects of design (Puranam et al., 2012). This research will investigate organizational structure in two ways: one is organizational structure forms; another is organizational structure dimensions.

2.3 Knowledge Sharing

2.3.1 Knowledge and knowledge management

Knowledge has become the most valuable resource for people, businesses, governments, nations, and society due to the development of science and technology and the emergence of the knowledge economy. It is also regarded as a crucial resource for boosting an organization's competitive advantage in the knowledge economy (Alyammahi et al., 2022).

The collection of tasks related to acquiring, encoding, storing, transferring, applying, and sharing of knowledge is known as knowledge management (Girard and Girard, 2015; Deng, P and Lu, H, 2022). According to Malik and Kanwal (2018), it can be defined as the methodical process of producing, acquiring, sharing, and applying knowledge to preserve a competitive edge and accomplish corporate objectives. Knowledge sharing is an essential component of the knowledge management process since one of the main goals of knowledge management is to systematically impact knowledge sharing and application to create value (Kozhakhmet and Nazri, 2017; Dalkir, 2005).

2.3.2 Knowledge, data and information

Knowledge is inherently complex, and although it has attracted a great deal of attention, there is no agreement on what constitutes it. Knowledge is complex in nature, consisting of personal values, experiences, contextual information, and expert insight (Davenport and Prusak, 1999; Demir et al., 2021).

The conceptual distinction between knowledge, data, and information has been agreed upon by academics; data refers to the facts or observations themselves, excluding

meaning, context, and intent; information is meaningful structured data; and knowledge comes from the accumulation of data, information. Knowledge is an awareness of facts, a familiarity with people and situations, and a set of practical skills (MW Staff, 2023). Knowledge needs to have the following four characteristics: firstly, knowledge is not lost by using it; secondly, knowledge is not lost by sharing and disseminating it; thirdly, knowledge itself is abundant but the ability to use it is scarce; and fourthly, a large portion of valuable knowledge within an organization is eventually lost (Szulanski, 1996).

2.3.3 Explicit knowledge and tacit knowledge

Knowledge can be divided into tacit and explicit knowledge. Tacit knowledge is the result of personal experience and includes intangible elements such as personal beliefs, opinions, and value systems that are difficult to communicate in formal language. Explicit knowledge is systematically codified and includes data, standards, and manuals that can be communicated in formal language. (Polanyi, 1966; Hislop, 2013). The distinction between explicit and tacit knowledge distinguishes between personal and organizational knowledge and is the basis for understanding knowledge sharing (Nonaka & Konno, 1998).

Organizations establish a knowledge-based view of resources, support the transformation and sharing of tacit knowledge, and promote the speed and quality of innovation (Muhammed & Zaim, 2020). Tacit knowledge is hidden within an individual's knowledge system, is harder to access directly than explicit knowledge, and has received more attention from researchers. From the perspective of knowledge value, tacit knowledge is often a constituent element of an organization's core competencies and is where the organization's secrets lie (Polanyi, 2015).

2.3.4 Knowledge contributors and acquirers

Knowledge sharing encompasses the process of intellectualization in the form of both knowledge contribution and knowledge acquisition (van den Hooff & Ridder, 2004). Knowledge sharing involves both knowledge contributors and knowledge acquirers: knowledge contributors provide knowledge in the form of presentations, compiling knowledge systems, constructing archives, or building repositories, while knowledge acquirers identify with and understand that knowledge through awareness, learning by doing, imitation, listening, or reading (Hendrisks, 1999). Knowledge transfer and understanding, behavioral interaction, and learning between knowledge gainers and knowledge acquirers in knowledge sharing (Zhong, X. et al., 2020) strengthen connections and interactions between organizational members (Shim and Kim, 2018), and in the knowledge-sharing process collectively creates a feedback loop (Cai, C, 2019).

A complete knowledge sharing process can start with the knowledge acquirer as well as the knowledge contributor. With the increased attention to knowledge sharing, there has been a proliferation of empirical studies on knowledge sharing contributors and acquirers. Knowledge sharing is not only a two-way exchange relationship between knowledge contributors and knowledge acquirers but also a sharing behavior between knowledge contributing owners (Ren, G, and Chen, Y, 2023). Knowledge sharing is beneficial to both parties, and knowledge sharing improves the performance of knowledge contributors (Chen, J, and Nonaka, 2022), and there are also empirical studies that show that knowledge sharing helps to improve the performance of knowledge acquirers (Swanson et al., 2020).

2.4 Organizational Structure

2.4.1 Organization and Organizational structure

An organization is a social unit that maintains tight ties with its external environment while having a well-defined goal orientation, a thoughtfully planned structure, and conscious coordination. According to Greenwood and Miller (2010), an organization must strategically distribute its resources and foster cooperative connections among its members. From the standpoint of management, an organization is viewed as a social unit, a deliberate fusion of two or more individuals striving toward a shared objective (Robbins, 1990). Every organization has three things in common: people, a defined structure, and a clear goal (Robbins, 1990).

Typical organizations usually have four levels of analysis that make up the shape of the organizational structure. The individual is the basic building block of the organization. Individuals are to organizations what cells are to organisms. One level higher than the individual is the group or department, which is a collection of individuals working together to fulfill a group task. A further level of analysis is the organization itself. The organizational structure contains three key elements (Daft, 2022).

2.4.2 Organizational structure dimension

The structural dimension provides a scale for describing characteristics within an organization, such as formalization, specialization, power hierarchy, complexity, and centralization, and provides a basis for measuring and comparing organizations. (Daft, 2022). Contingency factors Contingency factors cover a wider range of factors that influence organizational structure variables, including organizational size, technology, environment, and goals.

Organizational structure dimensions reflect the internal characteristics of organizations, and as a result, scholars and managers in the field of organizational management have continued to explore. Early organizational management researchers found five main

elements of organizational structure based on Weber's classic definition of bureaucratic organizations: specialization, standardizing, formalization, centralizing, and configuration (Pugh et al., 1968). According to Mintzberg's (1989), two basic components of organizational structure are coordination and specialization. Six main elements of organizational structure are proposed by DeCenzo et al., (2015), namely job specialization, departmentalization, chain of command, span of control, centralizing and decentralizing, and formalization. Camps (2016) contends that multidimension and specialization are two key organizational structures with relevance for the digital age. Formalization, which helps companies to standardize task-related procedures and individual actions, is the most often evaluated of these (Foss et al., 2015). Daft (2022) proposed that the three fundamental elements of organizational structure are management level and size, degree of integration, and cross-departmental cooperation. Recent research stated that task integration and decentralized decision-making are important organizational structure dimensions (Giau et al., 2020).

2.4.3 Organizational structure types

According to the theory of environmental-strategic-structural dynamic change, in the process of organizational development, organizational strategies must change in line with changes in the external environment, and organizational structures must be aligned with organizational strategies and evolve in line with adjustments to organizational strategies (Lawrence, 1967). Therefore, when the elements of the environment in terms of information, resources, and people input into the organization change, the organizational structure must change accordingly (Liu, D, 2019).

Organization management theory has developed and evolved over 150 years. Based on Kuntz's concept of "management theory jungle" in 1961, the concept of "organizational theory jungle" was proposed (Li, 2018). Summarizing the process of scholars on the evolution of organizational structure forms (Cai, 2021; Daft, 2022), this research divides the development of organizational structure types into three stages: classical

organizational structure, modernist organizational structure, postmodernist organizational structure, and specific types and core ideas are shown in Table 2-1.

Category	**Structure types**	**Core views**
Classical organizational structure (mid to late 19th century)	linear	The command system is a straight-line transmission, consisting of a superior-subordinate relationship, where decision-making power is centralized in the management and each employee has only one direct superior with clearly defined responsibilities.
	functional	Functional systems are organizations that are divided along functional lines, with each department being responsible for a specific function, such as finance, marketing, production, etc. Departments collaborate with each other but have their own management.
	linear and functional	An organizational structure that combines the characteristics of the linear and functional systems, with corresponding functional departments based on the linear system.
Modernist organizational structure (late mid-20th century)	division	Organizations are organized into divisions based on individual products or services, product groups, large projects or programs, businesses, operations or profit Centers.
	matrix	The organization is formally equipped with horizontal teams based on the traditional vertical hierarchical chain, i.e. combining functions and divisions to form cross-management.
Postmodernist organizational structures (after the	flatten	Simplifying the traditional multi-tier management structure into fewer tiers reduces the distance between employees and management and improves organizational flexibility and communication.

1980s and 1990s)	network-based	An organizational structure that makes use of modern information technology tools, a streamlined central agency and cooperation through contracts with other organizations.
	platform	Organizations are organized around platforms, often using digital technologies and network effects to connect users and providers.
	Cross boundaries	Organizations achieve greater flexibility, innovation, and responsiveness by reducing or eliminating internal and external boundaries, facilitating wider information flow, resource sharing and teamwork.
	Team-based	Organizations divide employees into independent teams, each responsible for a specific task or project, with an emphasis on teamwork, collective decision-making and cross-functional collaboration.
	federal	Within an overall framework, a certain degree of overall coordination is maintained, while each operates independently and to a certain extent has its own decision-making power.
	community	Communication and cooperation between members are facilitated by establishing and maintaining one or more communities for the achievement of common goals. Members are not just receivers of information, but also participants and contributors.

Table 2- 1 Organizational structure types of evolution

Source: Researcher's own work, 2024

2.4.4 Organization boundary

The theory of boundary organizations suggests that traditional organizations may have four types of boundaries: vertical, horizontal, internal-external, and geographical (Liu,, 2019). It may be helpful to define the several types of boundaries that can be found within an organization. Vertical boundaries refer to the boundaries between the vertical

management levels within an organization. Horizontal boundaries refer to the barriers between horizontal departments within an organization caused by the division of labor. Internal-external boundaries refer to the boundaries between an organization and its external environment. Finally, geographical boundaries refer to the boundary issues caused by objective geographical differences.

In the digital era, entrepreneurs and scholars are exploring new organizational structures, given the increasing volatility, uncertainty, complexity, and ambiguity of the external environment of organizations. Aldrich and Herker (1997) proposed the "boundary spanning" concept. Boundaries are defined as one of the characteristics of an organization, with boundary spanning being the link between organizations. Boundary spanning can be seen as a set of activities to integrate the culture and systems of different organizational contexts, to communicate and coordinate between organizations or within an organization (Schotter et al., 2017). Jack Welch, CEO of General Electric, put forth the idea of a boundaryless organization with the aim of overcoming traditional barriers between departments and between organizations and their external environment (Ashkenas et al., 1995). Since then, many new organizational models have emerged, such as the unstructured organization and the boundaryless organization (Bouée, 2013).

In recent years, organizational structures are becoming less rigid and more flexible, agile, and decentralized as they break through external boundaries (Wang, 2022). The organizational structure is evolving away from the traditional pyramid form with a view to promoting flattening and decentralization of the organizational structure, blurring organizational boundaries, normalizing cross-departmental cooperation, and decentralizing power (Wang et al., 2020). Organizations are no longer confined to physical spaces. There is a growing tendency towards a co-existence of physical and online spaces, which may result in a breaking down of the tangible boundaries of hierarchy and departments (Huang and Liang 2022).

2.5 Organizational Structure and Knowledge Sharing

2.5.1 Organization and knowledge sharing

Knowledge sharing is a win-win choice for organizations and individuals. It allows organizations to gain competitive advantage through access to a wealth of knowledge resources (Thomas and Gupta, 2022), and it also expands individuals' access to knowledge information to create new knowledge. Organizations play an information-facilitating role in individuals' knowledge-sharing behavior (He et al., 2018). Organizations need to provide a supportive environment where people can freely choose to share their knowledge autonomously (Gao and Zhao, 2019). Organizations need to expand individuals' access to organizational information and work strategies to reduce individuals' difficulty in accessing knowledge and information (He and Johnson, 2018); organizations need to deeply stimulate individuals' work potential to promote broader and deeper knowledge sharing (Qin, 2021).

2.5.2 Previous literature on organizational structure and knowledge sharing

Many academics have proposed that organizational structure and knowledge sharing are closely related (Chang, 2018; Simona & Oliveira, 2020) and that organizational structure is a significant factor that either facilitates or impedes knowledge transfer in organizations (Asrar-ul-Haq et al., 2016), despite the fact that Fan and Ben's (2024) review of the literature contains little empirical evidence to support this claim.

According to some academics, an organic organizational structure is characterized by low levels of power concentration, high levels of autonomy and flexibility in decision-making (Crespi et al, 2019), minimal formalization of rules and procedures, and the

lack of rigid organizational boundaries. These characteristics are thought to be more favorable for innovation and a dynamic environment (Shamim et al., 2016), which facilitates the creation and sharing of knowledge (Lloria & Moreno-Luzon, 2014). On the other hand, rigid organizational structures make knowledge sharing challenging (Lee et al., 2016), and the internal structure of complex companies, where managers who influence knowledge flow are located, may be the source of frictions in inter-organizational knowledge flows (Puranam, 2018).

Scholars have gradually focused on the design of organizational structure forms and dimensions to ensure effective knowledge exchange, enhance innovation capabilities, and achieve excellent performance results (Spraggon & Bodolica, 2017; Spraggon & Bodolica, 2018). Innovation in the form of organizational structure can create an environment for continuous learning and knowledge innovation, such as a combination of centralized and decentralized design, horizontal and vertical dual communication modes, and the non-hierarchical structure of virtual communities (Sun & Shen, 2022), thereby facilitating knowledge sharing (Kang et al., 2023). By adjusting the formal structure of the organization, processes and networks within the organization can be systematically shaped to facilitate knowledge flows (Argote et al., 2003), improve productivity and create competitive advantage (Kashari & Taheri, 2019), reduce the cost of knowledge production, and disseminate best working practices within the organization, thereby enabling the organization to solve problems (Zahedi & Khanachah, 2021).

However, both the design and implementation of organizational structures are very difficult to manipulate and achieve (Clement & Puranam, 2017), and striking a balance between maintaining centralized control and harnessing employee initiative is key to organizational design (Eklund, 2022). If too centralized and complex organizational structures reduce creativity and innovation, too much structure can stifle creativity and innovation (Mintzberg, 1989; Briscoe, 2007), but a lack of management hierarchy and

a lack of some unity of control can lead to managerial chaos (Albers et al., 2016). As it stands, research into organizational structures that can maintain just the right balance is inconclusive in existing literature.

Inappropriate, discipline-based organizational structures can be a serious barrier to effective knowledge sharing and collaboration between faculty (Khalil & Shea, 2012). Scholars pointed out that face-to-face interactions in the higher education sector are strongly perceived to affect sharing, but there are no direct findings to suggest that organizational structure is a key factor affecting knowledge sharing (Fullwood et al., 2018). As the departmental structure of universities has been highlighted as a barrier to knowledge sharing and the existing matrix structure is not supported by staff, future research should further explore the relationship between organizational structure and knowledge sharing in the higher education sector (Fullwood et al., 2018; Fan & Beh, 2024).

2.6 Organizational Structure Dimension and Knowledge Sharing

Regycleia & Pinheiro (2022) show that organizational structure elements such as organizational size, formalization, centralization, and integration are determinants of knowledge sharing processes.

2.6.1 Job specialization and knowledge sharing

Job specialization refers to how an organization divides tasks and activities into subtasks and assigns them to specific members or units of the organization (Mintzberg, 2003), also known as division of labor. Specialization refers to the degree of differentiation that exists within an organization, and the degree of specialization indicates the complexity of the organizational structure (Robbins, 1990). The higher the

degree of specialization, the more tasks are performed by people with specialized skills, and the higher the degree of control and autonomy in the performance of tasks (Pugh et al., 1968; Mintzberg, 1989).

Work complexity describes the amount and intensity of knowledge in an organization (Kim, 1980) and plays a key role in facilitating process development (Cohen & Levinthal, 1990). Team activities require people to share knowledge and develop a collective understanding of it. The complexity of work can enhance the skills and abilities of employees in their daily activities and make them more specialized (Pertusa-Ortega et al., 2010).

The other side of specialization is shown as the polyvalence characteristic, which is multifunction, representing the ability to perform different tasks according to the needs of the organization, implying that individuals can work on different tasks in different environments, lateral mobility between the multiple tasks of the job, which reduces the cost and time needed to mobilize them to perform a new duty or job (Camps et al., 2016). With the introduction of modern technologies in production environments, there is an increasing need for employees to expand their knowledge and utilize multiple information technology systems and equipment to complete tasks.

2.6.2 Job formalization and knowledge sharing

Formalization refers to a set of written formal rules, standard policies, work procedures, job descriptions, and policy manuals that govern behavior and activities in an organization (Pugh et al., 1968; Mintzberg, 1989; Robbins, 1990; Daft, 2022). Formalization provides a stable structure for the organization and a balance of power (Juillerat, 2010). As organizations grow and become more complex, formalization provides mechanisms for control and standardization (Hage & Aiken, 1967).

There has long been no consensus on whether formalization or informalization is more

conducive to organizational development. A part of scholars believe that formalization helps organizations access more knowledge from a wider range of sources (Piller et al., 2012). Formalization helps to transfer tacit knowledge to explicit knowledge through rules and improves cooperation and collaboration among employees throughout the organization (Cordón-Pozo et al., 2006). However, other scholars argue that strict adherence to rules and procedures can stifle individual innovation and cause employees to lose their sense of innovative ideas (Lee & Choi, 2003).

2.6.3 Centralization and knowledge sharing

Centralization denotes the concentration of decision-making authority inside an organizational structure (Pugh et al., 1968). Centralization is a crucial structural decision that all organizations encounter, influencing the degree to which decision-making authority is concentrated at the organization's core (Garicano & Rossi-Hansberg, 2004). Centralization represents an equilibrium between autonomy and regulation. Centralization defines the degree to which established decision-making authority is distributed within the organization. More centralization correlates with an elevated level of decision-making authority (DeCenzo & Robbins, 2009), and the formal decision-making power is more closely aligned with the organization's center (Cummings, 1995).

Academics have different views on the impact of centralization on knowledge sharing. A part of scholars believe that centralized power strengthens unified control over organizational decision-making, which can better integrate different knowledge resources within the organization and create broader and closer knowledge networks within the organization (Argyres et al., 2020). Other scholars believe that a less centralized organizational structure allows decisions to be more widely distributed across different departments of the organization (Wiedner & Mantere, 2019), improves responsiveness and simplifies decision-making (Raveendran et al., 2020), enables knowledge to be captured and shared at all levels of the organization, and is more

conducive to knowledge dissemination (Harrington & Lucia, 2012; Nham et al., 2020).

2.6.4 Integration and knowledge sharing

Integration reflects the collaboration between various parts within and outside an organization. An effective organization must have a high degree of both differentiation and integration (Lawrence & Lorsch, 1967). Grant (1996) argues that all organizations have problems with cooperation and coordination. Integration is a solution to the problem of coordination in organizations. Coordination and cooperation between multiple members allow the expertise of each member to be fully utilized. The learning process often requires a large investment of organizational resources, and it is more efficient for organizations to use different hierarchical structures and mechanisms to share the work.

The aim of the organization should not be to focus entirely on promoting mutual learning among all members of the organization. The focus should be on designing an appropriate organizational structure, making effective use of mechanisms for delegating authority, communication, or decision-making, and integrating the specialized knowledge that exists in individuals with organizational capabilities to achieve the most competitive use. Therefore, in the context of knowledge theory, the competitive advantage of an organization is the integration of the knowledge stored in individuals, which gradually forms organizational capabilities at various levels. The higher the level of organizational capability, the more difficult it is to achieve and the more extensive communication and integration of knowledge (Van Den Bosch & van Wijk, 2000).

Integration helps to accelerate and quality the knowledge and resource flows between several departments and teams (Tsai & Hsu, 2014). Integration produces synergies from complimentary knowledge and resources and balances information and resources amongst several departments and teams (Daniel et al., 2005). Through integration, individuals are more likely to seek innovative technologies, processes, techniques, or

product ideas, thereby supporting organizational management innovation (Su et al., 2019).

2.7 Information Flow Perspective

2.7.1 Information flow and organizational structure

Information is the bloodline of the organization. Managers spend at least 80% of their time actively exchanging information. They need this information to integrate the business. Organizational structure depends on whether it facilitates the open exchange of information both horizontally and vertically (Islam et al., 2012), so organizational knowledge management and knowledge sharing must be built on an organizational structure that facilitates internal communication and coordination. Organizational structure influences where knowledge is located, how it flows, and the incentives that encourage individuals to acquire, use, and share knowledge (Argyres & Silverman 2020; Lee, 2022). With complex and rigid organizational structure, information flow is impeded (McEvoy et al., 2019). Organizational hierarchical structures with long chains of command may reduce the utilization of acquired information (Laihonen & Mäntylä, 2018).

If the organizational structure is not developed to meet the organization's need for information, members of the organization will not be able to get enough information and will need to spend more time processing information they'd not need, which will affect the effectiveness of the organization (David, 1988).

Organizations should be designed to provide an organizational structure that provides all the vertical and horizontal information that flows necessary to achieve the organization's overall objectives. Vertical means of communication are designed primarily to exert control, whereas horizontal means of communication are designed to

promote coordination and cooperation, which often means weakening control. Organizations can use a variety of institutional means to achieve vertical linkages, such as hierarchical arrangements, rules and plans, and vertical information systems (Galbraith, 2014). Horizontal communication can be able to remove barriers between departments and provide employees with the possibility to collaborate to focus on achieving the organization's goals (Virpi, 2013).

2.7.2 Information technology and knowledge sharing

Information technology enables the flow of information throughout an organization, allowing information to be spread throughout the organization and routinely exchanged and updated by multiple parties in the organization. IT allows managers and front-line staff throughout the organization to routinely exchange and update information on progress, issues, opportunities, activities, and decisions. In organizations, employees are encouraged to use the information that appears in the organization's database, allowing them to easily search, share ideas and information, and establish ongoing horizontal connections. Management information systems can facilitate the sharing of explicit and tacit knowledge (Yao et al., 2021).

Knowledge management systems are essential software for storing and applying knowledge. They provide organizations with more channels for knowledge sharing and ensure that individuals in the organization have access to the relevant knowledge (Inkinen et al., 2015). Knowledge sharing can be effectively promoted through a network communication system (Deng & Lu 2022; Waititu & Barker, 2022). More organizations and individuals are using social media such as Facebook, LinkedIn, and Twitter to share knowledge. (Utz and Levordashka, 2017).

Advanced digital systems to store accurate, integrated, and comprehensive knowledge and information and rely on emerging technologies such as artificial intelligence maximize the use of data science and transform it into organizational knowledge

documents to enhance institutional memory (Shaker et al., 2022). Organizations can develop and maintain an effective knowledge management platform. For example, Ernst and Young have successfully utilized its knowledge management platform to increase productivity. According to a survey, 94 percent of EY teams are familiar with digital knowledge tools, which enable them to find the information they need quickly (Rao, 2020). An effective knowledge management system reduces the friction of knowledge transfer and helps organizations turn knowledge into a competitive advantage (Zhang, 2021).

Higher education institutions promote knowledge sharing by establishing information systems. The University of South Africa has established information technology-based research databases, laboratories, and knowledge platforms to manage the entire research process and support knowledge sharing and creation. The University of Mauritius has improved the accessibility and learnability of institutional knowledge by establishing a library knowledge storage system to manage its knowledge base (Puranam, 2018).

2.7.3 Cross-functional teams and knowledge sharing

Cross-functional teams are permanent task groups with members from different functional areas. Cross-functional teams enhance collaboration across functions by breaking down functional silos through a teamwork approach (Daft, 2022). Cross-functional teams have emerged as an efficient means for individuals from diverse sectors or organizations within a company to exchange information, foster new problem-solving strategies, and collaborate on intricate projects (Robbins, 2012).

Several studies have confirmed that teamwork facilitates knowledge sharing and creation (Coakes, 2010) and that organizational members must work together to build on each other's ideas and strengths and to help organizations cope with change, adapt, and innovate (Courtney & Navarro, 2007). Cross-functional teams facilitate the

exchange of information and resources, achieving synergies through the integration of these elements across several roles (Hirunyawipada et al., 2010). Cross-functional teams facilitate comprehension among diverse roles and teams, mitigate conflicts and discrepancies, foster trust and reciprocity, cultivate a unified vision, and exchange knowledge and resources (Brettel et al., 2011).

Teamwork is the key to sharing knowledge in cross-functional teams, meaning that people from two or more departments work together to accomplish a common point of view or goal or to share the results of their cooperation. Collaboration can achieve what no single department or individual workshop can (Thomas et al., 2001). Finding shared objectives and building successful synergies in an organization with transparent limits is essential for teams as well. Synergy is the idea of cooperation and coordination among many people or groups toward a shared objective. It stresses the need to use good communication, resource sharing, and mutual assistance to raise general efficiency and effectiveness. Collaboration is a process in which subjects can go beyond their own shortcomings to fully utilize inter-subjective collaboration and participate in reaching constructive solutions (Roberts & Bradley, 1991).

In the digital era, the dynamic process of constantly and actively seeking synergy to achieve organizational growth within boundaries, organizational growth across boundaries, and systemic self-evolution to achieve overall optimality. Organizational members are no longer in a subject-object relationship but are mutual subjects and integrated (Chen et al., 2022). The key to intra-organizational synergy is the reciprocity of responsibilities, rights, and benefits, while at the same time, organizations are to a greater extent in highly uncertain external environments, where the influence of factors external to the organization has become much greater than those internal to the organization, and where cross-boundary disruption, digital platforms, and digital ecosystems continue to emerge, so that organizations need to have the ability to capture greater value across organizational boundaries through extra-organizational synergies

(Chen et al., 2019).

2.7.4 Knowledge broker and knowledge sharing

The higher the level of environmental uncertainty and departmental fragmentation, the higher the proportion of managers performing integrative tasks. Integrators require excellent interpersonal skills, tend to have high levels of responsibility and low levels of authority, and need to be able to coordinate through specialist skills and lobbying to coordinate across departmental boundaries, the ability to organize people and gain their trust, and the ability to deal with conflicts and disagreements in the interests of the organization (Lawrence, 1967). Cross-boundary roles are to connect and coordinate key elements of the organization in the external environment. Boundary-spanning roles involve the exchange of information in two main ways: detecting and transmitting information about changes in the environment to the organization and transmitting information to the environment that demonstrates the organization's strengths (Daft, 2022).

With the development of the knowledge economy, this role has become increasingly important in all types of organizations as a facilitator of knowledge sharing and management. In cross-boundary organizations in highly uncertain environments and with highly differentiated structures, approximately 22% of managers are allotted to perform integration tasks. Knowledge brokers are people who act as a bridge in the knowledge economy (Burt, 2005; Reagans & McEvily, 2003). Knowledge brokers can effectively integrate, disseminate, and apply knowledge to help organizations improve their innovation capabilities and decision-making quality, have numerous relationships, and/or are people who have relationships that connect subgroups that would otherwise be excluded from the information flow (Borgatti et al., 2013; Cross et al., 2005).

There is not much prior literature on the knowledge broker role in online distance education. Some scholars believe that the strategic role played by IT personnel can have

a positive impact on knowledge sharing between IT and professional tasks (Nord et al., 2007). When IT personnel play a strategic role in an organization, the organization is more likely to be equipped to deploy IT innovations (Zhang, et al., 2014). Other scholars have argued that learning designers play the role of brokers to promote knowledge sharing (Bryk et al., 2015). Some scholars also believe that staff members of cross-departmental organizations such as teaching, and research centers and knowledge alliances can be considered key players in knowledge sharing. They connect educators from different sub-departments and organizations and engage in knowledge sharing and creation activities through common goals, formal meetings, and role allocation (Karnopp, 2023).

2.7.5 Community of practice and knowledge sharing

Knowledge management by means of employee experience has evolved into a crucial instrument for competitive positioning of companies in the knowledge economy era. Community of practice (CoP) is the most often used approach in both scholarly and pragmatic literature to enable knowledge workers to collaborate. CoP assists organizations to effectively communicate the tacit knowledge of outstanding people and enable them to be obtained (Jagasia et al., 2015). Asiedu et al. (2022) proposed that CoP, knowledge partnerships, and knowledge collections together support knowledge management and knowledge cooperation in higher education institutions.

CoP is defined as a group of people who share a concern or passion and learn how to do better by consistently engaging (Wenger, 1998). In line with earlier studies, Nicolini et al. (2022) defines CoP as a group of people connected by a common activity, shared knowledge, enthusiasm for a common cause, and a wish to learn or better their profession. CoP is predicated on the “Indwelling” theory. People can guide each other through their comprehension of generally accepted real-life difficulties when their “indwelling” is interlaced on the same thread, hence indirectly sharing tacit knowledge and accomplishing cooperative partnerships (Polanyi, 2015; Pyrko et al., 2017). When

researching the apprenticeship model of learning, Lave & Wenger (1991) put out the concept of contextual learning. Learning, they believed, is essentially a social activity rather than only in the learner's head. With three traits: shared repertoire, mutual engagement, and joint enterprise.

Several studies have confirmed that knowledge communities facilitate knowledge sharing. Teachers' professional learning communities are characterized by collaborative activities and de-individualized practices, emphasizing the interpretation of teachers' professional learning communities within the context of the educational ecosystem. The professional learning community of teachers creates a management environment suitable for the professional learning community of teachers, shares effective teaching skills, and forms multiple forms of knowledge exchange by establishing cooperation mechanisms, creating internal incentive mechanisms, building a teaching skills bank, and promoting knowledge management (Song & Sun, 2023). Some universities promote the balanced development of teachers' resources and knowledge sharing, enrich and expand teachers' knowledge structure, promote teachers' practical knowledge generation, and enhance teachers' digital literacy through the establishment of digital learning communities or online knowledge communities (Luo, 2024).

2.8 Organizational Incentives and Knowledge Sharing

Organizational incentives as an antecedent variable for individual knowledge sharing have been more widely studied. Reward creates a bond that promotes trust and reciprocity (Haesebrouck et al., 2021). Previous research has highlighted the role of incentives in knowledge sharing. Establishing rewards for knowledge sharing can help motivate individuals to share knowledge with the organization. Setting up performance management and reward systems related to knowledge sharing will help individuals to share with the team. The fairness of performance will also influence an individual's willingness to share knowledge (Bartol & Srivastava, 2002). At the same time, managers should appropriately appraise the knowledge-seeking and knowledge-giving

behaviors of their team members and give reasonable extrinsic rewards to work in conjunction with intrinsic rewards and attenuate the hindering effect of subjective concerns on these two behaviors (Gao et al., 2019).

In management practice, organizations need to design incentives that encourage collaboration, organizational learning, and organizational performance (Lee & Puranam, 2017). For example, organizing regular meetings between employees, reducing start-up costs for knowledge seekers, and providing incentives to knowledge providers linked to joint outputs will facilitate knowledge sharing (Sandvik et al., 2020). When measuring knowledge sharing is more difficult and costly, companies can reward employees through team or company performance (Wu, 2021). Firms can establish staff rotation programs, mentorship programs, and encourage cross-team collaboration. For example, Deloitte (2022) created an emerging leader development program. This mentorship program pairs each participant with a partner, principal, or direct sponsor who will help the participant develop in the organization over the next two years. The program has helped mentors and new hires build strong relationships (Mentorloop, 2017). The company can reinforce trust and reciprocity as well as shared values among employees. The organization cultivates a culture of trust by enhancing employee autonomy. They also try to connect employees and strengthen employee relationships through teamwork (Spotify, 2020).

Organizations should take strong measures (giving employees job autonomy, encouraging employees to participate in decision-making) to improve employees' perception of insider status, which in turn promotes employees' knowledge sharing (Zhong et al., 2020). There is a positive effect on employees' willingness to share knowledge when there is high employee engagement. Furthermore, organizational identification plays a partially mediating role between employee engagement and knowledge sharing (Luo & Lu, 2020). It is also evident that individuals and colleagues will establish different qualities of relationships. This will lead to a decrease in the

willingness to share knowledge with colleagues who have weaker exchange relationships (Omilion-Hodges & Baker, 2013).

2.9 Theory of Organizational Knowledge Creation

2.9.1 Knowledge creation model

The Theory of Organizational Knowledge Creation (TOKC) describes the dynamic process of organizational knowledge creation. It demonstrates that a continuous "dialogue" between tacit and explicit knowledge creates organizational knowledge. This "dialogue" occurs in a series of interactions between individuals, between individuals and teams, and between teams and organizations, generating new knowledge (Nonaka, 1994). TOKC provides a new perspective on knowledge management by focusing on the interactions between organizations, teams, and individuals in space and on the flow of knowledge in space. New knowledge is created through knowledge sharing to achieve organizational goals (Nonaka et al., 2006).

TOKC draws on Polanyi's (1966) distinction between tacit and explicit knowledge to develop a knowledge creation model. The knowledge creation model is called the SECI model of socialization, externalization, combination, and internalization, which describes the four processes between tacit and explicit knowledge and explains how knowledge can be transformed from tacit to explicit and ultimately generate new tacit knowledge (Bereznoy et al., 2021). According to TOKC, knowledge generation is an ongoing and dynamic cyclical process necessitating continuous interaction of knowledge between organizations and individuals. Organizations can perpetually innovate and enhance through this cycle.

In the knowledge economy, the transformation between tacit and explicit knowledge is important for organizational management, which can promote organizational growth

and knowledge innovation. On the one hand, organizations need to transform tacit knowledge into explicit knowledge. Most tacit knowledge therefore exists in people's minds, which is difficult to encode or share. On the other hand, organizations also need to encourage the transformation of explicit knowledge into tacit knowledge. Only when individuals learn and reflect on organizational knowledge and transform explicit knowledge into innovative knowledge does organizational knowledge management become meaningful in practice (Nonaka & Takeuchi, 1995).

Socialization is the conveyance of tacit information between individuals via experience sharing, imitation, observation, and brainstorming. Externalization is the conversion of tacit information into explicit knowledge, hence enhancing knowledge diffusion across the company, such as using models and diagrams. Combination is the process of transferring explicit knowledge from a group to an organization, such as a knowledge management system, and categorizing and preserving various forms of explicit knowledge (Koh & Kim, 2004). Internalizing is the process by which a person absorbs knowledge through practice and inquiry, converting explicit knowledge from the organization into tacit knowledge (Nonaka, 1994).

2.9.2 SECI model and knowledge sharing process

Many academics have examined the behaviors of companies, teams, and people in the four transformation processes based on the SECI model. Scholars from China have lately investigated the process of information exchange in the field of education using the SECI model. For instance, the SECI knowledge management model was creatively presented into the research of Chinese medicine inheritance, elaborating the explicit and tacit knowledge components of the five Chinese medicine inheritance modes, and proposed a new way of thinking about Chinese medicine knowledge inheritance through the four aspects of socialization of tacit knowledge, externalization of tacit knowledge, combination of explicit knowledge, and internalization of explicit knowledge (Liu et al, 2024). By means of the SECI model, a knowledge production

spiral model was built in the framework of public library reading events, thereby clarifying the dynamics of knowledge sharing in the context of reading activities (He, 2021).

Some scholars have applied SECI theories and models to the field of education. Introducing the SECI model into the field of pedagogy and constructing a model with the characteristics of contextual creation, action orientation, system promotion, and dynamic generation can help to stratify, classify, and manage the practical knowledge of teachers in stages (Nie, 2023). Through the basic framework of the SECI knowledge model, a theoretical model of knowledge creation in university teacher communities is constructed to support the building of teacher communities in higher education institutions (Gan et al., 2024). The SECI model has been used to explain how teachers can achieve continuous improvement and professional growth in their teaching ability through continuous social interaction, knowledge externalization, knowledge integration, and knowledge internalization (Liu, 2021). The SECI model allows us to analyze teachers' knowledge sharing in terms of four internal processes and enables us to propose systematic strategies to facilitate teachers' knowledge sharing. It is essential to cultivate an emotional culture and a conducive field. This entails optimizing the design of multiple structures for knowledge sharing and establishing an open professional platform and information network (Li, 2021). An effective knowledge management and sharing model is proposed, which depicts the process of virtual communities of practice using technological tools to facilitate socialization, externalization, combination, and internalization of knowledge in a higher education environment (Sun & Shen, 2022). Table 2-2 summarizes the four processes of knowledge sharing in the educational domain, based on the findings of related literature.

Sharing processes	**Form A**	**Form B**	**Form C**	**Form D**
Socialization	Social media	Team Building	Shared experience	Apprenticeship

Externalization	Blog	Forum (discussion)	Online Seminar	Collaborative teams
Combination	Knowledge management system	Collaboration tools	Thematic training	Teaching Reflection
Internalization	Instructional video	Learning Experience	Teaching practice	Learning by doing

Table 2- 2 Knowledge sharing process and forms

Source: Based on related literature, 2024

However, most of the literature to date has focused on the outcomes and methods of knowledge sharing and has not explored the processes and internal mechanisms of knowledge sharing. In addition, the emergence of innovative platforms such as large open platforms, digital learning resource sharing platforms, and online training platforms has expanded the organizational boundaries within which the SECI model can be applied. There is almost no empirical research on practices that cross organizational boundaries. There is a need to explore in depth the pathways and mechanisms of knowledge transformation in the digital era. (Zhang et al., 2021).

2.9.3 Ba concept

Nonaka and Konno (1998) proposed the term “Ba” to refer to the place or field of knowledge sharing and creation. They argue that knowledge creation requires an environment because there’s no creation without “Ba”. Four types of “Ba” are proposed to correspond to the four stages of knowledge transformation in the SECI model, each of which supports a specific transformation process, thus accelerating the knowledge creation process. Each Ba supports a specific stage in the SECI model and helps to transform and create different types of knowledge (Lee et al., 2021). The socialization process corresponds to “Originating Ba”, the externalization process corresponds to “Dialoguing Ba”, the combination process corresponds to “Systemizing Ba”, and the internalization process corresponds to “Exercising Ba” (Nonaka & Konno, 1998).

In “Ba”, the process of interacting with others enhances one’s own cognitive abilities (Nonaka et al., 2000). “Ba” is a shared space that transcends the boundaries of traditional interactions. It may be physical, virtual, or spiritual. Specifically, physical spaces can be rooms, offices, or workshops; virtual spaces can be information technology platforms, the internet, and other social networks; and spiritual spaces include shared experiences, ideas, and concepts. No organization can ignore the construction of a “Ba”. A beneficial “Ba” is self-organizing, with its own sense of purpose, direction, and mission. It has open boundaries and can resonate and dialogue with people from different backgrounds and with a broad perspective (Nonaka et al., 2003; Nonaka et al., 2006).

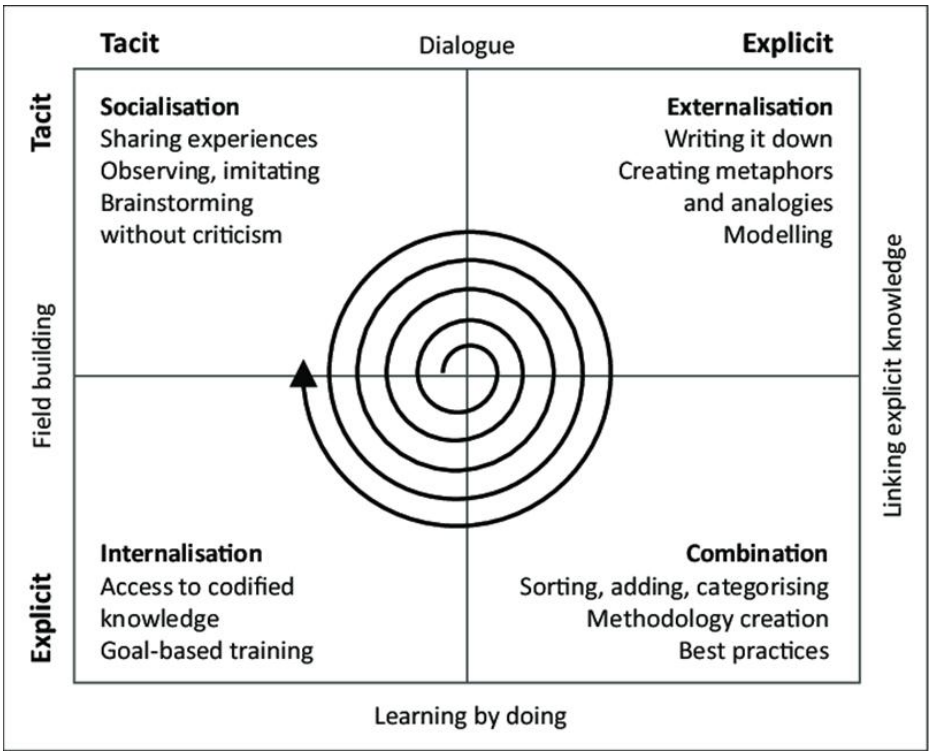


Figure 2- 1 SECI model and “Ba” theory

Source: Nonaka and Konno (1998) and Nonaka et al. (2000)

“Ba” concepts and their underlying concepts are indeed necessary to organize the process of knowledge creation and innovation. The primordial field, the dialogue field, the systemic field, and the practice field provide platforms for the knowledge-sharing process, all of which have power mechanisms for sustained knowledge creation (Neto & Choo, 2010). Figure 2.1 shows the relationship between the SECI model and “Ba”

theory.

Scholars analyzed four fields of action to facilitate the knowledge sharing process. Social media as a technological and social tool has significantly facilitated knowledge sharing among teachers. It provides a low-cost and efficient platform that enables teachers to easily exchange teaching experiences and resources, enhancing teacher professional development and collaboration (Li et al., 2021). The learning platform expands the channels for knowledge sharing and dissemination among teachers and creates a dynamic school-based teaching and research ecosystem, which can effectively promote teachers' knowledge development (Zhou, 2022). A stable collaborative learning platform is an effective guarantee for teachers to carry out in-depth, long-term, and continuous knowledge sharing and provides a long-term "Ba" for the dissemination and sharing of teachers' tacit knowledge (Wang, 2018). Tables 2-3 Shows name and actions of "Ba" from relative literature.

Name	Action 1	Action 2	Action 3
Originating Ba	Social interaction	confidence-building	Office break area
Interacting Ba:	Conceptualizing the discussion	collaborative learning	Continuing dialogue
Cyber Ba	Knowledge integration	Technical Support	Teacher community
Exercising Ba	Applications and Practices	Feedback on experience	knowledge creation

Table 2- 3 Name and actions of "Ba"

Source: Based on related literature, 2024

2.10 Theoretical Reviews

2.10.1 Theory of planned behavior

In social psychology, the Theory of Planned Behavior (TPB) is a general theory extensively applied to examine individual behavior. Three layers of concepts define the willingness to undertake a given activity, according to TPB: behavioral attitudes, subjective norms, and perceived behavioral control, therefore influencing the chance that a person will engage in a certain conduct at a given moment (Ajzen, 1991). Adding the idea of behavioral control, the TPB is a development and enrichment of the Theory of Reasoned Action (TRA).

The efficacy of the TPB conduct in forecasting behavioral intention and actual conduct has been extensively validated in numerous research studies (Cooke & French, 2008). In the domain of knowledge dissemination, the TPB or the TRA is employed to comprehend knowledge sharing within various professional cohorts. Chen et al. (2011) examined high school teachers' readiness to share knowledge, revealing that attitudes, subjective norms, and perceived behavioral control influenced this willingness. Virtual environments reveal that supervisory norms, descriptive norms, and the perceived controllability of knowledge sharing might affect organizational members' desire and behavior regarding knowledge dissemination (Hao, 2023).

2.10.2 Social exchange theory

Social Exchange Theory (SET) originated in the 1960s. The core content of the theory is that the relationship between people follows the principle of reciprocity. People communicate with others for the purpose of getting rewards, including material rewards and psychological rewards. Examples of social exchange theory include George Homans and Peter Blau. Homans emphasize the social exchange of individual behavior levels, and its theory is called "behavioral exchanges". Blau (1964) discussed and summarized some emergent forces from the process of simple exchange behavior to the characteristics of complex social structure. He focused on the model of explaining

social relations from the perspective of structure rather than culture and psychology and proposed the view of studying social exchange behavior from the perspective of sociology, arguing that social exchange is only a limited activity that depends on the response of others to rewards. Rewards are divided into four categories: money, social appreciation, respect, and obedience.

SET has been widely used in the field of organization management and has become the mainstream theory to explain organizational behavior. Based on SET, some scholars have explored the factors of knowledge sharing through empirical research. Wu (2006) explores the key factors influencing knowledge sharing in virtual teams based on social exchange theory. Xu & Zhang (2018) found that knowledge sharing among network users was driven by both external and internal reward motivations, and the former has a greater impact on knowledge sharing. Liu (2021) proved that social reward, emotional support, cost, and social expectation all support teachers' knowledge sharing effectively based on Laura's concept of reward.

2.10.3 Social capital theory

The concept of social capital was first introduced by Jane Jacobs (1961). Social capital is seen as the sum of the actual and potential resources contained in the network of relationships that an individual or social unit possesses and has at its disposal (Nahapie & Ghoshal, 1998). It represents intrinsic values such as social relationships, trust relationships and value systems that promote personal behavior. Lin (2001) proposed that social capital is a resource that exists in social networks and can be acquired and used through purposeful actions. Paldam (2000) argues that the core concepts of social capital are mainly network resources, mutual trust and cooperative behavior. Durlauf & Fafchamps (2003) point out that social capital is the behavior and trust that contributes to good social and economic outcomes. Bourdieu (2011) defines social capital as the collective benefits embedded in social networks and generated through social interactions. It can bring together individuals in a community to collaborate and

cooperate for a common goal (Putnam, 1995) and inspire cooperation between individuals to achieve common goals. From the above, social capital is based on reciprocity, bridging the gap between people with common goals and similarities to create value through social networks.

Scholars use Social Capital Theory (SCT) to explain how social capital in social networks induces knowledge sharing processes. The empirical results show that social networks and shared goals significantly promote knowledge sharing, but social trust has no direct effect on knowledge sharing.

Social Capital Theory (SCT) helps academics to understand how social capital in social networks generates knowledge-sharing mechanisms. Chow & Lai (2008) created a theoretical model implying that knowledge sharing is influenced by social capital including social networks, social trust, and common aims. Although the direct effect of social trust on knowledge sharing is not significant, empirical results show that social networks and common goals contribute significantly to knowledge sharing. Ton (2023) investigated the mechanisms by which social capital and its sub-dimensions influence the process of knowledge sharing to improve the academic performance of students in higher education and found that the cognitive dimensions of social capital have a significant positive effect on knowledge sharing.

2.10.4 Theory selection in this research

Research on knowledge sharing has used a variety of theories, and studies have used multiple theories to construct a research framework, such as the TPB, SET, and SCT. Table 2-4 shows theories applied in knowledge sharing studies. As discussed above, TPB, SET, and SCT concentrate more on personal behavior in the psychology research field. This research focuses on knowledge sharing processes and organization factors, not individual factors, so TPB, SET, and SCT are not appropriate to this research.

Theory	Measure of KS	Author	Year
TPB/ TRA	KS behavior	Hao, Q.	2023
	KS intention	Fullwood and Rowley	2017
	KS attitude	Javaid et al.	2020
SET	KS behavior	Abbasi and Dastgeer	2018
	KS behavior	Yao et al.	2021
SCT	KS behavior	Al-Kurdi et al.	2020
	KS behavior	Hung et al.,	2019
	KS behavior	Abbasi et al.	2021

Table 2- 4 Theories applied in knowledge sharing studies

Source: Based on related literature, 2024

2.11 Summarizing the Literature Review

A literature review was conducted based on research questions and research objectives. Firstly, concepts of knowledge sharing and organizational structure in this research were defined. Then, knowledge sharing is sorted out in terms of knowledge sharing process, knowledge demanders and knowledge contributors, tacit and explicit knowledge, and organizational structure in terms of organizational forms and dimensions. Then, a literature search is focused on previous studies that relate to these two aspects of this matter. Finally, a comprehensive review of organizational knowledge creation theories, the SECI model and Ba theory and their applications is conducted. Figure 2-1 below summarizes the literature review.

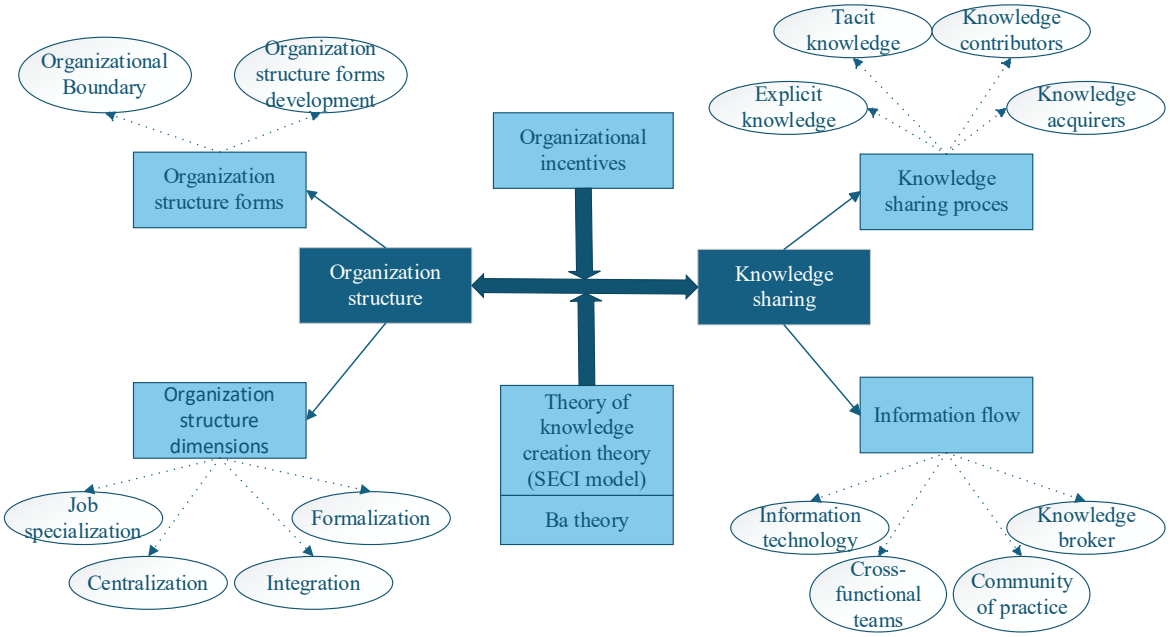


Figure 2- 2 Summarizing the literature review

Source: Researcher's work, 2024

2.12 Research Conceptual Framework

This research explored the organizational structure promoting knowledge sharing in the online and distance higher education fields. Firstly, this research highlighted the importance of digital transformation in knowledge sharing and organizational structure, as well as its relevance to online and distance higher education, pedagogy innovation, and other related topics. Next, this research conducted a critical review of the literature on concepts related to knowledge sharing, organizational structure, and the relationship between knowledge and organizational structure. Then, this research critically analyzed theoretical literature from previous knowledge sharing, selecting a theory of organizational knowledge creation, the SECI model, and Ba theory as suitable for this research. This led to the identification of the research gap. Furthermore, this research addressed research questions by collecting and analyzing data from semi-structured interviews, observations, and documentation. Finally, research objectives were solved. Figure 2.2 shows the research conceptual framework.

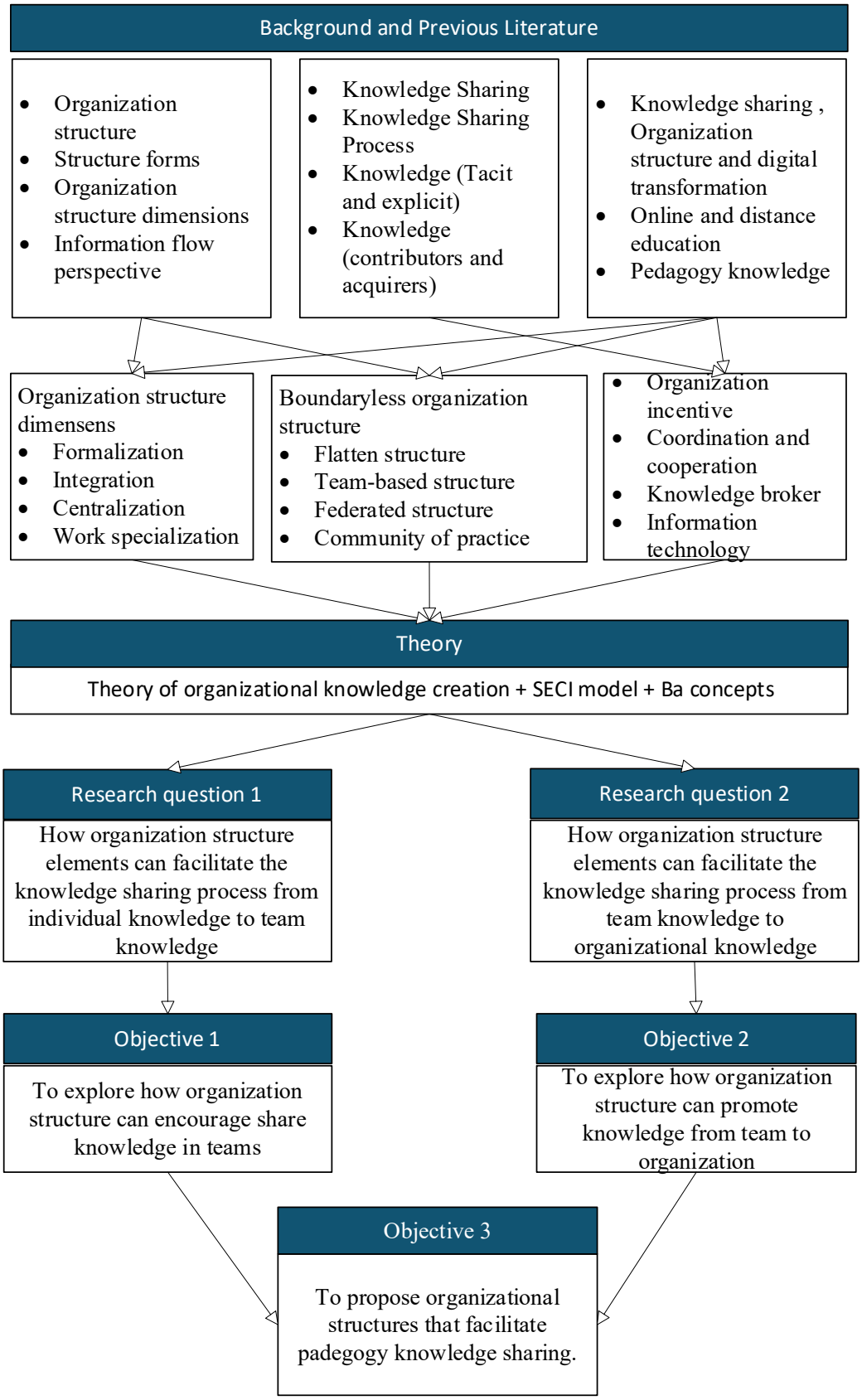


Figure 2- 3 The research conceptual framework

Source: Researcher's work, 2024

2.13 Chapter Summary

This chapter conducted a critical literature review of the research. The literature analyzed organizational structure in terms of its forms and dimensions. The literature analyzed knowledge sharing in terms of explicit and tacit knowledge, knowledge contributors and demanders, and the knowledge sharing process. This research then concentrates on the extant literature that examines the influence of organizational structure on knowledge sharing, specifically the movement of knowledge within the organization, the use of information technology, and the role of knowledge brokers. Next, this research reviewed theories related to knowledge sharing fields. Finally, this research identified the research gap.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Chapter Introduction

This chapter will present a discussion of research methodology, including an examination of the research philosophy, research design, data collection, data analysis, theoretical saturation, ethical considerations, research validation, and reliability.

3.2 Research Philosophy

3.2.1 Ontology, Epistemology, Methodology and Axiology

Since Kuhn first introduced the concept of "paradigm" in 1962, it has become an increasingly significant term in the field of research. A research paradigm is an important concept that guides researchers in conducting research. It comprises a combination of ideas, assumptions, and practices that direct researchers in their comprehension of research inquiries, methodologies for data collection and analysis, and interpretation of findings (Gliner & Morgan, 2000). The paradigmatic perspective that researchers adopt has a significant impact on how they define their research questions, formulate their hypotheses, select their research methods, and interpret their findings (Bryman, 1998). A paradigm is “a set of interrelated assumptions about the social world that provide a philosophical and conceptual framework for the organized study of the social world” (Filstead, 1979).

Guba and Lincoln (1994) stated a paradigm has three elements, which are “ontology, epistemology, and methodology”. It is of the utmost importance to have a profound comprehension of these elements, as a research paradigm represents the framework or

perspective that a researcher adopts when conducting research (Kivunja & Kuyini, 2017). It encompasses the researcher's mental models, worldviews, beliefs, values, assumptions, and methods, which can provide compelling arguments and terminology for obtaining reliable results (Mahbubur, 2023).

Ontology is a field of philosophy that examines questions about the nature of reality and what kinds of things exist in the world around us (Kamal, 2019). It explores the nature of people's understanding of social reality and how people perceive their beliefs about it (Crotty, 1998). Ontology is the starting point for all research (Grix, 2002); subjective researchers seek to understand reality through the eyes of the respondent (Olson, 1999). Ontology also discusses the units of existence and how the units interact with each other (Blaikie, 2000); researchers can gain a deeper understanding of whether the world that exists around us is real and how the world around us interacts (Pidgeon, 2019).

Epistemology is a branch of philosophy concerned with the study of knowledge and belief. Epistemology is concerned with how we know what is supposed to exist (Blaikie, 2000), with knowledge and its acquisition (Willis, 2007), and with how knowledge can be communicated to others (Cohen et al., 2007). Epistemology is an important area of research and is seen as central to the aims of research paradigm choice (Snape & Spencer, 2003), as it can help us to understand how knowledge is acquired and identify what we can know with certainty, as well as to evaluate and question one's beliefs and assumptions and to be more critical and reflective in our thinking (Khaldi, 2017).

Methodology refers to the systematic approach used to conduct research or investigate a particular topic or problem, a set of strategies, action plans, systematic processes, and techniques used to collect, analyze, and interpret research data (Crotty, 1998; Rahi et al., 2019). Methodology focuses on how we come to know the world or acquire partial knowledge of the world (Moreno, 1947), identifying methods and activities to acquire

the necessary knowledge through selection, reflection, evaluation, and argumentation (Wellington, 2015).

Axiology is the ethical issues that need to be considered in the research process and is a philosophical approach to making a valuable or right decision (Finnis, 1980) and involves making judgements about ethics and value systems (Patton, 2002). Axiology is the values that research must follow, the need to respect the rights of all participants, to ensure the goodwill of participants, to avoid research risks and harms, and the value of the outcomes (Saunders et al., 2006).

Ontology and epistemology determine the research questions that will be asked, and methodology determines how these research questions are answered (Grix, 2002). Figure 3-1 shows the relationships between research elements.

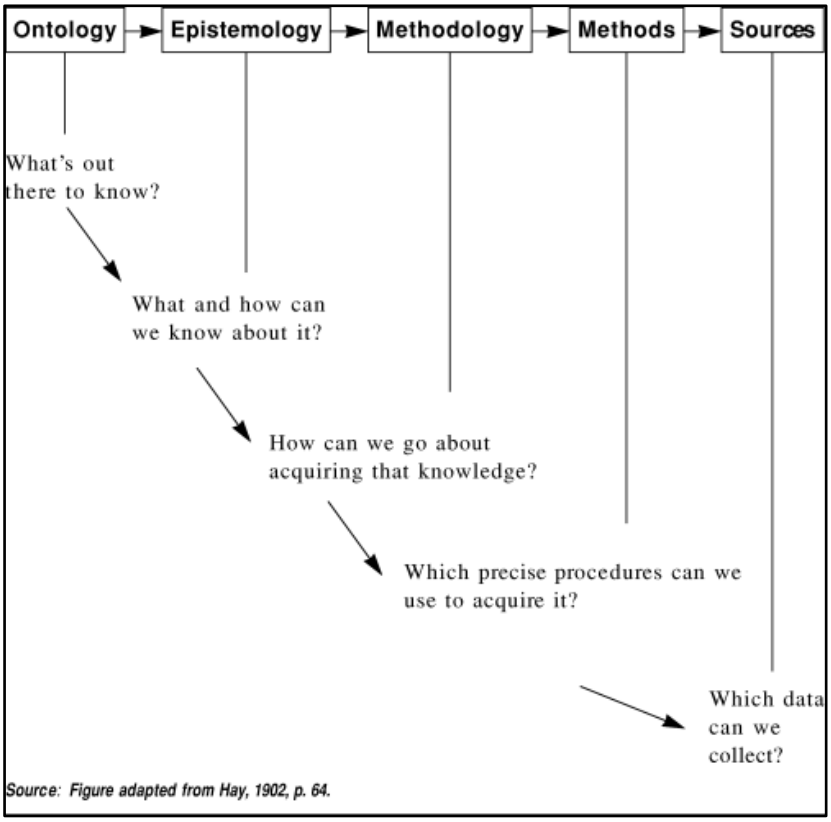


Figure 3- 1 The relationship between research elements

Source: Figure adapted from Grix, 2002.

3.2.2 Guba and Lincoln's research Paradigms

A paradigm is a loose collection of logically related assumptions, concepts, or propositions that guide thinking and research (Bogdan & Biklen, 1998) and is the philosophical intention or motivation for conducting research (Cohen & Manion, 1994). Table 3.1 shows the positivism, constructivism, and critical theory research paradigms proposed by Guba and Lincoln (1994).

Item	Positivism	Critical theory	Constructivism
Ontology	Naïve Realism "real" reality but apprehensible	Historical realism- Virtual reality shaped by society, political, cultural, economic, ethnic, and gender values; crystallized over time.	Relativism- Local and specific constructed and co-constructed realities
Epistemology	Dualist/ objectivist; findings true	Transactional/ subjectivist. Value-mediated findings	Transactional/ subjectivist. created finding
Methodology	Experimental manipulative. verification of hypotheses; chiefly quantitative methods	Dialogic/ dialectical	Hermeneutical/ dialectical

Table 3- 1 Major research paradigms

Source: Adapted from Guba & Lincoln (1994)

Positivism assumes that there is only one truth in the world and that there is a need for scientific methods of investigation that can explain natural causation and human behavior (Mertens, 2005). The positivism paradigm is predicated on deductive logic, which involves the formulation of hypotheses, the testing of those hypotheses, the

provision of operational definitions and mathematical formulae, and the calculation, extrapolation, and expression of those hypotheses to arrive at conclusions (O'Leary, 2004). Positivists take a neutral stance in research and generally use quantitative methods to conduct research (Saunders et al., 2004).

The interpretivism paradigm focuses on understanding the subjective world of human experience (Guba & Lincoln, 1989), focusing on understanding individuals and their interpretations of the world around them. It requires the researcher to seek to understand the point of view of the subject being observed rather than the point of view of the observer. The researcher will construct social knowledge based on his or her personal experience of the realities of life in the natural environment being studied (Punch, 2005). The key tenet of the interpretivism paradigm is that reality is socially constructed; hence, the paradigm is known as the constructivism paradigm (Mertens, 2005). Interpretive/constructivism researchers typically depend on participants' views of the studied circumstance and acknowledge the impact of their own backgrounds and experiences on the research (Creswell, 2007). This is examined through the interpersonal interactions between the researcher and the participants, from which meaning is derived or reconstructed (Chalmers et al., 2005). The researcher seeks the complexity of multiple perspectives rather than limiting meaning to a few categories or perspectives (Crotty, 1998). Interpretive/constructivism researchers are most likely to use qualitative data collection methods and analysis, as well as mixed methods that combine qualitative and quantitative approaches (Azungah, 2018).

Critical theory provides an explanation of the problems that exist in the current social reality, identifies actions to change the status quo, and provides clear norms for critique and change (Horkheimer, 1982; Bohman, 2013). Traditional theories explore and affirm the status quo, whereas critical theories challenge it and seek to construct new theoretical frameworks. Research is an ongoing process that is influenced and constrained by context (Morrow, 1994). Critical theory is sufficiently flexible to be

applied to any method or technique that helps to improve an imbalanced social system, but it is particularly suited to qualitative research (Hussain et al., 2013).

3.2.3 Burrell and Morgan's research paradigm

Burrell and Morgan (1979) proposed four sociological research paradigms, namely radical humanist, radical structuralist, interpretivism, and functionalist, which represent four different paradigms for viewing organizations and the social world. The four research paradigms are mutually exclusive and independent and have produced their own distinctive approaches to the analysis of social life. (Saunders et al., 2007).

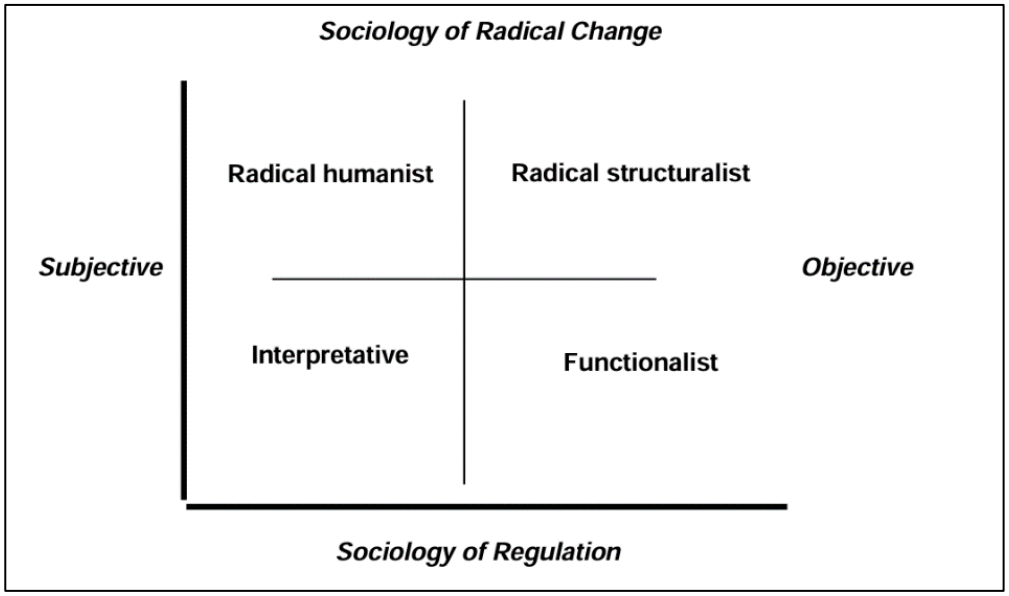


Figure 3- 2 Matrix of sociological research paradigms

Source: Burrell and Morgan (1979)

Figure 3.2 shows a matrix of sociological research paradigms, with the vertical axis divided into two dimensions, subjective and objective, and the horizontal axis divided into two dimensions, the sociology of regulation and the sociology of radical change. The matrix is on the subjective-objective axis, with the functionalist and radical structuralist paradigms belonging to objectivism and the hermeneutic and radical humanist paradigms belonging to subjectivism. On the regulation and radical change axis, interpretivism and functionalism belong to the social regulation perspective, and

radical humanists and radical structuralists to the social radical change perspective. The interpretivism paradigm stresses that the social world is only a subjective fabrication of individual human beings who can create and sustain a social world of intersubjectively shared meanings by means of a common language and daily interactions. Its primary goal is to understand and explain the social world from the perspective of actors directly involved in social processes (Bryman & Bell, 2012).

From an objective perspective, organizations are objective entities that can be studied in the same way that scientists study the natural world. From a subjectivist perspective, organizations are social constructs. These views and narratives explain a wide range of social realities to some extent. Burrell and Morgan (2019) further trace the development and interrelationships of the different sociological schools within each paradigm and apply them to the field of organizational studies in relation to organizational theory to illustrate broader sociological themes and provide a framework for assessing future developments in the field of organizational analysis.

Item	**Paradigm**	**Paradigm2**	**Paradigm3**
Cuba and Lincoln (1998)	Positivism	Constructivism	Critical theory
Burrell and Morgan (1979)	Functionalist	Interpretivism	Radical structuralist. Radical humanist

Table 3- 2 Comparison of paradigms

Source: Author own's work, 2024

Table 3.2 compares the Cuban and Lincoln paradigms with those of Burrell and Morgan. Positivism is closely related to the functionalist paradigm. The critical theory paradigm is related to the radical structuralist and radical humanist paradigms. Guba and Lincoln's constructivism paradigm is a comprehensive and diverse theoretical framework that positively incorporates constructivism, interpretivism, and hermeneutic perspectives (Schwandt, 1998). They argue that reality is empirical and consists of the psychosocial constructions of individuals or groups, which in turn are grounded local contexts.

Burrell and Morgan (1979) The interpretive paradigm is the subjective experiential level of the individual's understanding of the social world. Thus, the basic nature of constructivism and interpretivism paradigms is the same.

3.2.4 Research Approach

The Saunders Research onion illustrates “inductive” and “deductive” are two research approaches in research work (Saunders et al., 2007; Saunders et al., 2009). Deductive approaches are validation theories (Silverman, 2013), fit the positivism paradigm, and are usually used in qualitative research (Snieder & Larner, 2009). An inductive approach is creating or developing theories, usually used in constructivism and positivism paradigms, and is usually used in qualitative research (Bryman & Bell, 2011). Moreover, quantitative and qualitative research methods are two major research methods in educational research in terms of design and implementation (Adjei-Boateng, 2020).

The quantitative research method normally is based on the theoretical foundation of positivism and constructivism (Denzin & Lincoln, 2003). The object of research does not depend on the researcher and exists independently; the thing itself has its intrinsic fixed, repeatable laws. Quantitative dimensions can be used to examine the nature of things (Bryman, 2012). The quantitative research method describes trends or explains existing relationships between variables, analyzes and compares these data using mathematical methods such as statistics, and interprets the results of existing research or predictions for the future (Creswell, 2012).

The qualitative research method is heavily based on constructivism/interpretivism (Denzin & Lincoln, 2003). The qualitative research method is richly descriptive as it focuses on attention and consideration of the research process, context, interpretation, and meaning (Yilmaz, 2013). A considered naturalistic, qualitative approach focuses on understanding the phenomenon as a whole and explores issues and deepens

understanding of the phenomenon (Creswell, 2012). Unlike quantitative approaches, they are flexible and dynamic as they avoid design rigidity and can adapt to changing circumstances during the research process (Patton, 1990).

Qualitative researchers primarily use in-depth interviews, observation, document review, focus group discussions, and audio-visual materials to collect data. Information obtained from qualitative sources is written in detail to avoid biasing people's voices (Creswell, 2012). Data collection for qualitative research usually involves fieldwork, where the researcher consciously sets aside bias and lets the data speak for itself (Patton, 1990). Qualitative research methods allow respondents to explain problems and express their thoughts and feelings in their own words (Berg, 2007). Qualitative research, when used to organizational management, can highlight issues with team operations and the ways in which these issues develop (Bluhm et al. 2010).

3.3 Research Design

3.3.1 Philosophical assumptions adopted in this research

To ensure successful research, it is essential to have a proper research design in place. This is a plan developed by the researcher before data collection begins, with the aim of achieving the research objectives in an effective manner (Asenahabi, 2019). It is generally accepted among researchers that there are specific methodologies and paradigm associations. Researchers can choose the most appropriate paradigm and determine the most appropriate research design to suit their research (Chilisa & Kawulich, 2012).

When evaluating research design, the research objectives and research questions are of paramount importance (Cassell & Johnson 2006). Considering the research objectives, this research must address the following research questions: How does the

organizational structure of online and distance higher education institutions support the sharing of pedagogy knowledge from individuals to teams and from teams to the organization? To answer these questions and to make a series of recommendations to promote knowledge sharing, the researchers gain insight into the knowledge, experiences, personal views, ideas, and concerns of academics.

All paradigms have the potential to possess idiosyncratic strengths and weaknesses, which render them useful for solving different research objectives (Cavana et al., 2001). In this research, the constructivism/interpretivism research paradigm was selected based on comparative analysis of the research philosophy and research paradigms, in consideration of the paradigms' respective ontological and epistemological positions. Positivism/functionalist paradigms are not suitable for this research because the aim of the research is to examine the question of how rather than quantify the number of instances. The present research is specifically concerned with elucidating the experiences of academics engaged in the process of knowledge sharing within organizational contexts. Consequently, this research is not suitable for the quantitative method.

Critical theory, radical structuralism, and radical humanism are typically employed in management research to reformulate current management practices and to diagnose issues within prevailing organizational theory and practice (Saunders et al., 2007). The objective of this research is to discover elements that have been implemented in organizations and have yielded favorable outcomes. Therefore, this paradigm is unsuitable for this investigation.

According to constructivism and interpretivism, the world and the objects in it are indeterminate. They may contain potential meaning, but the actual meaning only emerges when consciousness is involved. In other words, truth is the result of a consensus formed by a group of people or co-constructors (Crotty, 1998). This research

explores the day-to-day activities of people in organizations, as well as people's perceptions and beliefs about the activities within organizations and identifies organizational structure to boost knowledge sharing. The constructivism/interpretivism paradigm is consistent with the requirements and objectives of this. Table 3.3 shows the philosophical assumptions of this research.

Item	Constructivism/ Interpretivism
Ontology	Co-constructed realities
Epistemology	Subjectivist; created finding
Methodology	Hermeneutical

Table 3- 3 Philosophical assumptions of this research

Source: Adapted from Guba and Lincoln, 1994

3.3.2 Grounded theory in this research-

In recent years, studies on organizational management and knowledge management have used the following two qualitative approaches: grounded theory (Sterna & Zibrek, 2021) and case research (Iftikhar et al., 2021), among others. The grounded theory was adopted in this research because this approach can answer the research questions appropriately and adequately (Yu & Smith, 2021). And it develops the knowledge creation module that will facilitate pedagogy knowledge sharing online and distance higher education.

Grounded theory is a research pathway capable of capturing and conceptualizing underlying patterns in the social environment (Glaser & Strauss, 1967). The grounded theory approach originated in field research by sociologists Strauss and Glaser on the handling of dying patients by medical staff in a hospital in the 1960s. It has grown in popularity and has been adopted by a wide range of fields outside of sociology, such as psychology, education, healthcare, and management and organizational studies in the field of management and business, and you are likely to find references for Glaser and Strauss (Locke, 2000).

Grounded theory places particular emphasis on generating theory from action, constructing theory from the perspective of the actors, and deriving theory from information with a close connection to the data. At the same time, it recognizes the importance of developing theories in social science research and that all levels of theory are essential for a deeper understanding of social phenomena. Grounded theory researchers prefer analysis over description, fresh conceptual categories over preconceived ideas, and systematically focused, continuously collected information over an amount of simultaneously collected information (Charmaz, 2000).

Currently, three separate academic streams are prevalent in the domain of grounded theory: Glaser's classical grounded theory, Strauss and Corbin's procedural grounded theory, and Charmaz's constructive grounded theory (Chen, 2020). All three streams of thought emphasize the generation of theory from information and employ similar methods and procedures, including successive comparison, coding, memorization, and theoretical sampling. Glaser (1992) is strongly opposed to reviewing literature before forming a theory, as he believes that preconceived knowledge in literature limits the basic theoretical analyst. He recommends a literature review after data collection. Corbin and Strauss (2008) and Charmaz (2014) advocate conducting a literature review prior to data collection and analysis to gain knowledge of the field, stimulate research questions, and guide coding (Yu & Smith, 2021).

This research primarily employs Strauss and Corbin's procedural grounded theory approach, which, due to its specific methodological and procedural requirements, is better suited for researchers who are just beginning to master grounded theory (Chen, 2020). Simultaneously, the aim of this research is to investigate how organizational structure enhances pedagogy knowledge sharing online and distance higher education. Therefore, Strauss and Corbin's procedural grounded theory offers flexibility and practicality, enabling the researcher to incorporate preconceived ideas into the research

process. Constant comparison is the analytic process that compares each piece of relevant data for similarities and differences and then develops the concepts (Corbin & Strauss, 2008).

3.3.3 Research design framework

Research design is a framework or blueprint for conducting a research project (Bryman & Bell, 2011). It details the necessary procedures for obtaining the data needed to construct and/or solve the research questions and objectives. (Saunders, 2009). The research design lays the foundation for conducting the project (Nihar, 2017). Figure 3-3 shows research design framework.

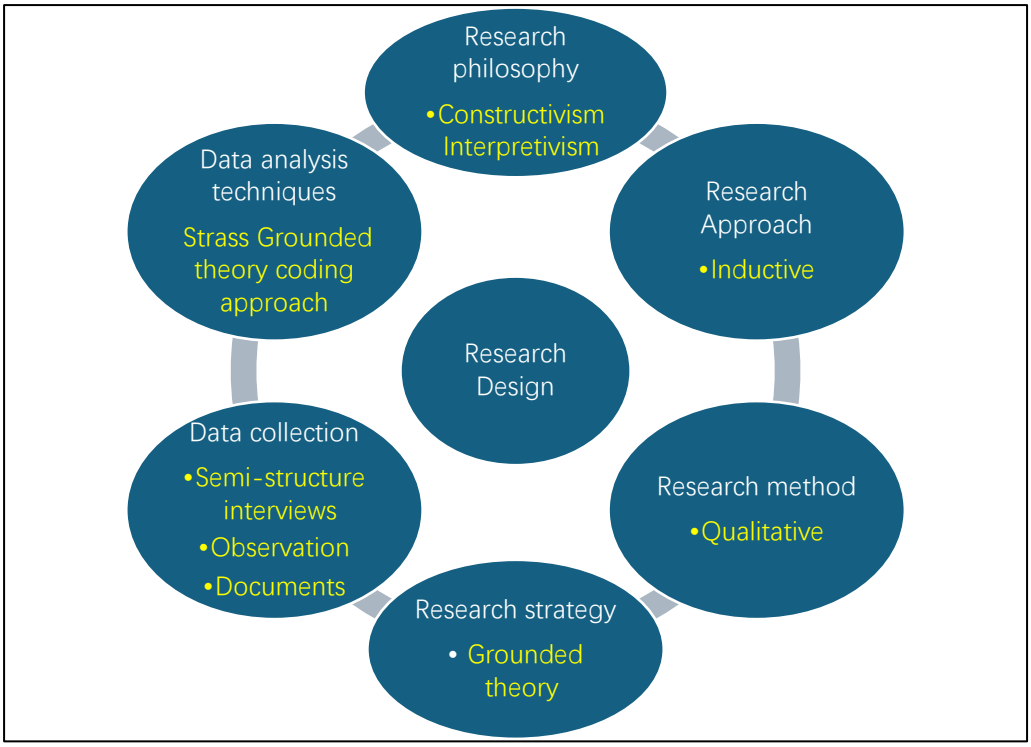


Figure 3- 3 Research design framework

Source: Research's work and adapted from Wilson, 2014

This research is based on the constructivism/interpretivism paradigm and uses an inductive research approach, a qualitative research method, and a grounded theory research strategy. Data was collected through semi-structured interviews, observation, and documents. Strauss and Corbin's grounded theory coding approach was used to

analyze the data, then answer the research questions and achieve the research objectives.

3.4 Data Collection

3.4.1 Semi-structure interviews

Interviews provide researchers with a valuable opportunity to gain access to the personal views of others, to learn about what you cannot see, and to interpret what you see in different ways (Glesne & Peshkin, 1992).

Due to the complexity of this research topic and the lack of previous academic studies on the online and distance higher education sector, the researcher chose interviews as the primary method of data collection. Structured interviews have a set of strict questions that do not allow deviation, so this research selected semi-structured interviews. Semi-structured interviews are the most common method used in social science research and are widely used in qualitative research (Rosalind & Janet, 2013) due to being open and allowing new ideas to emerge during the interview based on the interviewee's responses. In a semi-structured interview, the researcher usually has a thematic framework to explore (Eleanor et al., 2022) and is allowed to seek understanding and interpretation in the research.

3.4.2 Interviewees selection

The quality of the responses was of paramount importance in this research. It is therefore essential that the researchers identify academics who possess both the requisite experience and maturity to engage in a meaningful discussion of the successes and challenges associated with organizational dimensions in facilitating the knowledge sharing process. It was essential that respondents engaged in online and distance higher education for an extended period, demonstrated familiarity with and utilization of

pedagogy knowledge, and exhibited both the role of a knowledge contributor and that of a knowledge demander in the pedagogy knowledge sharing process.

Three major, well-established, and highly influential online and distance higher education institutions in the UK and China housed the respondents. The research employed the "snowballing" technique (Goodman, 1961) to identify respondents. This technique relies on a chain of referrals, whereby existing research participants recruit future research participants, and the process continues until enough research participants are obtained. The first respondent was recruited using our own acquaintances, after which we received recommendations from other academics, who then made further suggestions and assisted us in contacting additional academics.

The research used stratified sampling to select respondents. The academics interviewed were categorized into two levels: top managers and middle managers (head of department or team leaders). The interviewees for this research were selected according to the following criteria:

- Academics or technology specialists/experts in online and distance education.

- Management positions such as chancellor or vice chancellor of universities, the head of department, the dean of faculty/college/school, the director/leader/chair of team, the chair of CoP, and so on.

- Familiar or applied pedagogy knowledge in academic experience.

- 15 years of working experience in the higher education industry or 10 years in the online and distance higher education industry.

These participants are described as the interview elite Marshall and Rossman (2011).

These scholars are regarded as influential, prominent, and well-informed (Delaney, 2007). These individuals were able to provide valuable information and a deeper understanding of several key areas, including organizational management, pedagogy, knowledge sharing, and creation.

3.4.3 Demographics of interviewees

A total of 18 semi-structured interviews were conducted for the research, with all interviewees having more than 18 years' experience in the education sector. 9 of the 18 interviewees were emeritus professors or professors from the university who also held positions in senior management. The remaining 9 interviewees are senior lecturers or associate professors who utilize pedagogy teaching and pedagogy knowledge sharing in their organizations. They have all held the position of project director and possess their own perceptions of pedagogy practice and team management. The total interview time was approximately 1160 minutes. Table 3.4 presents Demographic profile of participants. P1-P18 represent the 18 respondents, and A, B, C represents three universities.

Participant	Gender	Academic experience	Position	Sample level
P1 (B)	Male	25 years	Team Director/Professor	Middle managers
P2 (A)	Female	20 years	Team Director/Vice-professor	Middle managers
P3 (C)	Male	36 years	Dean of faculty/Professor	Middle managers
P4 (B)	Male	39 years	Dean of faculty/Professor	Middle managers
P5 (B)	Female	33 years	Head of department/Professor	Middle managers
P6 (C)	Female	26 years	Head of institution /Senior Lecture	Top managers
P7 (B)	Male	39 years	Team Director/Senior Lecture	Middle managers
P8 (C)	Male	20 years	Head of department/Vice-Professor	Middle managers
P9 (C)	Female	18 years	Learning designer	Middle managers
P10 (C)	Male	32 years	Team Director/Professor	Middle managers

P11 (B)	Female	33 years	Team Director/Senior Lecture	Middle managers
P12 (C)	Male	37 years	Dean of faculty/Vice-professor	Top managers
P13 (B)	Female	26 years	Dean of faculty/Senior lecture	Middle managers
P14 (B)	Male	39 years	Vice-chancellor/Professor	Top managers
P15 (A)	Male	29 years	Dean of faculty/Professor	Middle managers
P16 (A)	Male	21 years	Dean of faculty/Professor	Middle managers
P17 (C)	Female	35 years	Vice-chancellor/Professor	Top managers
P18 (A)	Male	26 years	Team Director/Vice-professor	Middle managers

Table 3- 4 Demographic profile of participants

Source: Researcher's own work, 2024

To conduct the interviews, an interview protocol consisting of several predetermined open-ended questions (Appendix F) was used to prompt participants to begin thinking about their experiences of working within the organization (DiCicco-Bloom and Crabtree, 2006). The interview emphasizes listening and understanding during the process and takes the form of a guided conversation rather than structured questions (Bai, 2023). The interview begins with the researcher asking the participant to describe their role in the organization, which usually leads to an open dialogue covering a range of topics related to their work and experiences, stimulating the participant to engage in conversation about "how they understand their pedagogy, "how they share it" and "how they evaluate their organization's efforts to achieve this sharing" "What's the unique experience they have as an employee of the organization" "What are their perceptions of the organization" Researchers encourage respondents to think more deeply by exposing their own experiences. The researcher encourages the interviewees to express their genuine opinions and consider alternative viewpoints, recall previously overlooked aspects, and reflect on issues and ideas without conscious awareness. By conducting semi-structured interviews, researchers can gain deeper insights into the work experience of the interviewees, allowing them to hear their voices and identify aspects that may have been overlooked or not initially considered. This approach can enhance the value and depth of the research.

3.4.4 Observation and documents

To supplement the interview data, researchers had a chance to stay or visit these universities to conduct non-participant observation. Researcher attempts to collect data based on observation (Kvale & Brickmann, 2008).

In this research, observation preceded or was conducted concurrently with the interview. Observation offers insight into the actual working environment of the interviewee and the situations that occur there (Bogdan & Biklen, 2006). By observing rather than engaging with the participants, an outsider status was maintained (Patton, 2002), recording first-hand information about what was happening in the observational setting, examining people's actual behaviors and engaging directly with the topic under research. During the observation period, the researcher recorded their observations in memos.

Furthermore, the research collates relevant documentation pertinent to the research topic, including foundational data regarding the university's organizational structure, knowledge management documents, team management policies, the community of practice operational system, documents and information about academic conferences, academic papers and surveys published by research institutes and institutions of higher learning, and so forth.

3.5 Data Analysis

Data analysis was conducted using Strauss Grounded Theory analytic techniques, subjected to three major types of coding (Strauss & Corbin, 1990), which included interview transcripts, observation memos and documents.

3.5.1 Three-step coding method

This research used three types of coding proposed by Strauss and Corbin (1998), which are open coding, axial coding, and selective coding, to analyze the data. Below is a detailed description of these three procedures:

"In open coding, the analyst is concerned with generating categories and their properties and then seeks to determine how categories vary dimensionally. In axial coding, categories are systematically developed and linked with subcategories. Selective coding is the process of integrating and refining categories (Strauss & Corbin, 1998, p. 143)".

The coding process is the core and cornerstone of grounded theory (Babchuk, 1997). Coding is a dynamic and fluid process that requires the researcher to analyze relevant and interesting data (such as interviews, documents, and memos) line by line, listening to the data and letting the data speak, and through constant comparison, the relationships between concepts and categories emerge (Corbin & Strauss, 2015). The coding process can be seen as hierarchical, with open coding at the lowest level. After completing open coding, the researcher can proceed with selective coding and axial coding (Khandkar, 2009). Finally, the number of codes is reduced, and the codes are organized to show the relationships between them (Goulding, 1999).

This research also draws on three outcomes of grounded theory proposed by Corbin and Strauss (2015), namely description, conceptual ordering, and theory. Description is clear terminology, conceptual ordering is the organization of data into themes discovered through coding, and theory is the themes are integrated into a theoretical scheme in which the process, cause, place, time, and manner of the phenomenon under study are realized through the constant interaction between the researcher and data.

3.5.2 Open coding

The core elements of open coding are to raise sensitive issues and constantly compare data and codes through in-depth analysis, conceptualization, and classification of phenomena (Vollstedt & Rezat, 2019). Label each important part of the interviewee's statement, including words, lines, paragraphs, and events, to accurately capture the interviewee's true thoughts and narrative logic (Strauss & Corbin, 1990; Strauss & Corbin, 1994). After dividing the data into different parts, the goal of conceptualizing and classifying the data is achieved by carefully examining, comparing the similarities and differences of the data obtained, and asking questions based on the phenomena reflected in the data (Mey & Mruck, 2011).

The process of open coding involves the breakdown of collected data, the identification of similarities and differences between phenomena reflected in the data, and the labeling, conceptualization, and categorization of these phenomena. To develop the main categories, it is necessary to ask questions, compare the similarities and differences in the data, sample theories based on the concepts and categories that gradually emerge, collect further data, and then further compare the new data with the original data and the refined concepts and categories. The procedure for open coding is as follows: information is labeled, conceptualized, and generalized, and concepts and categories are named using structured interview transcripts, observation memos, and multiple sources of documentation (Appendix G-K).

3.5.3 Axial coding

Axial coding is the process of describing what is heard and seen and understanding it. It links categories with their concepts through attribute classification (Strauss & Corbin, 1998; Strauss & Corbin, 2015). Axial coding understands concepts and categories in terms of their dynamic interrelationships and requires researchers to analyze the relationships within the data in terms of context, consequences, interactions, and

causality and to develop a model describing the conditions under which the phenomenon occurs, which forms the basis for theory building (Goulding, 1999; Brown et al., 2002).

The objective of axial coding is to identify and elucidate the interconnections between the categories, thereby demonstrating the intrinsic relationship between the constituent dimensions of the data set. This research used Strauss and Corbin's analytical paradigm of condition-phenomenon-context-action/interaction strategy-mediators-outcomes to elucidate the relationships between the categories in accordance with this logic.

3.5.4 selective coding

Selective coding is the process of extracting core categories and systematically integrating them, constructing and validating relationships (Strauss & Corbin, 1990). Through this process, core categories are integrated and ultimately become the basis for theory construction and the main explanation of what really happened in the study (Babchuk, 1997). This is achieved by systematically linking the core categories to other categories, developing a relationship of the core categories, collecting new information to verify their relationships, and further refining the categories and their interrelationships through the interaction of the information with theory in the process of being formed. The aim of this process is to build up a conceptually dense and fully developed grounded theory. The development of a comprehensive and well-founded grounded theory (Chen, 2020).

3.6 Theoretical Saturation

Until they reach a point of data saturation, researchers should keep gathering data and comparing it continuously (Glaser & Strauss, 1967). According to Brown et al. (2002), coding is said to have reached theoretical saturation when it reaches the code selection stage and no new dimensions, traits, or relationships appear. At this stage, the researcher

concludes that no new information or insights will be added to the categories, nor will any new data arise (Creswell, 2012). The theory can only be deemed legitimate if the evidence has reached saturation (Goulding, 1999).

A significant amount of data was gathered for this research by observations, interviews, and documents. The data was then categorized, examined, and fresh ideas were continuously compared, categorized, compared, and integrated. During the interview, starting from the 11th interviewee, repetitive narrative content was constantly heard, and the data tended to be saturated. By the 15th interviewee, no new topics could be developed. Therefore, a total of 18 respondents were interviewed in this study. Continuing to obtain data could no longer reveal new attributes or acquire new concepts, and the sampling was stopped.

3.7 Ethical Consideration

Research must first evaluate ethical implications, and such considerations should be addressed before, during, and after the study, as data collection in natural settings presents many ethical challenges (Lambert et al., 2011).

3.7.1 Prior to data collection

This research was conducted in accordance with the ethical guidelines set forth by the University of Wales Trinity Saint David (UWTSD). Prior to the commencement of the research, ethical approval was obtained from the UWTSD Ethics Committee. The letter of ethical approval for this research can be found in Appendix B.

The researcher sent “Contact Letter with Participants” to the respondent an invitation for an interview by email (Appendix E). Attached to the email were “Participation Information Sheet” (Appendix C) and “Interview Consent Form” (Appendix D). This was done to ensure that respondents were adequately informed about the purpose,

process, potential risks, and benefits of the research and had voluntarily agreed to participate before doing so.

The respondents were informed by the researcher that they could contact them at any time to discuss the research process and any questions about the research. The respondents were assured by the researcher that their participation was entirely voluntary and that they could withdraw from the research at any time. Furthermore, the respondents were informed that their anonymity would be maintained and respected throughout the research.

Moreover, to make the content of the interviews clearer to the respondents, an "Interview Outline" (Appendix F) was also emailed prior to the interviews. The researchers emphasized to respondents that their personal information would be kept confidential and processed anonymously, in the hope that respondents would be more open and honest in the interviews and not hold back.

3.7.2 During data collection

At the beginning of the interview, the researcher will mention that they will abide by "Interview Consent Form". The respondents will also be told that if they feel uncomfortable with any of the interview questions, they can refuse to answer and terminate the interview at any time.

During the interview, the researcher always respects the views and feelings of the participants and avoids forcing them to discuss sensitive topics. Furthermore, ensure that participants' identities are not disclosed during the interview and that confidentiality is maintained when recording and storing data. Lastly, pay attention to participants' emotional reactions during the interview and redirect or end the interview if discomfort arises.

When using the interview data, especially during the data analysis and reporting findings, it was ensured that participants' information was anonymized. When using documentation, use publicly available information on websites and publicly available institutional documents, and anonymize relevant documentation where necessary.

3.7.3 After data collection

The research data (interview text, coding process text, and documentation) will be categorized and stored, with passwords and encrypted data on the computer and removable hard drive. Researchers ensured any personal data that could potentially identify individuals was anonymized, such as name, age, gender, social identity, and so on. Interview transcripts and videos with the interviewees were kept in a separate folder and coded accordingly, from P1 to P18. At the same time, the research data will be stored and backed up data through removable hard drives to prevent data loss and corruption. This research will never transmit these data by electronic means, nor will it pass them on to any other person or institution.

It is imperative that all interview transcripts and documents be retained in a secure manner for a period of five years. The information collected will only be used to produce research reports, conference papers, academic journal articles, and monographs related to the subject matter. Any other use of the data is strictly prohibited

3.8 Research Validation and Reliability

Validity and reliability are important in qualitative research. Researchers use at least two of these techniques throughout the research process to control bias and increase the validity and reliability of the research (Lincoln & Guba, 1985). Creswell (2012) suggests that qualitative researchers should use a variety of methods to check reliability, including data triangulation, member checking, and external auditing. As the researcher is considered an instrument in qualitative research, the validity of qualitative research

is largely dependent on the researcher's sensitivity, skills, abilities, integrity, and rigor in designing and conducting qualitative research (Patton, 1990).

To ensure the credibility of this research, reliability and validity will be enhanced through a triangulated approach. This research collected data via semi-structured interviews, observation, and documents. Triangulation refers to the use of multiple methods or data sources in qualitative research to gain a comprehensive understanding of a phenomenon (Patton, 1999). Triangulation is also considered a qualitative research strategy that tests validity by bringing together information from different sources (Carter et al., 2014). The researcher cross-validated the results using interviews, observations, and document analysis to increase the credibility of the results. The researcher regularly reflects on her biases and positions and documents these reflections, which contributes to the transparency of the research.

3.9 Chapter Summary

This chapter describes the research paradigm, the research approach and research design, as well as the research methods of data collection and data analysis. Grounded theory and its coding analysis technique are explained in detail. Finally, research ethics consideration and research validity and reliability issues are highlighted.

CHAPTER FOUR: DATA ANALYSIS

4.1 Chapter Introduction

This chapter analyzes in detail the findings from qualitative research conducted with 18 educators from three online and distance higher education institutions in the UK and China. The data were collected through semi-structured interviews, documents, and observations. Next, the results obtained will be presented, followed by analysis of the data using the three-level coding approach of grounded theory to extract coding and concepts, leading to the formation of categories.

4.2 Pedagogy Knowledge Sharing

This part is the prerequisite for answering the first research question and the second research question, and it is also the starting point of the entire research, that is, why it is important to share pedagogy knowledge. The interviewees elucidated their comprehension of pedagogy and its significance in online and distance education. The interviews delved into the external environmental influence, supporting students' methods, and the interconnection with module design.

4.2.1 External Environment Drives

4.2.1.1 Impact of the epidemic

A former head of department (P5) said:

"I think in some ways as an example of why it's important to think about the pedagogy of online learning, you could go back to the COVID-19 pandemic in 2020. Suddenly UNESCO said at one point over 90% of all education shifted online".

According to a team director (P1) said:

"In the rest of higher education now in universities that teach on campus, not only but also in particular the COVID pandemic, there has been a lot of attention paid to pedagogy. Because campus-based universities had to learn how to learn very quickly on how to teach students who lived off campus because they were not allowed to come on campus during the pandemic. So, I think the understanding of that pedagogy in higher education is important cross the whole of the higher education sector, not just the online and distance university".

Notes: Pedagogy used to be of major concern to online and distance higher education institutions. Thus, many respondents particularly indicated that the COVID-19 pandemic has led to more teachers and students recognizing and becoming aware of the importance of online pedagogy. So, pedagogy is no longer just a hot topic in online and distance higher education, it has become a general concern in the higher education industry.

4.2.1.2 Impact of online education

A vice-chancellor (P17) believes that pedagogy should be understood from multiple perspectives.

"I think it's quite important that pedagogy isn't doesn't exist in a vacuum. Although we would like to believe that everything we're doing because we believe this is the best way for people to learn".

Another vice-chancellor (P14) expresses his interesting vision of the future of pedagogy.

"I think it's interesting in some ways traditional universities have become a bit more

like the online and distance university. And the online and distance university has become a bit more like traditional universities, in fact. So that we can offer, we didn't used to be able to offer any kind of synchronous face to face events or online events. And now of module we can".

Notes: Top university executives reaffirm the importance of pedagogy for online and distance higher education institutions while looking ahead to future developments in pedagogy.

4.2.1.3 Impact of technological developments

A dean of faculty (P3) recalled the pedagogy developments he had experienced:

"I think pedagogy is still quite important because online and distance education development mainly relying on this information technology and development. Almost 50 years ago, teaching methods rely on radio and television. Later, it relied on the internet, and now multimedia and AI".

The concept of pedagogy given by a dean of faculty (P4), which shows the relationship with technology.

"The pedagogy is not just about the what the teacher does, it's what the students do, it's that interaction between the teachers and students, which is mediated by the different technologies, the different media we use so of module there's so many sorts of different."

4.2.2 Supporting students learning

4.2.2.1 Student and Teacher interactions

A team director (P2) said:

"I think one of the things about online and distance education is that your students are far away in terms of space and in terms of technology, but also in terms of social interaction between each other, and between their educators and other staff who's supporting them. There is more distance than there would be in a face-to-face setting".

In a detailed account, a team director (P11) elucidates the role of pedagogy in the teaching of language subjects.

"In language teaching, because of the different learning locations, there is much less interaction, unlike when you have a small class in a language classroom, where the teacher is face-to-face and there is a lot of opportunity to speak and have a conversation, which is a big challenge. So, in the textbook, it's important to create more of that interaction, even if it's between student the machine, between student and the textbook, and then with other students through the online Discussion forum. Even if it's not synchronous, asynchronous needs to be considered as an opportunity for interaction.

Notes: In response to our inquiry regarding the necessity of pedagogy knowledge in online and distance education, most respondents highlighted the distinctive feature of this modality that separates students and teachers. Pedagogy constructs the interactive relationship between students and teachers and builds a bridge between teaching and learning, thereby facilitating the integration of teaching and learning.

4.2.2.2 Adult learning characteristics

A team director (P9) pointed out:

"There is enormous diversity of students in from their backgrounds, from their previous knowledge, from their previous educational achievements".

Another team director (P7) also believes the importance in terms of pedagogy support for students.

"Pedagogy is really important to online learning with our students; they often face a lot more challenges than on campus students. Our students are usually part time. So, they're maybe working full time, or they have caring responsibilities. And all of this, we need to make sure they can fit in with their studies around all of that. So, I think that's why the pedagogy is so important for online learning, because you need to make it as effective and experience for them as possible".

Notes: Online and distance education is mainly aimed at adult learners. Pedagogy can meet the diverse learning needs of adult learners and support the realization of learning for everyone, everywhere and every time.

4.2.2.3 Independent learning

A dean of faculty (P12) said:

"So that creates different challenges, because our different students also learn in different ways. I think in terms of pedagogy where thinking about encouraging our students to be self-directed learners much more perhaps than in a face-to-face context. Tutorials are very much supporting the content that students are learning through the module materials. They're much more interactive. Students learning through activities and reinforcing what they're learning through application or rather than sort of learning directly from the tutorial session".

A learning designer (P9) proposes that module design focuses on improving the effectiveness of self-directed learning.

"I think that's why pedagogy and making sure that the online modules are designed in

the most effective way is important because the students must do it by themselves. They don't get that tutor contact and that one-to-one time".

4.2.3 Common pedagogy knowledge

4.2.3.1 The function of pedagogy knowledge

An team director (P10) outlined the role of pedagogy in the module design team.

"In online and distance education, the materials that the students have provided with almost replacing a traditional lecture. In that way they're really giving the students all the factual knowledge that they're going to need to know to pass the module. There's also obviously a lot of thought that goes into the pedagogy of how those materials are presented. That comes down to things like the language that's used. It's unambiguous the visual representations, the figures and diagrams that are used. Incorporating lots of activities and lots of questions for the students to answer and get feedback. Students can sort of reinforce what they're learning and their understanding."

A learning designer (P9) believes that pedagogy in module design must deliberate.

"We must work quite hard to build in important aspects of social interaction between the teacher and the student and between the student and students. You must take a very deliberate, you have to think carefully about it and you have to design it in advance rather than when you're in a classroom with people in the room with you. You can think I'm going to do this now and you can make a change. You can't do that in the online space in the same way or in the distance place".

4.2.3.2 The importance of pedagogy knowledge sharing

A dean of a faculty (P12) talked about sharing pedagogy knowledge for teamwork.

"I think for online and distance pedagogy knowledge sharing is quite important, because we have always been teamwork, and this is a particularly big advantage that distinguishes us from ordinary higher education teacher".

A team director (P11) believes that the sharing of pedagogy knowledge and practice revolves around the team.

"There's also that desire to be to share the knowledge and practices across those teams. That's within a subject area, but also across subject areas such that there is a certain degree of familiarity consistency that always to be exactly the same. There's a need to sort of share more about how the different things fit together in terms of how the sort of modules working about, what are the common aspects of pedagogy and the use of technology in particular and things work so that there's an inherent inbuilt sharing that sort of goes on even within the sort of production of modules and things, and in terms of the ongoing monitoring".

- **Observation:**

Common knowledge and the common idea of sharing knowledge is fundamental for organizations to motivate knowledge sharing. Seeing that teamwork, pedagogy knowledge, educational technology, etc. are common topics in the field of online and distance education, knowledge sharing is possible under this premise.

4.3 Cross-functional Teams

The initial topic is concerned with the formation and functioning of cross-functional teams, with a particular focus on the process of transferring individual knowledge into team knowledge.

4.3.1 Team-based work

4.3.1.1 Various kinds of team

- **Documents:**

The most important aspects of online and distance education are the module design and teaching process. They are all done by teamwork. This research explored the module team from three online and distance higher education universities, table 4.1 shows the name of universities and teams from the university's website.

Name	Concept
university A	Online teaching team
university B	Module production team, Module presentation team
university C	Module design team

Table 4- 1 Name of universities and teams

Source: Researcher's own work, 2024

- **Observation:**

All the teachers were in different Teams and some of them were in more than one Team at the same time, all the teachers were accustomed to carry out all their work through teams, teamwork was a deep-grounded culture in their work, and knowledge sharing occurred among the members of the team in the process of their work.

4.3.1.2 Teamwork is fundamental

A team director (P11) commented:

"I think the team approach to everything, but you never do anything on your own, and you always working with other people. I think that's an essential foundation. I think the culture of working with teams gives our staff. New people come in and it gives staff the idea that they are not alone. They do not have to take sole responsibility for things and the decisions they make are not hidden from other people. The decisions that you make

as an individual become shared by other people are going to share those decisions and accept the outcomes of those decisions and work with them".

Another team director (P18) also said:

"If we're talking about the students enrolled on a program, there are teams of different people, different specializations who support that experience. You've got the academic at the federation, you will have the student enrolment, and registry team and the people who get the students onto the program. Then we have teams who support assessment, support student life, student experience, support careers and employability".

Notes: Many interviewees identified teamwork as the most fundamental aspect of operating online distance education. The concept of teamwork is a fundamental aspect of the collective mindset. It is not possible for educators to complete tasks alone; they must participate in teams and complete the work through the sharing of knowledge within the team.

4.3.2 Teamwork function

4.3.2.1 Team for supporting students

A dean of faculty (P12) said:

"I became the academic lead for the engineering student support team, which was a 5-year long experiment in supporting students at a subject level. And the team involves internal staff from all different roles. We had assistants, academics, students support people from academic from what was called student services in those days, and we had external people, the people who work part time for the university, associate lecturers and so on. The team is a multidisciplinary team, and the purpose of the team was to

support students".

4.3.2.2 Team for support teachers

A dean of faculty (P13) said:

"The module team structure is one that fosters the sharing of expertise and experience between more senior experienced members of the academic staff and the academic support staff, and the more junior members".

4.3.3 Diversity of team members

4.3.3.1 Roles of team members

A team director (P11) said:

"In online and distance education, it's a team effort whereby you have the academic experts and two or three or more working on creating the teaching materials, but you also have these other professionals who are editors, media developers and others who help advise and talk about how to use the different technologies and different modes, emerging technologies to support that the pedagogy structure of the module".

A team director (P2) said:

"The module team structure in every faculty is fixed, people have different roles on a module, but they do work together. There's like lots of people that get involved in the whole process between the beginning and then when it launches at the end".

- **Documents:**

Module production from the university website. Our modules are developed by multi-

disciplinary module teams comprising:

- *Academics, educational technologists and media specialists contributing pedagogic and technical expertise*
- *Respected academics from other universities working alongside university colleagues*
- *External examiners.*

This model has helped to build the University's reputation for innovation, rigour and quality and has been adopted by distance teaching institutions worldwide.

Documents:

The management policy of the online teaching team of University A:

No.7: The online teaching team consists of a teaching team providing academic support, teaching implementation team, and teaching support team providing non-academic support.

Notes: The diversity of the team members ensures the quality of the module production and the effectiveness of the module delivery. Different team members work together on team module production and delivery tasks.

4.3.3.2 Responsibilities of team members

A head of institution (P6) described cross-functional teams as follows:

"We'll work with lots of other people across the team. We work with librarians who help us source the online readings, any books and things that we want to give to students or online library. We work with learning technologists, so they take care of the platform. We work in our virtual learning environments. We work with Moodle and module, so they sort of do the upkeep of those, and once the content is written, they'll upload that

onto the platform, they'll create any things like multiple choice quizzes, or if we have anything that's interactive on the platform, that's what the learning technologist will do. We work with editors as well, who will edit all the content, make sure it obviously makes sense that it's in House style, correct any spelling or grammar issues. We have project managers who also work with us to sort of keep the project on track. There's like lots of people that get involved in the whole process between the beginning and then when it launches at the end".

The main roles and responsibilities in the team were determined through an analysis of the interview data provided by the interviewees. Table 4.2 shows module team roles and responsibilities.

No	Role	Responsibilities
1	Project manager	understanding the administrative side of what needs to be done on the module
2	Academic	subject matter experts
3	Stuff tutor	Organizing the teaching, looking after the tutors on a module and in issues with students. Half an organizational management role and half an academic role.
4	Learning designer	developing several different approaches to improve online learning
5	Learning technologists	taking care of the platform, creating any things that's interactive on the platform
6	Editor	editing the content that make sure it's in proper style, correct spelling or grammar
7	Media developer	Developing software or designing
8	Librarians	sourcing the online readings, any books and things that we want to give to students or online library

Table 4- 2 Module team roles and responsibilities

Source: Researcher's own work, 2024

- **Documents:**

Module teams and academic roles from the university's website.

Production of modules typically takes place over a 2-3year time frame and involves not only the academics but also a curriculum manager, educational technologists, editors, media specialists (graphic artists, media developers, audio-visual etc.), external consultants and external assessors. The production teamwork develops the content of the module, and its materials aligned with the module learning outcomes, with a particular focus on designing for retention. The academics work together in a team (of typically 3-5 academics), writing and commenting on multiple drafts of the materials throughout the production, before the materials are finalized.

Following production, modules enter presentation, with a typical lifetime of around 8 years with some ongoing refresh/updates of materials at intervals during this time. The presentation of modules is supported by a core module team, who are responsible for the maintenance of the modules including assessment materials and any amendments to module content and activities. The core module team is supported by a large team of Associate Lecturers who have responsibility for the support of a group (typically 20) of students via the forums, optional learning events, as well as marking of the tutor-marked assignments.

4.4 Community of Practice

In response to the second research question, the interviewees in this research mentioned a variety of combinatorial processes from team knowledge to organizational knowledge. This research explored the community of practice in an online and distance higher education institution.

4.4.1 Developing a community

4.4.1.1 A community of pedagogy practice

A dean of faculty (P3) said:

"I'm teaching different going on it's all about communities, interlocking communities. These communities' kind of go from my module team through to the department I lived in and then going out to the university and looking at different communities of practice within the distance learning sector, then looking at communities of practice within my subject area, which is not about distance learning and the intersections between those things, are where it all gets exciting. And if you're interested and care about your job, it becomes possible for to knowledge your term and rather knowledge to flow up and down through the members of the community".

Notes: As information technology develops, online and distance education moves from television delivery to the development of new modules in conjunction with information technology, and pedagogy knowledge changes rapidly. It would be beneficial for universities to have a dedicated center that focuses on the value of research and practice of pedagogy.

- **Document:**

The website of the university shows the definition of the scholarship.

We define scholarship as systematic and ethically reasoned investigation of aspects of teaching and student learning by applying disciplinary knowledge, resulting in reflections and outcomes that are publicly shared for peer-review and for others to build upon. (Minocha and Butler, 2021)

Scholarship' is understood here as the Scholarship of Teaching and Learning (SoTL),

which involves the systematic investigation of teaching and learning practices that is practitioner-led, grounded in context and conducted in partnership with students, using a range of research methodologies. SoTL builds on and contributes to an international, peer-reviewed body of literature to establish and share good practice in teaching and learning

4.4.1.2 Set up a scholarship Centre

The dean of faculty (P4) stated:

"The University did bid for one and got one which was in the X faculty area. That's why for certain decades; X faculty has always been at the has been more at the forefront of this. It specifically got funding for being able to get new people in or fellows or get payouts buyout time of academics to start doing scholarship activities and research on teaching and learning around X faculty subjects and that started inculcating a sort of more structured approach to thinking about how to do that type of knowledge, sharing knowledge creation and sharing around pedagogy about an educational technology within a particular subject area and that in itself then started to inform universities, policies and strategies around scholarship. The university introduced a scholarship strategy for the university".

Notes: More than a decade ago, a faculty was awarded a grant for pedagogy research through a competitive bidding process, launching an exploration of pedagogy as an area of research and practice.

- **Observation**:

Almost every week the scholarship center will email staff about knowledge sharing events or training sessions. It was great to see most of the academics working at the school talking about the Scholarship center, about the support they receive and the role they play in their module teams.

4.4.2 Replicating more communities

4.4.2.1 Replicating a scholarship center model

A dean of faculty (P13) said:

"We wanted to establish and to support scholarship of a wider range of types. Because the one in X faculty is a particularly successful where this broader range of scholarships could be discussed and supported. There has been some wonderful work in X in learning and teaching of sciences."

A dean of faculty (P12) stated:

"Then became a model in one faculty which the university decided was worth replicating in other faculties. You've got these scholarship centers in each of the faculties. That means that there are dedicated people and is funding available to do scholarship projects. They put on training events, they have run conferences and so they can do that within faculties. But then at the university level periodically they have university wide sorts of conferences on teaching and learning, so to bring everybody together. It's all part of trying to create structures to access, as well as having there's is online platforms for sharing some of the results from these programs."

Notes: After the end of the first national grant, the scholarship center of faculty has been a huge success and is recognized by the university. University B decided to replicate the model of the Scholarship center that the X faculty attempted to set up as a center at university level, with a scholarship strategy to support the research and sharing of pedagogy knowledge.

- **Observation:**

The X faculty has the highest level of research, professional rankings, and reputation among the facilities at university. The scholarship center was the first to be established, so the staff of the scholarship centers of the other facilities would learn from the head and staff of X faculty's scholarship center.

4.4.2.2 Scholarship Centre for four faculties

Each faculty now has its own scholarship center. A team director (P11) talked about the centers in other faculties.

"I know the scholarship center in the X faculty at the university was in the leadership team when we established that in the 1st place and it's a very important organizational structure. There are obviously several faculties within the university and each faculty has similarly has a body that looks after scholarship within that faculty."

- **Observation:**

Online and distance higher education institutions found that the research on teaching and learning was important as research on subjects and have a practical nature. Then the university set up the scholarship community across the schools, faculties and universities.

- **Document:**

Figure 4.1 shows the scholarship Centre of four faculties.

The adoption of a university-wide Scholarship Plan in October 2018 led to the creation of Scholarship and Innovation Centers in each of the faculties, and an increased focus on evidencing excellence in teaching and learning. This Scholarship Plan supported a university-wide unified approach to scholarship that accelerated and increased the impact of the University's excellence in scholarship applied across all disciplines for the benefit of students.

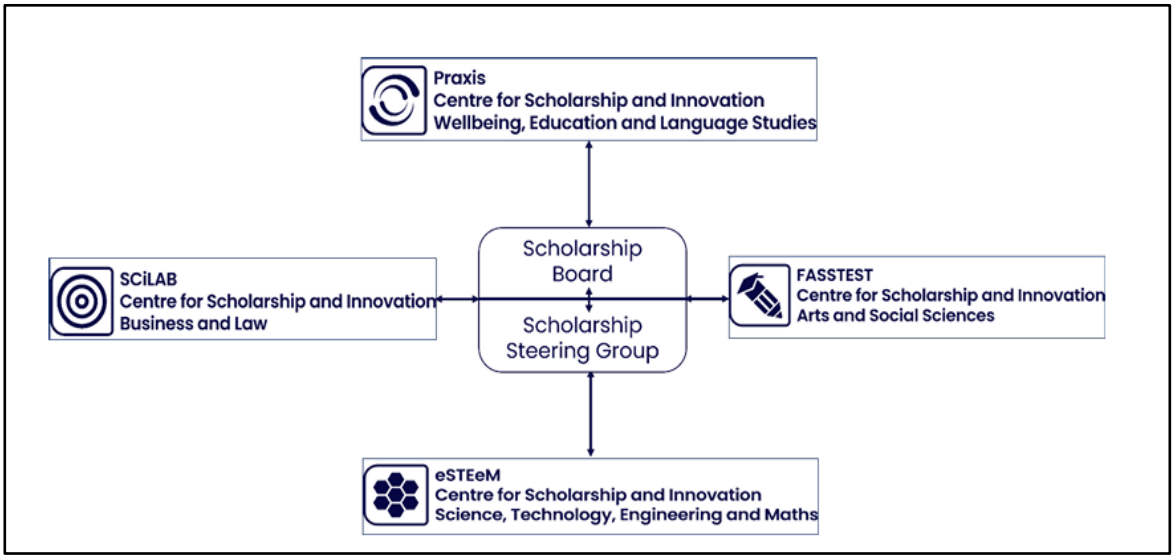


Figure 4- 1 The scholarship Centre of four faculties

Source: Scholarship Plan 2024-2029 of B University

4.4.3 Community function

4.4.3.1 Working together smoothly

Dean of faculty (P15) stated:

"Because we are remote and online, we rely a lot on these mechanisms to develop a community to work together smoothly. To be able to improve our practice I can only speak as short as a university person. We wanted to show other people when they're interested, how we do things right. You don't want to hear people repeat the mistakes you know you want them to make. You want good information, correct information to

be communicated, and you also want to be able to receive the correct information."

A Dean of faculty (P16) argued:

"What we need is community practice in teaching and learning. UK universities are collectively starting to transform their education with those teaching and learning technology programs. The learning and teaching support networks, subject Centers, that was all about bringing the educational research into practical learning and teaching support. What you need to focus on learning, teaching support network who can work alongside the faculty, bringing in all the useful practical knowledge about how learners learn at a distance, and adapting their offer the way they do things and what they do to the way learners learn. It's practical day-to-day stuff. It's not big theoretical stuff."

Team Director (P18) stated:

"I'm teaching different connections going on it's all about communities, interlocking communities. These communities' kind of go from my module team through to the department I lived in and then going out to the university and looking at different communities of practice within the distance learning sector, then looking at communities of practice within my subject area, which is not about distance learning and the intersections between those things, are where it all gets exciting. And if you're interested and care about your job, it becomes possible for to knowledge your term and rather knowledge to flow up and down through the members of the communit."

Notes: The Scholarship center is a space for all team members sharing and releasing outside the day-to-day flow of the work of the module team. It naturally creates an interactive community of people who can share their experiences, learnings and regrets.

4.4.3.2 Training reflective practitioners

A vice-chancellor (P17) stated that the Scholarship community promotes the sharing of practical knowledge about teaching and learning.

"Scholarship is not necessarily creating full blown education researchers of everybody, but it is creating, as I said before reflective practitioners, people who are doing the practice and understanding how they want to improve their practices. Scholarships are more to do associated with understanding our practices, how to improve them? How to disseminate the practice and how? How do other people then? Then improve their own practices so the scholarship is more about practices."

4.4.3.3 Practice learning and teaching

A dean of faculty (P13) thought scholarship community is open to everyone and useful.

"Let me explain a little bit about the scholarship Centre. So basically, teams support all the staff who are involved in learning and teaching, carry out an investigation to improve their practice. You can be a tutor, you can be a learning designer, you could be a data person, you could be student support team for the opportunities are there for people to get together to think about whether they have areas they want to know about and understanding that then will lead down to their understanding, but mainly it will improve what they do in their daily work. So that's kind of the practice side of it."

A team Director (P11) told research the knowledge stored in organization.

"I think scholarship and teaching at my university are closely linked, and the program specifically promotes knowledge of pedagogy. Then the university has a platform related to scholarship, that is, every time the scholarship program is finished, there must be a special report. The report will be put on the exchange platform related to

scholarships. All the University people can share it, and there are keywords on it, how to search and how to download."

- **Document:**

The website of the university shows three aspects of the scholarship community. For students allowing us to systematically evaluate our teaching to improve the quality of student learning; For academic disciplines and institutions ensuring that we base innovation and future development on robust evaluation and enabling our teaching and learning to be recognized externally for its excellence and impact; For practitioners allowing staff to develop their professional practice in the field of teaching and learning.

4.5 Boundaryless Organizational structure

In response to research questions 1 and 2, it is necessary to consider boundaryless organizational structures. The formation of cross-functional teams represents a fundamental mechanism for the dissemination of individual knowledge. Similarly, communities of practice constitute a basic unit for the dissemination of team knowledge. In order to enhance the formation and operation of these basic units and facilitate digital transformation, a range of boundaryless organizational structures have been devised and established through optimizing and reorganizing the organizational structure of online and distance higher education institutions.

4.5.1 Flatten organizational structure

4.5.1.1 Original vertical organizational structures

- **Documents:**

The system structure of University A from the website:

- *The Headquarters is the core leading body of the A University organization system. The headquarters' main responsibilities include researching and formulating macro policies, development plans, quality standards, and teaching processes according to national education principles and policies.*
- *Branches are leading local organizations established by the A University's organization system in provinces, districts or cities. The main responsibilities of the branches include the construction and management of local colleges and learning centers according to relevant policies and regulations and the unified university operating standards of the university and carrying out teaching and scientific research.*
- *Colleges include construction of local schools, industry and corporate colleges, specialized schools and experimental schools. Local schools are established and managed by branches in their respective regions according to related A university construction standards. The main responsibilities include organizing recruitment, teaching, management, and quality assurance in line with relevant university policies.*
- *Learning Centres the organization system of University A at the local grassroots level, directly implementing personnel training and education for learners. The main responsibilities include carrying out enrolment, examinations, and specific teaching management, teaching guidance, and learner support services under the guidance of branches and colleges.*

Documents:

The management policy of the online teaching team of University A:

"No.6: The online teaching team consists of experts from universities and online and distance education industries, as well as experts, teachers and technicians within the university system. The human resource management and salaried contract of the team

members are subordinate to the original unit, and they undertake the teaching and research tasks given by the online teaching team."

4.5.1.2 Break down vertical boundary

A team director (P18) elucidated the way a university forms online teaching teams and the way these teams operate by transcending vertical organizational boundaries.

"We are an educational system with four levels units in the organization, such as headquarter, provincial branches, colleges and learning centers. In the past, information was passed on hierarchically. Five years ago, we set up an online teaching team. This team will form a platform, and then form a small collective, the teachers are all teaching the same module, and then from three other level branches. Teachers from the past three levels of the educational system can enter the team, and then they will communicate with each other."

Another team leader (P2) also said:

"There is a problem of imbalance of teachers in our organization system, we concentrate the teachers of this module together through the online teaching team, and through the internet the excellent teachers can directly face the students, which solves the problem of the quality of the module and ensures the learning process of the students. However, the online teaching team breaks through the vertical schooling system and impacts on internal organization, now this type of team still accounts for a relatively small proportion, but many modules are willing to try this reform."

- **Observation:**

Cross-vertical boundary organizations refer to entities that operate across different verticals or sectors within an industry or between distinct industries. This concept emphasizes collaboration and integration between various specialized areas, enabling

organizations to leverage diverse expertise and resources. In the flattened Organizational structure type, the original organizational hierarchy is broken down, and teachers at all levels can be brought together in online teaching teams. Each level of teacher shares their knowledge in the team, which collaborates according to a highly organized, flexible and innovative team model.

4.5.2 Team-based Organizational structure

4.5.2.1 Learning designer in module team

- **Documents:**

From the university B's website.

"Teaching at B university primarily takes the form of the specially written module texts and activities delivered via a module website hosted on the B university's virtual learning environment platform. The writing of the module content, activities and assessment is undertaken centrally by our team of central academics (Lecturers) and regional academics (staff tutors)."

"University modules are underpinned by research of international excellence and are subject to rigorous external scrutiny. In addition, a world-leading program of research into teaching strategies and educational technologies ensures that our materials are effective and appropriate for large-scale open learning."

- **Observation:**

University B considers learning design to be one of the most important tasks of module team and therefore attaches great importance to the role played by learning designers in the team. During the formation of the module team, the involvement of learning designers broke through the horizontal boundaries of the organization and reflected

cross-departmental cooperation. Initially, learning designers were involved in module teams as experts in specialized educational technology research institutes. Later, the university established a specialized department for learning support and services, in which learning designers were centralized and deployed across module teams. In addition, the educational technology research institute focused on the developmental frontiers of learning design and became the leading educational technology research organization in the world.

4.5.2.2 Break down horizontal boundary

The head of department (P5) commented:

"We set up a specific organizational department to develop that pedagogy knowledge in university. It was called the Learning technology department. And this department had its task to develop understanding of pedagogy for teaching at a distance, and it was involved across the university and all the faculties. In helping academics learn how to do that difficult job gradually".

A dean of faculty (P15) introduced learning designers of the university:
"There's a lot of learning design nurse up in the university, but they're basing different places. They could be in a unit that goes across the university."

A team director (P10) said:

"In the early days, members of educational technology research institute would be on each module team that was producing module so have one of them. A person from this unit who was there to be the experts to try to help the academics to understand how they could use new technologies and the pedagogies."

Notes: It is standard practice at university for learning technologists to be included as

core module team members in module teams. Learning technologists, such as learning designers, facilitate the formation of teams that transcend the horizontal organizational boundaries of the university.

4.5.3 Federal Organizational structure

4.5.3.1 University federation history

The head of the institution (P6) stated the background of University C:

"University C is a federation of several higher education institutions. Within the online and distance education center, we have several dozen fellows, and we work in several different ways. One of the things that we do is projects for the university and for the federation.

Documents:

The university C's federation has grown and changed over more than 100 years, but the core purpose of collaboration and delivering some of the UK's best higher education and research has remained the same. Our federation members are all independent institutions and vary widely in size and subject, but all offer the world-leading education that the federation is known for.

Following figure 4.2 is the information of university C's federation.

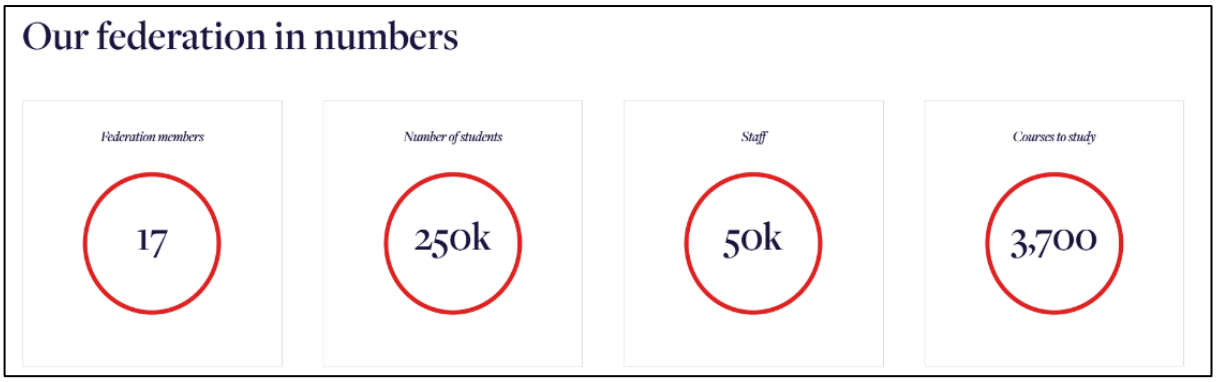


Figure 4- 2 Federation information
Source: Website of C University

4.5.3.2 Break down external boundary

A learning designer (P9) introduced:

"All the production stuff that I work with, the learning designers, the editors, the video people, the learning technologists, we're all in the same department. We all work together and follow the same processes. We have the same as head of department. We all know each other very well and all have the same aims and process, and then it's only the academic program teams that will come from a different department or outside of the university in a different university."

- **Observation:**

  University C set up an online and distance center on the foundations of federation universities. The module design team members of the federation are composed of staff from different universities, reflecting the characteristics of crossing the external boundaries of the organization. The academic staff or team directors of the module team may come from the federation, while the learning designers and other module support staff come from the Center. They share knowledge with the team to achieve the module goals.

4.5.4 Community organizational structure

4.5.4.1 Three-Lier scholarship Centre

Notes: University B set up a scholarship center, which functions as a community of practice, concentrating on teaching and learning practices and research in online and distance education. The Scholarship center has developed a three-tier structure of

schools, faculties and departments.

A team director (P11) said:

"Like Three-Lier hierarchy, there are scholarship Centre at a university level, at the faculty level and then at the school level. At a university level, there is a pro-vice-chancellor for scholarship and research, who will cover everything. At a faculty level, it'll only be one or two people. At a school level, there's also a director of research and within each school, there's also a director of teaching, strategy and thinking about areas in which we carry out scholarship research."

Observation:

Researchers observe the structure of the university scholarship center. The following figure 4.3 shows the three-level structure of the scholarship center. The University has established a Scholarship Board, headed by the Vice Chancellor, for major policy and planning development. In each Faculty are Faculty-level Scholarship Centers, which are responsible for teaching and learning research and knowledge sharing within the faculty. There are also School Scholarship Centers within the Faculties to facilitate collaborative research and sharing in the same discipline.

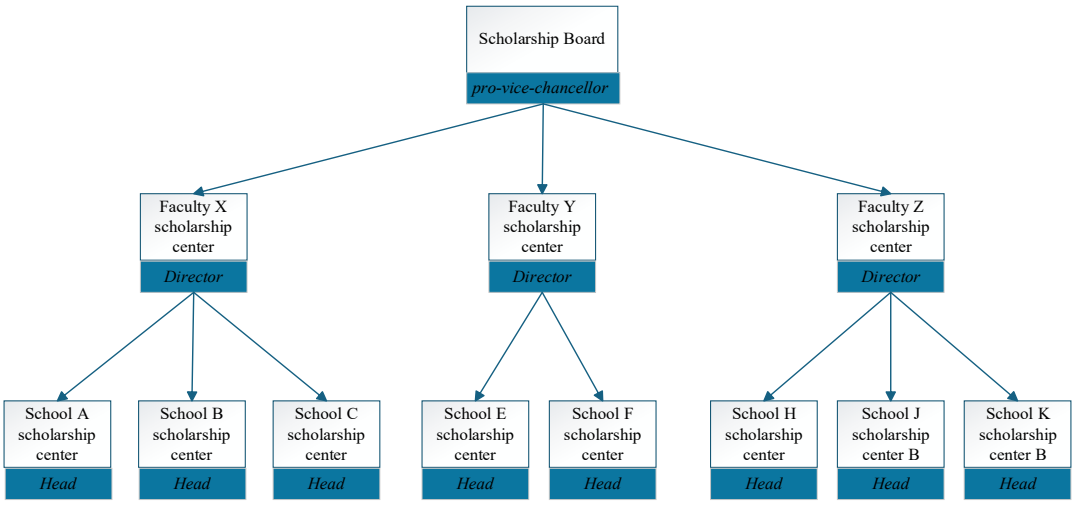


Figure 4- 3 Three-liar structure of scholarship center

Source: Researcher's own work, 2024

4.5.4.2 Break down all boundaries

A team director (P7) said:

"There's this now this sort of growing body of work around the scholarship of teaching and learning and everything that sort of goes into that. It means that you creates both mechanisms and processes and structures which support the sharing of knowledge, the discussion of how pedagogy should be working or how teaching learning should be structured about the sharing of how new technologies, new emerging ways of practice can be put into practice, and also equally important to help devise methods and processes, or for evaluation and monitoring which are able to give the best insights and the most robust ways of understanding that the evidence or the data that is comes out of what you're doing. "

- **Documents:**

The Centers for Scholarship and Innovation based in each faculty form a networked community coordinated through the Scholarship Steering Group, which includes stakeholders from across the university working together to implement the Scholarship Plan. The Scholarship Board provides strategic oversight, is chaired by the PVC-R & I and includes the PVC-S, Academic Lead for Scholarship as well as the Centre Directors. Scholarship centers form communities for teaching and learning research, and community interactions discover links to their own work.

4.6 Organizational Formalization

The research presents a summary of data on the formalization of organizational structures, which may provide insight into both the first and second research questions.

4.6.1 Strategy and plan

4.6.1.1. Strategy based on overall work

A vice-chancellor (P17) expresses the importance of strategy.

"I think the strategy office at the university is a really important office, but relies on the work of the learning analytics team, student analytics team, the work of whole institution in terms of the research that's done the pedagogy research and the way that's used and the scholarship that's undertaken, so it's a very big complex piece of work, but ultimately is strategic. "

A dean of faculty (P12) said:

"I think the and it all links back to strategy. You've got your data and then you need to think about what it is you want to achieve. We've got this data now, what's our strategic approach in doing that, and it must be a whole institutional approach. You've got to take everybody with you because you can't one person do it on their own."

4.6.1.2. Formulating a work plan

A vice-chancellor (P14) said:

"We have something called a university Senate, which is a the most senior committee in the university, and that committee approves all the plans for the university with regard to learning and teaching and research".

A dean of faculty (P13) said:

"There are also those formal aspects in terms of another thing which structural process is that not only every faculty, but every school is meant to have a scholarship plan for

their school. There's a plan that school level, there's a plan at the faculty level, there's a plan at the university level and again they each are informing the others over time in terms of what is happening. It's about trying to create those is reasonably common structures and processes and mechanisms by which as far as possible there is as much sharing of knowledge as possible."

A team director said:

"Every year almost April to do the next year's workload plan, who next year in which module, do what things, so this you must have a very tight organizational structure, all aspects of cooperation".

Note: The Scholarship centers at the three levels of the school have annual work plans and are linked to each other. University B formulates annual work plans very far in advance.

- **Observation:**

It has been observed that the university's annual work plan is a very complex degree of complexity, with the need to do next year's module development plan from April each year. This is because the module team involves many departments and staff from formation, operation to assessment streams, requiring multiple parties to work together, and it is necessary to go through the completed Organizational structure and organizational processes to ensure that all aspects run smoothly.

4.6.2 Part of a workload

4.6.1.3. Everyone needs to attend community

A team director (P1) said:

"There is in the workload planning there is the scope for making sure that they have time set out to do scholarship. That is a negotiation agreed in terms of what's possible to anyone time in one year. Somebody might not do any scholarship, but they may have a scholarship project in the next year, which takes up to two months of their time. They can say I need 20 days to do this and the head of school of things will sign that off".

A dean of faculty (P3) said:

"There are those mechanisms in place so that everybody certainly academics but goes across other staff to some extent there is that dimension of understanding where the scholarship is a part of what they need to be doing. It's parts of everybody's responsibilities, the degree of scholarship may do at any one time, just like the degree of research they do will vary with their workloads."

Note: Participation in Scholarship center activities is part of the workload. Everyone recognized that this was part of their job in blaming and actively participated in the research project.

4.6.1.4. Basial responsibility

A team director (P7) with extensive experience participates in a way that is more of a knowledge contribution, which is part of the workload.

"It's a part of workload or thing. You have the meeting you need to presentation. That's two-way things. You don't just attend meetings to receive knowledge, but you attend meetings to give knowledge. Because it could be that you comment on someone's talk. It could be that you're giving the talk. In my case, I have 10 meetings, comment on other people's talks at 10 meetings because I'm giving the knowledge to other people."

- **Observation:**

Many of the team members are dual or multiple duty holders, and as such, the team members are not as cohesive as the members within the organization. If participation in activities across organizational boundaries is included as part of the workload, it provides institutional safeguards and creates a minimal incentive for team members in terms of work mechanisms.

4.6.3 Established process

4.6.3.1. Importance of processes

A dean of faculty (P15) said:

"I think the key to unlocking all of this is what processes we have operated which enable this structure to deliver comparable outputs to that structure. Get closer to the performance of the other organization with its different structure."

A dean of faculty (P13) stated:

"I think the key thing is having the structures and processes. In a sense that it's embedding in there the culture that there is this process of scholarship sharing, that's going on that you should always be telling people about what it is you're doing, whether it's through those say formal mechanisms of the annual reviews you do qualifications, or whether it's through specific projects and things. It's creating those different mechanisms which we'll all go to helping improve the way that the teaching and learning is done within the institution. It's an ongoing process, it's never finished, it's ever changing."

4.6.3.2. Well-developed procedures

A team director (P10) said confidently:

"We have very well-developed procedures because we've been doing it for so long. We've been producing modules for 50 or you know 60 years. Originally sending paper resources provides students with booklets and paper resources so that system has been in place. It's adapted to technology, and it's expanded in the way in which the number of teams. But there has always been a system to produce a module, whether that module was a research guide or whether it's now an elaborate virtual learning environment experience."

A learning designer (P9) described the work.

"We have a very structured sort of how we'll work together. When we work with the different Project teams, a lot of my job at the beginning is to talk to like the module authors and tell them how we're going to work. This is the process that we're following. These are the timelines and deadlines before we even get on to. After that, the sort of learning design things and methodologies. Ideally, we would work with every project team in a very similar way, because it's supposed to be so structured."

- **Observation:**

The process of teamwork in module production is also one of transferring individual knowledge to create team knowledge. The module design process is formally developed within the organization and operates according to formal procedures, ensuring the knowledge sharing process from the individual to the team.

4.6.3.3. Module production process

A team director introduced the module production process:

Initiating Process:

"Before we can create a degree, it goes through a lot of like planning and approval things, so the Project director will write module specifications, it will go through like approval events with our quality team. All of this must happen, and the degree has to be officially approved, or we can start production work".

Planning process:

"Once they move into production phase, they start with something called a module development planner. The subject matter experts complete the module development planner which is a template outlines several different aspects of the module."

Implementation process:

"*It's about 9 months for a 15-credit module, which tends to be 10 weeks of learning for the students. That's roughly 4 months of that would be the design phase, so that's where I talked to academics about learning design and then they wrote the module design planner and then we it's sort of iterative some feedback and we go back and forth. 3 months to go through the editing and production process when they'll write out their content properly if they're doing any filming, they'll write slides and scripts and then they'll do the actual filming in our studio. 1 month for upload to the platform. And then ideally about 1 month of buffer at the end*."

Closing process:

"*We're looking at the end of module evaluations from students, so all the feedback that they've given us both sort of questionnaires that they've answered open comments and that sort of thing, and we're trying to improve the modules based on this feedback."*

Monitoring and controlling process:

"*In general we try to have in place a number of quality cheques and we also have a*

quality monitoring process at the end of every year where each module kind of has feedback and analysis and we've got big data dashboards that show how your module compares against other modules in the factory and other modules in the university for student performance, student completion, student satisfaction, all those things. "

Figure 4.4 shows the module production process more clearly.

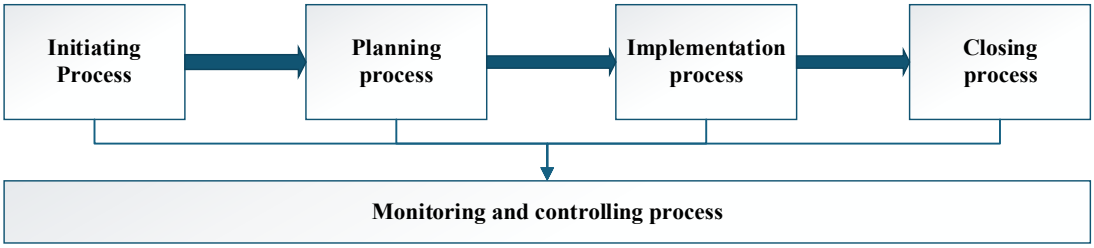


Figure 4- 4 Module production process

Source: Researcher's own work, 2024

Observation:

Observing the module production process of two online and distance higher education institutions. The difference is that the demand for building a module is initiated by the teacher or the school where the teacher is located, and then market research is carried out, and a feasibility report on the production of the module is put forward, which is then included in the new module project through the approval of schools, faculties, and universities at various levels. The faculty will determine the curriculum manager, who will contact the learning design department to arrange for professional learning designers or other relevant personnel to enter the team and begin module production design. Other module production processes are basically similar, and the same module design assessment and supervision throughout the entire process of module production.

4.6.4 Management policy

4.6.4.1 Module management policies

A team director (P7) elucidated the management policies of the online teaching team and its ramifications for the preexisting organizational structure.

"Since the official establishment of the online teaching team in 2018, a total of five management documents have been issued from the university headquarters level. The implementation of the management system of the online teaching team has proven to be more challenging due to the impact on the original four-level organizational system. This represents a form of organizational change that has affected the interests of some of the original management levels."

Document:

Since the establishment of the online teaching team, university has issued 5 official documents which regulate all aspects of team formation, operation and assessment. Regarding team assessment, it was revised again in 2022 based on the operation of the team. Management policies of the online teaching team as following:

- *"Opinions on further promoting the construction of online teaching teams", 2019.*
- *"Measures for the construction of online teaching teams", 2019.*
- *"Assessment scheme for online teaching teams", 2020*
- *"Notice on the overall planning of online teaching teams", 2020*
- *"Measures for the construction of online teaching teams (revised)", 2022*

4.6.4.2 Community management policies

Scholarships have been focused on the design of processes and mechanisms to ensure knowledge sharing. A dean of faculty (P12) said:

"It's all designed to sort of create as far as possible processes and mechanisms which captures and records the scholarship that people are doing across these different

projects how shared through the different mechanisms shared."

Institutional documents have been formally introduced at the university level to regulate the operation of the Scholarship center. A team director (P11) said:

"That would be shared amongst everyone in terms of a policy document. The policy document is not only written by the head scholarship, but also the contributions from other members of staff throughout the university. So essentially that document then becomes university document. It could be then accepted. This is university policy on scholarship. It'd a huge document and be 5000 pages long."

Therefore, the participation of cross-organizational members still needs to be ensured by the organization in terms of overall system design. The dean of faculty (P15) said:

"I have used management tools such as a division of responsibility form to monitor progress in the early stages of launching the team."

A team director (P18) recognized the center as giving support to teamwork.

"Scholarship projects very often are led by an individual group, and they get grants in order to pursue an idea of how to improve the pedagogy. Scholarship has a funding every year, it will let us submit an application, the money is not much, but you can apply, for example, 2000-3000 pounds, up to 5000 pounds."

- **Observation:**

The scholarship center has a very formal organizational and operational mechanism. If you take up the position of chairman, you need to apply personally, go through a selection process, and be approved by the committee before you can take up the position. The chairman has a term of office and responsibilities, and it is a formal job that will

be counted towards the annual workload.

4.7 Organizational Integration

This section answers the first and second research questions at the same time, talking about how integrated dimensions of organizational structure can facilitate pedagogy knowledge sharing. Boundaryless organizational structure introduces managerial complexity and requires organizational coordination to support organizational knowledge sharing across boundaries. At the same time, coordination across external organizational boundaries in the research was much more difficult than across other kinds of boundaries. This research interviewed more academics from the university who had crossed the external organizational boundaries to understand the experience of organizational coordination in an online distance learning center from their perspectives.

4.7.1 Cooperation and coordination

4.7.1.1 Signing cooperation agreement

The basis for cooperation across external boundaries is the signing of an intention or agreement between the two universities. A team director (P2) introduced the way.

"There is a central unit at the university that make decisions about the learning design of the modules. Two universities signed a contract, and the financial model is agreed. So how much each university puts into the development, how the profits are split, and that will appoint a program director."

A team director (P7) said:

"The online teaching team has been assembled in accordance with the terms set out in

the agreement between the organization system and the efficiency."

A team director (P11) said,

"The different levels we've got in each of the faculties. We've got these scholarship centers. These are places by which are there to coordinate and support people in their faculties in undergoing and undertaking that scholarship and doing it around things that in two ways things in areas of activity that the university or the scholarship centers themselves identify as being important across university things. "

- **Documents:**

An agreement on promoting integrated construction No 6.

"Create quality and improve education. To serve the economic and social development of the country and region, and in line with the objective of meeting and leading social needs, two universities must cultivate key disciplines. Develop plans for the construction of disciplines, reinforce the development and implementation of majors, the teaching process is managed in a standardized manner."

- **Observation:**

Contract between the external boundary's organization needs a formalized organizational coordination structure. Module production team, whether the initiator of building a new module is an organization or an individual, the process of identifying a module to build is sorted out and coordinated through organizational strength.

4.7.1.2 Set up an executive team

People from different organizations come together to form new organizations that cross boundaries. A head of institution (P6) stated:

"We have an executive team of 9 additional Fellows form the executive, and they were elected and that they change over time. But each of the executive members has a responsibility. The executive meets monthly and makes some of the key decisions. But any new areas of work or new approaches to things are discussed with the whole fellowship, and actually many fellows bring ideas to the Centre and want to develop. It's quite a collegiate, decision-making is done via consensus."

A vice-chancellor said (P14):

"The project I'm working on is that the academic team are from G university, G university decides who the Project director for the online modules will be and sort of nominates that person. They need to really make sure that their team has the right capacity."

4.7.1.3 Management approach

University has adopted a project process management approach to ensure the successful completion of the project. The team director (P1) stated:

"One of the things that we do is we create, or our project manager creates a schedule at the beginning of the process. With all of the different milestones we have to hit the different things the academic will have to do and deadlines for doing those, and we share that with the academic and ask for their feedback. We asked them to review the schedule at the beginning and then we really try to be as flexible as possible while keeping those deadlines."

Another team director (P2) said:

"We have like fortnightly progress meetings, and we'll do those RAG reports and say whether something's green or whether it's amber, which means it's at risk or red, which

is even more at risk and those sorts of things. We're always trying to predict whether we think something's going to launch on time and if there are any issues that come up that make it abusive if we're delayed or if something else is happening, then try to work around it and see how we can solve that problem. It's a lot of like project management and progress reporting that goes into sort of keeping the project on track."

4.7.1.4 Meeting and conversations

The head of department (P8) said:

"There are steering group meetings which are higher-level meetings with the directors at my university and the directors at the university we're working with. They make sure things are on track from a financial and budgetary point of view. This meeting maybe held every couple of months to make sure that the overall project is running on time."

The other party organizing the co-operation is involved in the co-operation team and its leader. A learning designer (P9) said:

"We'd have a lot of conversations before we work with them where they're sent lots of information about how we work; How many hours we think they might have to spend over the 9-month period. And it's the responsibility of their Project team to make sure that they have the capacity to work with us."

Scholarship officers in the faculties interact and consult with the school level. A dean of faculty (P13) stated:

"What would normally happen is that the heads of scholarship of each school would have regular meetings with the faculty and regular meetings with each other. They have regular meetings with the head of scholarship for the university. It's an academic committee."

A team director (P10) thought although there is a structured bureaucracy at the institutional level, people's communication and interaction is very flat and free.

"University has a hierarchical structure, but flatter at the bottom. At the bottom it means that we are there's a lot of interaction between individuals at my level and below. The way that happened at the university is the head of research or the head of scholarship would create the structure where they're having meetings with heads of scholarship Centers."

Observation: *Because coordinated communication happens all the time, not just a co-operation agreement between two organizations, but also an executive team. meeting and conversation that drives all day-to-day workflow.*

4.7.2 Broking teams and community

4.7.2.1 Knowledge brokers

A head of institution (P6) said:

"In the module production process, I think project managers are the knowledge broker. Thus, they bring together all the production teams and technology teams and the subject matter experts and sort of stands in the middle, bringing them together and helping them to connect their ideas."

A learning designer (P9) thought the team director was a key person.

"Director is keeping an eye on how people contribute and there is almost a continuous or a very frequent dissemination activity from the sender saying we need people to

review this, we need people to do this and that, and we'll be interested in that. As I said contribution on compulsory, it's up to people how much they want to contribute, but also there is a constant call for motivating people to contribute. These invitations are by name, so somebody has an expertise, a particular area and instead of saying to the whole the fellows, would you like to do this because we now have this particular area."

Team leaders come from different backgrounds but they all play an important role in guiding the knowledge sharing of the team. A dean of faculty stated:

"*We have a module manager on a module as well. He is somebody who understands the administrative side of what needs to be done on the module much better. People have different roles on a module, but they do work together. The module manager will support the staff tutor and the central academics or other staff tutors on the module team with sort of the if you like the running the administration of the module."*

- **Observation:**

I have observed that some experienced module leaders have completed the design work in as fast as 8 months, while some module design takes 2 to 3 years, in addition to the discipline-specific design time will vary, depending on the ability of the module leader to co-ordinate and the level of participation of various members, as the team has teaching technicians from other departments, and is involved in several module teams at the same time. There is a great need for organizational and institutional constraints, for example, the time that each module design team must complete, otherwise the efficiency of the team's work can hardly be guaranteed.

A head of department said:

"Scholarship can then become research Centre, and you then have a big incentive for tutors, for academics to become better. It can then broker the knowledge because that

is where the knowledge sits."

The head of the scholarship center described their work, and it broke different parts of staff to the scholarship community.

"That's definitely in part of my role is to work across all the different parts and to bring them together and really to share expertise, to support, mentor and build expertise."

A dean of faculty (P12) said:

"Scholarship is something that we encourage everybody to do, so that's a big part of my job and my responsibility is to support and encourage colleagues to take part in scholarship activities. So that includes everybody from our head of school is involved in scholarship. Central academics are involved in scholarship down to everybody, students associate lectures, other staff, tutors, so everybody is involved."

Another dean of faculty (P13) stated:

"I could identify individual groups throughout university that may be coming up with new ideas that could be applied elsewhere. I think that's important. Even though I wasn't working in the area, I knew who was working in the area, and I could say, look, why don't you tooth meet up. They're in a different faculty, just working together. Because you see that means that in the future funding for interdisciplinary projects is now much easier than in the past because you are breaking new ground."

"To see if there are lessons that maybe learn from them that you could bring into your own subject area. But again, that's where some knowledge brokers or other people who try to synthesize some of learn lessons and things across the university across a faculty to perhaps summarize them for other people, but again they're both formal and informal ways in which this happens."

- **Observation:**

Several scholarship leaders in Schools and Faculties were observed, and this position is generally held part-time by experienced central academic or staff tutors who do not work in a leadership capacity but act more as knowledge connectors. Although it is a part-time job, it counts towards their workload.

4.7.2.2 Flowing team information

A team director (P10) told they will help team members understand each other's perspectives and find ways to solve problems together.

"The major function of the team was to ensure that we all knew what everybody else was doing and we all share our previous experience, but also our growing experience of doing this job and that team structure really facilitated that knowledge sharing with a subject focus, it became much more purposeful. It wasn't just sort of nebulous, sort of ill-defined student support needs."

The team director (P18) said he should guarantee that each team member has equal access to information and provide equal resources.

"You need to be able to share the knowledge to groups of individuals, and those groups of individuals then maybe discuss this with their members of the module team. It could be that the module team chairs and deputy chairs or attend the meetings and then when they understand why this is being done, then have a module team meeting which will then discuss the implications of what these new developments are to their team. In that way, everyone, regardless of their responsibility, as an idea of what their role is and why these changes are being implemented."

- **Observation:**

In the module team, the team members are organized from different Schools, different departments or even from different universities, meaning that they do not have the same line manager. Their combination of information is by natural barriers, the speed of information flow in the team and the content of the team to determine the members of the team's understanding of the work of the team, if efficient and high-quality completion of the team's work, it must be necessary to fully share knowledge and information flow.

4.7.2.3 Bring people together

Teaching and research for all in the community is supported by organizing meetings to encourage people with experience to share. A team director (P11) said:

"We support conferences for people to go and disseminate the scholarship finding. It is really about people creating and thinking about what they need to know to be better, and they come to us, and we'll support them in that journey."

A dean of faculty (P18) proposed:

"When you have is invited to present, to participate when you have funding for projects, you invite from all the members of the overall community to bid for that funding, and you are quite clear on how the money is allocated and what the benefits to the Community. Whatever you invest money or resources in doing has impact, so it's useful and impactful. You have to tell other people about what you're doing."

- **Observation**:

Project leaders are generally experienced academics who not only have a background of subject knowledge but also have their own unique understanding of technological developments and applications in online and distance education. There are also sessions dedicated to the sharing of learning designers, who give well-prepared

presentations that are particularly helpful to some.

4.7.3 Role flexibility

4.7.3.1 Multi skilled

According to a dean of faculty (P13) stated:

"AI is in full swing right now, but our daily teaching is still the same. Teachers on our learning network would like to use AI to support our teaching, or allow our students to learn English using AI, and we want our organization to be innovative and inclusive, and to push teachers to be innovative and bold in trying out new technologies."

A vice-chancellor (P14) thought:

"Shouldn't we be as an academic community, be developing those skills and the knowledge needed to support that in our individual and in our teams, so that you're not each time you think I've got to get employability into my module. I'll go and get an employability specialist. I've got to make sure it's accessible. I'll get a disability specialist. Each time you think, I've got to go and get a specialist, whereas actually what you need is your team to have to develop their skills themselves so that they're not going out to the expert every time and costing more money".

Note: Teamwork fosters diverse skills team members, enabling people to think about problems from different perspectives and come up with innovative solutions. The ability of team members to learn is also necessary for the survival of the organization.

4.7.3.2 Overlapping responsibilities

A team director (P7) said:

"All the roles are important, and people do tend to just work together, so the boundaries are very blurred. For us, because everybody supports everything really. There are some overlaps between curriculum managers and staff tutors. Colleagues will work together to organize things like monitoring. I think there's lots of synergy probably because certainly between staff, tutors and module team members. It's somebody who's a staff tutor on one module will be a module team member on another module. People are doing all the roles. On different modules, everybody has a good understanding of what everybody's doing. There's lots of crossover."

Another team director (P10) said:

"There needs to be overlap and if someone was to leave a team or was to be ill and then you need to have some residual knowledge amongst the team to enable them to continue doing the work. For example, a module production will be 2 years normally and 5-6 people in a team usually. It could be that someone is involved in the first part and obviously the last part and it could be someone with an expert in a different field who comes in temporarily to write their material and then leaves. It's dynamic, so it's not always fixed, and it could be that someone is asked to chair another module，and they have to give their work to someone else in the module team."

Note: The process of teamwork inevitably involves the re-posting and crossover of responsibilities between team members. Because of the long production cycle of the module, team members will have some of the skills of the other members to ensure that the team runs smoothly.

- **Observation:**

Module production in an online education module team is a standard flow operation that requires some overlap between the various components for full coverage. I learnt that in a module teaching team, the opening lecture and pre-exam review would be assigned to teachers on the team each cycle, with each teacher having the responsibility of delivering the opening and closing lectures. The overlap of duties ensures that the team has room to adjust, reflecting the flexibility of organizational duties.

4.7.4 Technology support

4.7.4.1 Team management system

A vice-chancellor said:

"One of the key the key challenges for the project team and the subject matter experts is having sufficient time for the subject matter experts to have time because all of our subject matter experts are teaching in their own institution and they're responsible to their students, there are usually face to face students and so actually for them to have time to prepare and to think and to come in and make the videos, select the resources. All of that is very challenging and sometimes there's tension."

A dean of faculty (P16) said:

"We have a very well-established system for costing how much it's going to cost to develop a module and how much time is allocated from all the different teams, so we have all of that worked out and every member of the directorate who is online in education, their time is allocated to projects, modules to or other projects. There might be other types of projects they're doing, but they will be allocated to module production."

Note: One of the biggest problems with blurring organizational boundaries is the dual

identity of members, who have responsibilities both in their own organizations and in cross-boundary organizations. Coordinating the time, they spend working across organizations is therefore a key issue. University control projects with a management system that records project workloads and manages each project with precision.

4.7.4.2 Establishing a sharing platform

A head of department (P8) stated：

"I think scholarship and teaching at university are closely linked, and the program specifically promotes knowledge of pedagogy. University has a platform related to scholarship. Every time the scholarship program is finished, there must be a special report. The report will be put on the exchange platform related to scholarships. All the people can share it, and there are keywords on it, how to search and how to download."

A team director (P2) said:

"Each of the scholarship centers got its own website and you can look on their little projects they've funded there be descriptions of them. Through obviously the having the details put online having been shared at particular conferences or seminars or other events internally or shared to the wider our education sector. Perhaps at conferences and things put on across the university and even further afield international."

Another team director (P1) stated:

"It also created scheme for knowledge sharing in that a lot of ideas that were accumulated over 4-5 years went on a faculty site, people want to go and find out who's doing what scholarship or who's done what in the past, and go to the team site and saw that in the teams, so they can and it's just for the school, you can share the knowledge."

- **Observation:**

A scholarship sharing platform established at the university level to store research results that all faculty and staff can log in and learn from. Each faculty's scholarship center has its own Scholarship center website. Everyone can search for each school's research findings. Meetings are held regularly once a year at the faculty level, it is as a knowledge-sharing platform, where one can see the results of research projects in teaching and learning over the years.

4.7.4.3 Knowledge management system

B university set up a knowledge management system and support to academics. A head of institution (P6) said,

"We have a unique call knowledge management system, which maintains a lot of databases. They are quite important in terms of this system. They maintain the system so that the frontline student support team colleagues can rely on it."

- **Documents:**

From the university B's website.

The knowledge management system (KMS) is an internal website primarily used to support student-facing stall in all four UK Nations and the Republic of Ireland-the stall who deal with the recruitment and support of our students.

KMS contains a variety of resources, designed to support enquirers and students at any stage of their research journey from enquiry to graduation and beyond. KMS has the following features:

- *A sophisticated search engine which enables staff to locate information quickly*
- *A permissions function which allows pages to be restricted to staff in specific roles*

- *A decision-tree referrals guide which enables staff to quickly locate and accurately route student queries*
- *A daily announcements facility to alert staff to new and updated information*
- *An internal feedback system which enables staff to rate and feedback on the information and system*

4.8 Organizational Incentives

Incentive accelerates individual-to-team and team-to-organization knowledge sharing processes. Whether it is a team or a community, it is usually a sharing place that brings people together and allows knowledge sharing and work to merge.

4.8.1 Organization incentives

4.8.1.1 Reward and assessment

A team director (P11) told her performance requirements.

"Within their staff appraisal they do each year, then they must record what it is and think about what they're trying to do about scholarship in the short term or medium term. Every central academic has a large portion of my contract to do research, once a year I have to report to my line manager, and there is a continuous development assessment. "

The team director (P10) stated:

"There is also an annual team rating on the university side. For example, if the team is rated A grade, the team will be rewarded with a 20% upward adjustment. Every year there will be a part of the funds to the team member as a reward. Although the number

of rewards is very small, this is also from the perspective of the university's affirmation. It is from the organizational point of view of the incentives."

A dean of faculty (P16) said:

"We have Scholarship Centre, so they kind of promote internal research around, because often a lot of the work you're doing to develop modules is very scholarly. It involves research and things, and so we have kind of smaller projects that are internally funded, for example, 2000-3000 pounds, up to 5000 pounds, and people can publish their research there."

Note: Participation in the research and activities of the Scholarship Centre as part of the assessment. Module teams will also be evaluated and those that are rewarded will encourage more participation from team members. Given that knowledge sharing is more of an individual behavior, organizations should create more incentive effects.

4.8.1.2 Career development

Criteria for people to be promoted in positions should increase factors such as participation in knowledge sharing. A dean of faculty (P13) stated:

"I think you must make it incentive. For example, if your promotion criteria include dissemination, which will be a great thing to do. People who have a good research profile will get rewarded and promoted."

A head of department (P5) thought getting more involved in cross-functional teams can lead to job advancement.

"I think the spirit of honor on the incentive, if you do attend teamwork, you can be assessed provincial awards, evaluation of titles in the useful you will share more in team. For example, a teacher of my team who comes from a branch of my university. He

received a higher mark in the title evaluation because he used the results of our team research."

A team director (P7) said:

"In our teaching and research process, we have a teaching and research meeting every month, where encouraging the teachers communicate, the teachers to do more work within the team, that is, it will definitely reward you in some form in the future, so it's now very much more focused on the teaching team from the headquarters to the branch. "

4.8.1.3 Academic recognition

Participating in a scholarship Project is a way to get high recognition for your academic abilities. A dean of faculty (P15) said:

"You need to gain different levels of recognition within the academy can be important. In doing that, you have to write a report which demonstrates that through your own practices and your own work you understand something about the pedagogy that is being used in different modules or in different settings. And so now within the University scholarship structure many people have got recognition with the higher education academy."

A dean of faculty (P13) said the extent of your participation in sharing and your contribution to the team can help you to be recognized.

"When you at appointment level, there is an evaluation of the things you have in your CV and the activities you carry it. Also, you want to continue your fellowship after three years. I think you must reapply. There is an interest in looking at what people did and how much they contributed and give a minute story. There's no performance management as that assessing people's performance. But if you want to continue being

a fellow, you need to demonstrate that you've done some work over your fellowship, and also when you're appointed, you have to demonstrate the work you've done is relevant to the activities of the Centre."

A vice-chancellor (P17) stated:

"I think the biggest thing is to motivate support and then build a platform. This big platform is built by the university, and the platform is a space for teachers to freely exchange knowledge and share it."

4.8.1.4 Participating in interest

A dean of faculty (P16) thought interest is the basic motivation.

"There's no financial motivation. I think it's because people find it interesting. Every year an academic staff member of the University is allowed to spend something like 1/3 of his or her time on research. And the academic manager, Dean, cannot change. That is the contract, and they have time to do research. That's attracting young academics."

A dean of faculty (P3) said:

"There's this bottom-up thing going on the other thing is top down, it's about fostering these the community of practice across all sectors. I think it's academics thrive on their conferences when everybody with this, which we had a shared interest in something comes together and I think those features of our lives as academics."

4.8.2 Self-determination

4.8.2.1 Academic autonomy

A vice-chancellor (P14) said they have a culture of academic autonomy.

"We must talk about the culture of universities in the UK. And part of the culture of universities in the UK is what we call academic governance, which means that the academics, particularly those responsible for teaching and research in the university, are broadly responsible in formulating the policy of the university. So that is different from management, but so of module we have managers in university, people like Pro-Chancellors, Deans, Vice chancellors and but they should develop their ideas in partnership with the academic staff of the University".

- **Observation:**

Academic autonomy in UK universities gives module teams and knowledge communities more academic freedom, allowing team leaders, academics and community members to make more decisions about how team tasks and community activities are carried out. New opinions and suggestions can also be brought to the attention of managers, encouraging knowledge sharing and innovation.

4.8.2.2 Bottom-up decision-making in academic

By offering bottom-up academic advice and module-related applications, we can increase their willingness to share knowledge and act. A dean of faculty (P3) said:

"There's this bottom-up thing, it's about fostering the community of practice across all sectors. I think it's academics who thrive on their conferences when everybody with this, which we have a shared interest in something that comes together, and I think those features of our lives as academics."

Decision-making is bottom-up, a head of institution (P6) said:

"It's an interesting and complicated culture. It takes a lot of time to work in a culture like that. As you can imagine, because decisions are not all top down, decisions have to come through the organizational layers, up through the faculties, through the university Senate. In partnership with the Vice Chancellor."

A vice-chancellor (P17) said:

"Universities quite often fall into the trap of us, we've got to consult everybody and unless you get 110% of people saying yes otherwise, we won't do it."

- **Documents:**

From the university's website:

Principles of the operation of the academic governance system.
1. Decisions should be taken with proper concern for the University's reputation and standards, for the principles of academic freedom, for relevant context and available resources.
2. Decisions should be taken at the lowest appropriate level in the structure.
3. Consultation about major decisions should be managed effectively.
4. Composition of governance bodies should reflect the diversity of the University community.
5. Information about the constitution and regular business of academic governance should be readily accessible.

4.8.3 Inclusive and respective

4.8.3.1 Common goal

A dean of faculty (P4) said:

"I think it's about having a shared sense of purpose. I think in terms of making a team but so is about having a shared sense of purpose. If you have a shared sense of purpose and the leadership within the team convinces every member of the team that they are valued that whatever they can contribute is of value to the team. They will care about achieving the team's goals in the sense of its purpose. You can take a team of just people, completely different backgrounds completely different levels of expertise and knowledge and whatever you and they can be."

4.8.3.2 Including all voices

A dean of faculty (P12) said:

"You can find a way of making sure that the voices of all of those across the organization I heard and listened to and respected. As university has done, invite fellows from different institutions that may cut the university and invite fellows from outside who've got expertise and knowledge that can contribute, and then make sure that all of events and activities are completely inclusive."

"When I was chairing the committee meetings, when the Pro Vice Chancellor wasn't available I took a lot of time and trouble to make sure everybody in the committee, present, had a chance to express their opinions and had a chance to influence the discussions that went on the decisions that were made and I think that's an exemplar of where without thinking about it, that's what I believed was the right thing to do. "

4.8.3.3 Respecting all the members

A team director (P11) said:

"My role as the chair was to ensure that everybody on the committee felt valued. Because if they felt valued, if they were given an equal opportunity to express their opinions and that those opinions wouldn't potentially make a difference if they could be persuading the other members that was a good idea, then they would automatically care about the business of the committee".

"If you make sure that that every actor so that every individual person in our in our world, every individual person thinks that their opinion is as valuable as anybody else's opinion. Then it always is treated with the same lovely respect as everybody else's opinion. Then the structure will deliver the outcomes that you want for it."

4.9 Knowledge Sharing Effect

4.9.1 Organizational sharing activities

4.9.1.1 Encouraging peer-to-peer team learning

A team director (P7) said:

"I was within a few months of starting work at the university writing scripts for television Projects. I'm working with people who are producing the television Projects that we're going to put on the television, so there reviewing my scripts, rewriting my scripts, telling me how I can write better. And you're constantly learning from professional experience in what I describe as a bottom-up learning on the job process. And without the team approach to doing it, it would be much more difficult to develop those skills."

Cross-functional teams encourage team learning among peers, and module team

building is a complete workflow. A team director (P1) said:

"Learning on the job. You learn through doing it under supervision and everything you do as a module team member is subject to quality management processes. So, you never write anything without somebody else. Normally several other people look at it and make constructive comments on what you've written from the point of view of how effectively it's likely to perform the function that it's meant for. They will suggest where you might improve what you've written."

A team director (P11) said: agreed that peer learning is even more important for young scholars just starting their careers.

"The module team structure is one that fosters the sharing of expertise and experience between more senior experienced members of the academic staff and the academic support staff, and the more junior members."

4.9.1.2 Cross organizational sharing activities

The team director (P2) stated:

"We have what we call a digital education group, and this is anyone from the university can join who has an interest in digital education. They don't have to be learning designers. They can work in any job. And essentially this group meets maybe every six weeks, someone picks a topic around digital education and then presents it. And then we discuss it. I think this is a useful way to sort of disseminate that pedagogy knowledge internally. Make sure that we're always discussing things, keeping up with the things that are happening at the time in our field and so that's a good method internally."

A team director (P12) talked about convening an annual worldwide conference on online and distance education to exchange research experiences and lessons learned.

"One big international conference in our March conference which we had 17 countries represented together. I think this is really important in online and distance education, you have to recognize the number of teams who are involved in online and distance education. These are the key components of sharing knowledge. Sharing research is a research component as well. It has to do with via internal conferences via seminars, via invitation to committees where the outcome of this research might be of interest."

A dean of faculty (P15) showed their dissemination knowledge through collective publishing.

"We hope that with a Project of conferences and workshops and publications that people learn, and that people are impressed by our work and that they want to support our work. It's a unique structure."

Another dean of faculty (P16) said:

"In terms of sort of the external dissemination of pedagogy knowledge. We have a blog which we think is called online education at the University and anyone in our team can contribute to that blog. I've written blog posts on different areas of best practice for online learning. One of the recent I did was about sort of tips for how to use AI when designing online modules and sort of the pros and cons of that and how we can use that to help our learning design processes."

- **Observation:**

People in cross-organizations work part-time, they have a regular job position in addition to their work responsibilities, so their opportunities to engage in knowledge sharing activities are to some extent more demanding on the organization. As a result, sharing makes more use of fixed meetings, presentations, and organizational methods

such as publications and public websites.

4.9.1.3 Community sharing activities

Note: Through the organization of a series of activities, the pedagogy knowledge and other project management experiences in the teaching team are stored in the organization and transformed into organizational knowledge.

At the university and faculty level, a team director (P7) said:

"The scholarship Centre then create opportunities. We have modules twice a year at the moment to invite colleagues to write proposals and then, once the proposals get approved, then the scholarship centers help colleagues' project lead to being able to be equipped. You know, some people who are faculty practitioners, but haven't done much of educational scholarship or educational research, so they may need help with their methodology and the esteem provides opportunity to for those opportunities, train them qualitative research or vivo."

"The university wide lectures and wide workshops, you can attend a workshop in an area that's going to be possibly multi faculty in the future. And we'd hear about those either through emails or there'd be some advert on university websites. I have taken part in meetings where I share my knowledge throughout anyone in the university."

A team director (P18) said

"Faculty also holds a conference every year where colleagues from the faculty get together, usually for about two days and share their research, presentations and talks. When you have your annual conference, everybody from the whole university is invited. Conferences is an opportunity to find out who's working in what area, what people are doing and to gain some inspiration as well for new things to try on your own modules,

which is really nice."

From the school level, because of the proximity of specialisms, there is a more detailed sharing of teaching and research knowledge within the teaching team. A team director said:

"At a school level we have sort of an annual scholarship day. So that's a whole day that we take just dedicated to talking about the research projects that people are doing. So that's an opportunity both for colleagues to present their work and to have discussions around their projects. To think about how they might be useful for other colleagues on the modules that they work on one of the key things clearly that's important to you as well is dissemination. It's about people doing research and then communicating with other people and explaining what research they've done, what the results are and how that might be useful to other people."

"The scholarship cluster meets probably every one to two months. And that's an opportunity for colleagues just within school to talk about their work or sometimes we have somebody else come to talk to us, to discuss any problems they're having with all sorts of things. There's no set format, but it's an opportunity for people to gain mutual support and to share what they're doing."

- **Observation:**

Participation as an observer at a faculty's annual scholarship conference. The project is very full, with the usual schedule of presentations by project leaders on recent research and discussion sessions. The meeting is open to all and can be booked in advance by email. The most impressive thing is that the convenor emails the participants after the conference to ask for takeaways and solicit input.

4.9.2 Improving knowledge and skills

4.9.2.1 Boosting knowledge flowing

A dean of faculty (P15) said:

"Based on that one module, we will discuss what problems you have in the education process, how the teacher at the headquarters designed it, what kind of difficulties I have in implementing it, and there will be a process of sharing and exchange of knowledge. This online teaching team has broken down the existing pyramid-shaped organizational structure, creating a flatten organizational structure."

- **Observation:**

Teams that cross vertical organizational boundaries break down the original layers of information so that teachers and students can face each other directly. The new model of teams allows teachers at all levels to have direct access to the latest pedagogy knowledge, increases the opportunities for exchange between teachers of agreed subjects, and makes the process of knowledge transfer more efficient and precise.

4.9.2.2 Improving knowledge linkages

Federal organizational structure breaks through the internal and external boundaries of the organization and enables knowledge links across different organizations. A head of institution (P6) said:

"The University benefits from its structure. The universities around it have a very well reputation. They can offer quite a lot of knowledge to be shared. The visiting fellows, the court fellows that are part of the structure and big majority of them come from contributing institutions or the University. These people help as well in the sharing of the pedagogy knowledge across the organizations. These fellows as sender of education

become agents of sharing with the knowledge, knowledge that had been produced within the sender to their institution, but also bring good practice."

Crossing external organizational boundaries allows for more knowledge sharing. The head of department (P8) said:

"I think it gives us a wider group of people to share knowledge with because we can work with any university in the federation and so it gives us a wide group of people to share knowledge with and learn from in that way."

- **Observation:**

University is organized like a satellite around the globe type of structure. By observing several of the academics working in it, it became clear that they all had fixed contracts at their own universities and were involved since different projects, as the Centre is mainly about module production and operations, and the research and academic work comes mainly from academics from the federation, who have effectively linked their knowledge.

4.9.2.3 Enhancing online teaching skills

A team director (P18) stated:

"What's important is some of the tools that we use for the module team as well as the tutors. The tutor, manager or staff tutor, would actually try and link in the tutors to training modules that enable them to understand the new technology. There are two ways of doing this. Any new tutor would have to go on training modules. In order to be a tutor, but also even tutors who are quite experienced would have to occasionally go on modules because there's a new development."

A dean of faculty (P13) told their workshop in the team.

"There's usually a workshop that the team run with the subject matter experts that really start to think about what are the kind of key learning outcomes, what is the assessment? what are the learning experiences? And then finally, what are the resources, and we tend to start from that direction."

- **Observation:**

In online distance higher education institutions, basic knowledge of educational technology and learning design appears as a required skill for faculty in teacher training projects, and new faculty members are required to attend learning design workshops to enhance their information literacy skills.

4.9.2.4 Enriching team knowledge

Note: A very important role in the online and distance education module team is that of an educational technologist or a professional in educational technology, and this research interviewed several well-known academics in the field of educational technology in the UK, who are committed to the creation of knowledge in educational technology and at the same time share their knowledge with the module team, enriching the team's knowledge.

A learning designer (P9) said:

"I guess what is really interesting and this is what we've been pushing for more over the last five or ten years is providing educators with kind of clearer visualizations of their decisions and how they design decisions."

A head of institution (P6) stated:

"I work with the academics to sort of give them feedback on pedagogy to talk about how they can convert maybe their face-to-face teaching that they do on campus to

online learning, and how to make that sort of an effective method of learning. And I also advise them on like the different sorts of digital tools that they could use to help with that learning as well."

A dean of faculty (P3) said:

"They have one or more people working in a team called Learning Technologists, and these people have the have the core competencies around pedagogy for online and distance teaching and multimedia teaching, in particular using technologies for learning and teaching."

- **Observation:**

X faculty are probably the only faculty with their own learning designers these days. Learning designers are usually involved in about 5 module building teams at the same time. Due to the unique needs of X faculty with rapid iteration of professional and technological updates and high IT level requirements, arranging Learning designers in their own faculty and integrating with academics facilitates knowledge sharing. However, at the same time, there is a lack of opportunities to communicate and learn from peers, and the learning ability of individual learning designers is particularly important.

4.9.3 Encouraging knowledge innovation

4.9.3.1 Stimulating research enthusiasm and ability

The existence of the center gives people the opportunity to participate in research projects, creating a culture of research. A team director (P2) said:

"We have scholarship Centre, they are kind of promote internal research around,

because often a lot of the work you're doing to develop modules is very scholarly. It involves research and things, and so we have kind of smaller projects that are internally funded, and people can publish their research there. So, it's kind of try and promote that research culture amongst people."

A team director (P7) thought the existence of such an organizational structure motivates and encourages people to research.

"A structure within the organization, you have a Centre, so it helps to motivate and encourage people to do that kind of work. Promote as being an important part of what you do, and then also provide a means of dissemination by organizing conferences, so you need a core dedicated group of people to help you with that."

The Scholarship center promotes the integration of practice and research, reflection from practice, problem-oriented research, and research results that again drive practice. A dean of faculty (P4) stated:

"For us scholarship is important because the decisions we make in terms of trying new things or improving the quality of teaching and learning on a module, we need to be evidence based. We encourage people to do research by doing scholarships and educational research projects so that we can constantly improve what we're offering for the students. So that the people teaching can improve their own practice and reflect on their own pedagogy and how they teach themselves. It's important at a university level because the University has a reputation for delivering very high-quality online teaching. The university is always trying to be innovative and to make sure we're at the forefront of offering the best we possibly can for the students."

- **Observation:**

Online and distance education institutions have a dedicated scholarship center that has

become the community and platform for pedagogy knowledge to promote scholars' pedagogy research, it was established and formed a top-down decision-making body.

4.9.3.2 Fostering knowledge innovation

A team director (P1) said:

"I think innovation often happens when people share ideas across different fields. That's how innovation happens."

The head of department (P5) said:

"After becoming the beneficiaries of sharing, in turn, in the future work is also to promote the work. You listen to this person's lecture, he shared this thing to the organization, and then, combined with some of your own original experience you will produce a new kind of knowledge one, and then go to share it with others, in fact, it is a knowledge spiral upward a process."

Note: Knowledge creation and innovation occurs in a cycle of thinking from individual knowledge to team knowledge, team knowledge to organizational knowledge and then back to individuals and teams.

- **Document:**

From University Innovation Report 12.

'Innovating Pedagogy 2024-Exploring new forms of teaching, learning and assessment, to guide educators and policy makers'

Every year X university releases its Top 10 Pedagogies to the world, a report that condenses the latest innovations in pedagogy from around the world over the module of the year. The top ten pedagogies provide online and distance education organizations

with references to the latest teaching and learning technologies, as well as inspiration for new pedagogy designs, which continue to emerge year after year of pedagogy practice and innovation.

4.10 Data Analysis

4.10.1 Opening coding

According to the open coding procedure, we use NVivo 14 software to decode the interview data, observation data and document. The first step, labelling', is to analyze data word by word and sentence by sentence, to mark the content related to the research topic, to simplify it and to refine it initially. The second step is 'conceptualization'. Phenomena are upgraded to concepts based on the researcher's theoretical reserves and sensitivity, free nodes belonging to the same phenomenon are grouped under the same tree node (with the coding prefix 'a'), and complete concepts are developed to define this tree node. In this way, 69 concepts are obtained. In the third step, categorization', tree nodes that seem to be related to the same phenomenon are grouped together to form a new tree node (with the translation prefix 'A'), and 28 categories are created. Table 4.3 shows the results of opening coding.

Concept		**Categories**	
a1	Impact of the epidemic	A1	External environment drives
a2	Impact of online learning popular		
a3	Impact of technological developments		
a4	Student-teacher interaction	A2	Supporting students learning
a5	Adult learning characteristics		
a6	Independent learning		
a7	The function of pedagogy knowledge	A3	Common pedagogy knowledge
a8	The importance of pedagogy knowledge		
a9	Various kinds of team	A4	Team-based work
a10	Teamwork is fundamental		

a11	Supporting students	A5	Teamwork function
a12	Supporting teachers		
a13	Roles of team members	A6	Diversity of team members
a14	Responsibilities of team members		
a15	Community of pedagogy practice	A7	Developing a community
a16	Setting up a scholarship Centre		
a17	Replicating a scholarship center model	A8	Replicating more communities
a18	Scholarship Centre for four faculties		
a19	Working together smoothly	A9	Community function
a20	Training reflective practitioners		
a21	Practice learning and teaching		
a22	Original vertical organizational structures	A10	Flatten structure
a23	Break down vertical boundary		
a24	Learning designer in module team	A11	Team-based structure
a25	Break down horizontal boundary		
a26	History of federation	A12	Federal structure
a27	Break down external boundary		
a28	Three-Lier Scholarship Centre	A13	Community structure
a29	Break down all boundaries		
a30	Strategy based on overall work	A14	Strategy and plan
a31	Formulating a work plan		
a32	Everyone needs to attend community	A15	Part of a workload
a33	Basial responsibility		
a34	Importance of process	A16	Established process
a35	Guidance of process		
a36	Module production process		
a37	Module management policies	A17	Management policy
a38	Community management policies		
a39	Signing agreement	A18	Cooperation and coordination
a40	Executive team		
a41	Management approach		
a42	Meeting and conversations		

a43	Knowledge brokers	A19	Broking teams and community
a44	Flowing team information		
a45	Bring people together		
a46	Multi-skilled	A20	Increasing skill
a47	Overlapping responsibilities		
a48	Team management system	A21	Information technology support
a49	Establishing a sharing platform		
a50	Knowledge management system		
a51	Reward and assessment	A22	Incentive strategies
a52	Career development		
a53	Academic recognition		
a54	Participating in interest		
a55	Academic autonomy	A23	Self-determination
a56	Bottom-up decision-making in academic		
a57	Common goal	A24	Inclusive and respective
a58	Including all the voices		
a59	Respecting all the members		
a60	Encouraging peer-to-peer team learning	A25	Organizational sharing activities
a61	Cross organizational sharing activities		
a62	Community sharing activities		
a63	Boosting knowledge flowing	A26	Improving knowledge and skills
a64	Improving knowledge linkages		
a65	Enhancing online teaching skills		
a66	Enriching team knowledge		
a67	Stimulating research enthusiasm and ability	A27	Encouraging knowledge innovation
a68	Fostering knowledge innovation		

Table 4- 3 Open coding results

Source: Researcher's own work, 2024

4.10.2 Axial coding

Axial coding is an attempt to discover and establish the connections between the main

categories to show the organic relationship between the parts of the data, using the paradigm model of 'condition-phenomenon-vector-mediator-action/interaction strategy-outcome' proposed by Strauss and Corbin. According to this model, the researcher can present the relationships between the main categories according to this logic, so that the information is put together again. Figure 4.5 shows the logical relationship between the main categories.

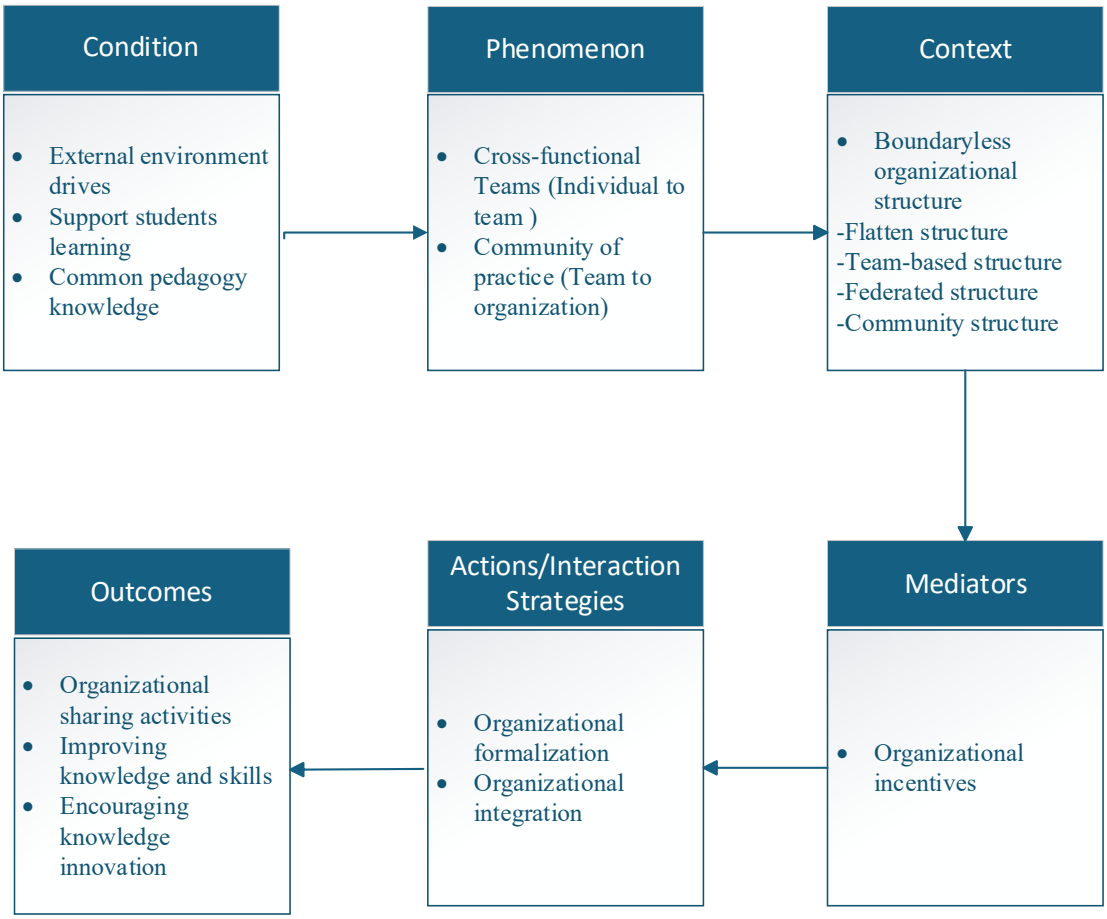


Figure 4- 5 Axial coding results
Source: Researcher's own work, 2024

4.10.3 Selective coding

Selective coding is the process of summarizing the core categories from the main categories, sorting out the logical relationships between the categories and forming a story line. The basic requirement is that the conceptual model and the story line can concisely explain all the phenomena related to the research problem. After repeated analyses and comparisons with existing theoretical studies, this research has refined six

core categories: knowledge sharing reasons, Organizational structure type, organizational formalization, organizational integration, organizational incentives, and knowledge sharing happen. Table 4.4 shows the results of selective coding.

Categories		Core Categories	
A1	External environment drives	AA1	Knowledge sharing motivation
A2	Supporting students learning		
A3	Common pedagogy knowledge		
A4	Team-based work	AA2	Cross-functional Teams
A5	Teamwork function		
A6	Diversity of team members		
A7	Developing a community	AA3	Community of practice
A8	Replicating more communities		
A9	Community function		
A10	Flatten structure	AA4	Boundaryless organizational structure
A11	Team-based structure		
A12	Federal structure		
A13	Community structure		
A14	Strategy and plan	AA5	Organizational formalization
A15	Part of a workload		
A16	Established process		
A17	Management policy		
A18	Cooperation and coordination	AA6	Organizational integration
A19	Broking teams and community		
A20	Increasing skill		
A21	Information technology support		
A22	Incentive strategies	AA7	Organizational incentives
A23	Self-determination		
A24	Inclusive and respective		
A25	Organizational sharing activities	AA8	Knowledge sharing happen
A26	Improving knowledge and skills		
A27	Encouraging knowledge innovation		

Table 4- 4 Selective coding results

Source: Researcher's own work, 2024

4.11 Chapter summary

The chapter discussed the key issues in Organizational structure and knowledge sharing process. The data analysis is based on interviews, observation and documents. Next chapter will discuss the results from the data analysis.

CHAPTER FIVE: DISSCUSSION

5.1 Chapter introduction

The chapter successfully explored how the practice of pedagogy knowledge sharing can be facilitated through organizational structures online and distance higher education institutions. The research questions posed were answered, and the research objectives addressed were accomplished. In addition, best practice references in terms of organizational forms and dimensions of organizational structures were provided for the organizational factors affecting knowledge sharing, enriching the literature on knowledge sharing in the field of higher education and designing a framework for organizational structures that facilitate knowledge sharing, highlighting the important role of boundaryless organizations and organizational incentives in knowledge sharing.

5.2 Review Research Questions

5.2.1 How can organizational structure facilitate the knowledge sharing process from individual knowledge to team knowledge?

Considering the SECI model of knowledge creation, which named the process of individual knowledge sharing to team knowledge the externalization process. This research found that team building is an important way of sharing knowledge in the externalization process. Online and distance higher education institutions promote the process of sharing individual knowledge to team knowledge by forming cross-functional teams, validating the results of previous studies, such as cross-functional teams have the function of sharing knowledge and resources, facilitating collaboration, and solving problems together (Brettel et al. 2011), and by forming cross-functional

teams to promote knowledge sharing and creation, thereby driving management innovation. As a professor stated, “One of the things that’s important in open distance education is that the team-based effort immediately means that is sharing some knowledge between those different people in that team”.

Figure 5-1 presents the organizational structure forms and dimensions that facilitate the formation of cross-functional teams. The figure illustrates those organizational structures across organization boundaries, organization formalization, integration, and incentives support the construction of boundaryless organizational structures and knowledge sharing in teams.

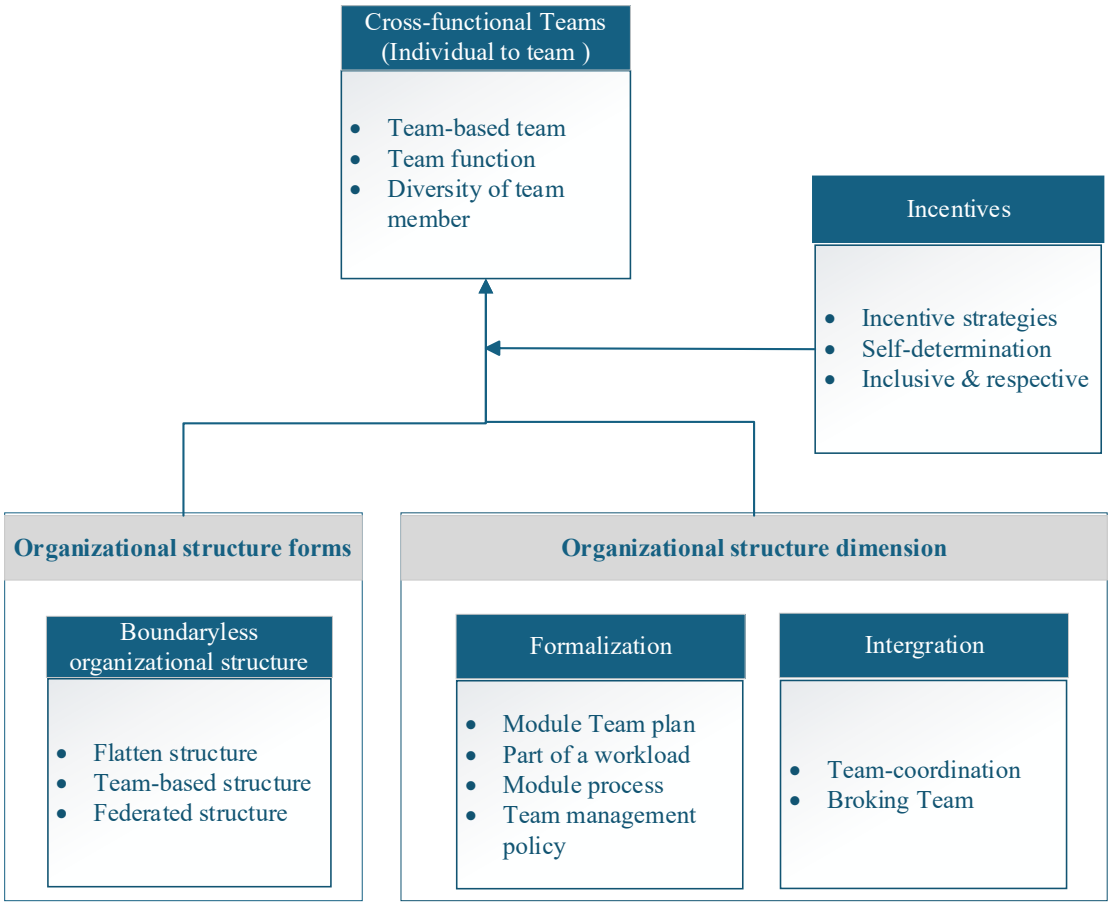


Figure 5- 1 Cross-functional teams and organizational structure

Source: Researcher’s own work, 2024

5.2.2 How can organizational structure facilitate the knowledge sharing process from team knowledge to organizational knowledge?

Considering Nonaka's SECI model of knowledge creation, which named the process of team knowledge sharing to organizational knowledge as a combination process, this research found that Community of Practice is an important domain/field of sharing knowledge in a combination process.

The community of practice serves as the organizational structure carrier that facilitates knowledge sharing in the process of transferring team knowledge to organizational knowledge. Scholarship Centers serve as knowledge-sharing platforms where organizations are constructed from the top down, convening educators from diverse organizations, departments, and disciplinary backgrounds with the objective of enhancing the research and practice capabilities of online and distance teaching and learning. Educators were grouped together in communities, with regular sharing of successful team knowledge, storage of team knowledge as organizational memory, and facilitation of knowledge creation.

Figure 5-2 presents the organizational structure forms and dimensions that facilitate the formation of a community of practices. The figure illustrates the organizational structures across organization boundaries, organization formalization, integration, and incentives support the construction of boundaryless organizational structure and knowledge sharing in community.

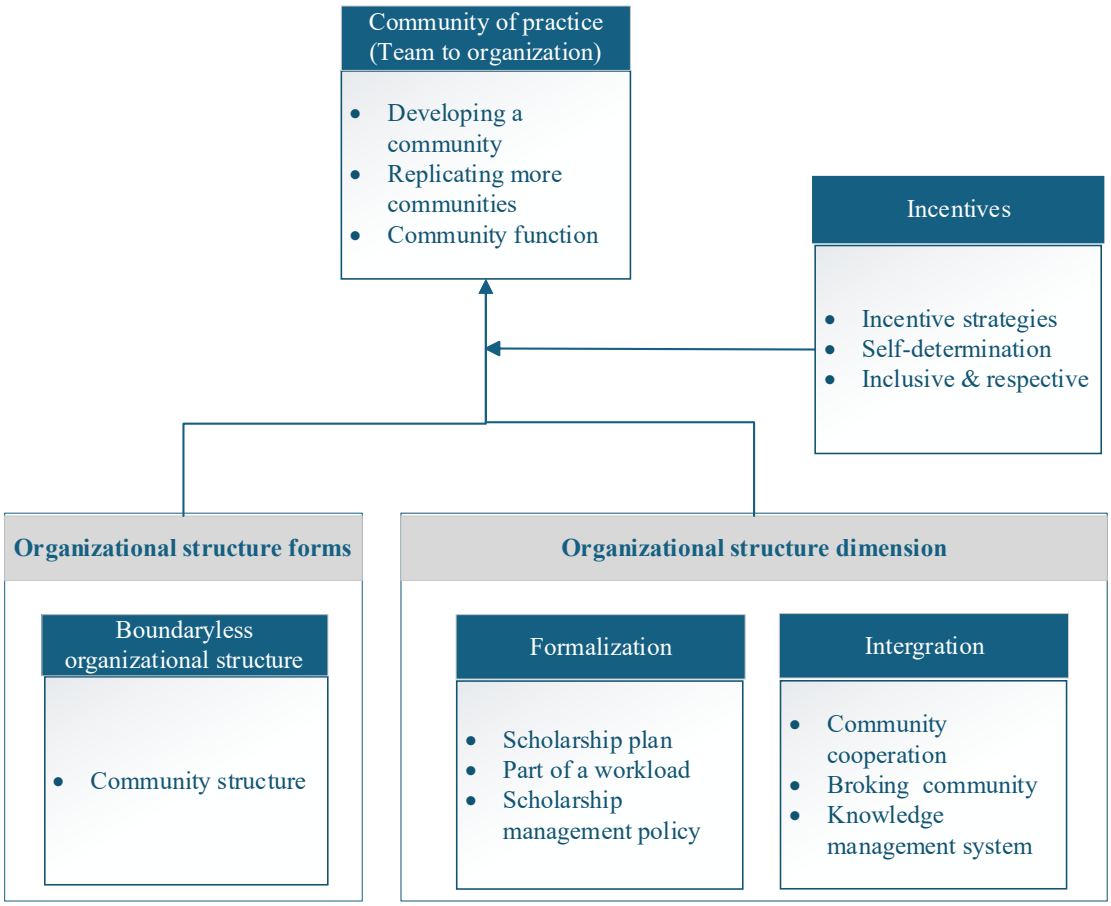


Figure 5- 2 Community of Practice and organizational structure

Source: Researcher's own work, 2024

5.3 Restating Key Findings

5.3.1. Summary of findings

This research obtained the findings by analyzing the semi-structured interview texts, researcher observation notes, and documentation, which we coded at three levels of grounded theory. The two main findings of this research are as follows:

Finding 1: Boundaryless organizational structures play an important role in facilitating pedagogy knowledge sharing in online and distance higher education. Cross-functional teams and communities of practice are two organizational structures and important

knowledge sharing “Ba”.

Finding 2: Organizational formalization, organizational integration, and organizational incentives are organizational structural dimensions central to facilitating pedagogy knowledge sharing in online and distance higher education. Their collaborative function ensured the implication of the pedagogy knowledge sharing process.

5.3.2. Boundaryless organizational structure forms

5.3.2.1. Practices of boundaryless structure forms

Boundaryless organizational structure is the most important finding of this research. As data analysis in the above chapter 4 shows, teams are fundamental to the management and operation of teaching and learning in online and distance higher education (ODHE) institutions, and pedagogy knowledge sharing cannot be separated from team activities.

During the period of digital transformation, all three ODHE institutions in the research implemented innovative team formation methods using three boundaryless organizational structures: the flatten organizational structure, the team-based organizational structure, and the federal organizational structure. The formation of modular teams crosses the horizontal, vertical, and external boundaries of the organizational structure, and the subjects across the boundaries include different roles such as teachers, instructional designers, academics, team leaders or team experts, etc., and the specialized and diversified knowledge of the team members work together to achieve the team's goals and tasks, which facilitates the process of pedagogy knowledge sharing from individuals to the team.

Meanwhile, University B has established a scholarship center as a community of practice that breaks down organizational structures horizontally, vertically, externally,

and even geographically. This community gathers knowledge sharers and contributors, facilitating the process of sharing team knowledge with organizational knowledge. Table 5.1 shows a comparison of the four forms of boundaryless organizational structures, each of which is described below.

Name	Organizational structure types	Boundaryless structure type	Cross-boundary individuals
University A	Flatten organizational structure	Vertical boundary	Teacher
University B	Team-based organizational structure	Horizontal boundary	Learning designer
University C	Federal organizational structure	External boundary	Fellow
University B Scholarship Centre	Community organizational structure	All boundaries	Teacher/Learning designer/Fellow

Table 5- 1 Comparison of organizational structure types

Source: Researcher's own work, 2024

5.3.2.2. Flatten organizational structure

For the last 40 years, University A's online teaching team has followed a four-tier pyramid organizational structure, with the headquarters at the top and the learning center at the bottom. The biggest problem with this organizational structure is that teachers at the top, in the headquarters, don't have direct access to students, and teachers at the bottom, in the learning centers, are lagging in their grasp of policy.

In response to the challenges posed by the digital transformation of education, University A has re-examined the traditional pyramid structure that has been in place for the past five years and piloted flatten organizational structure, the online teaching team, to address the problems of the original four-tier organizational structure. Figure 5.3 shows the transition from pyramidal organizational structure to flatten

organizational structure and demonstrates how teachers in an online teaching team can contribute to the collective knowledge of the team by sharing their personal knowledge.

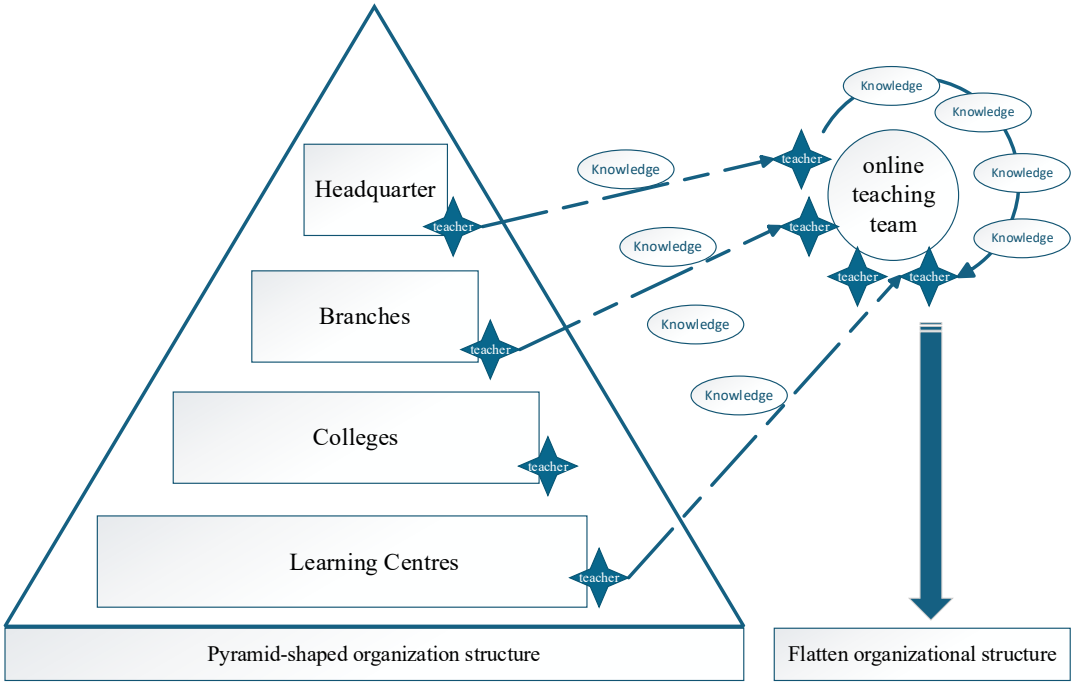


Figure 5- 3 Flatten organizational structure

Source: Researcher's own work, 2024

In Figure 5-3, we can see that teachers can join the online teaching team regardless of which level they are at in the original four-tier organizational structure (headquarters, branches, colleges and learning centers), if they have the appropriate subject background and teaching ability. In the online teaching team, teachers at the headquarters can directly understand the needs of students and problems in teaching design, while teachers at the learning center can keep abreast of the latest pedagogy knowledge and teaching policies, breaking the vertical organizational boundaries. At the same time, teachers share pedagogy knowledge and solve common problems in the online teaching team.

5.3.2.3. Team-based organizational structure

University B believes that pedagogy knowledge is the core competence of the module

team in online and distance education and therefore pays special attention to the role of the learning designer. University B promotes the cross-departmental involvement of learning designers in the formation of module teams within a functional organizational structure, forming a team-based organizational structure that allows for the organizational structure to have a more flexible form of existence. Figure 5.4 illustrates the team-based organizational structure model and the knowledge sharing process.

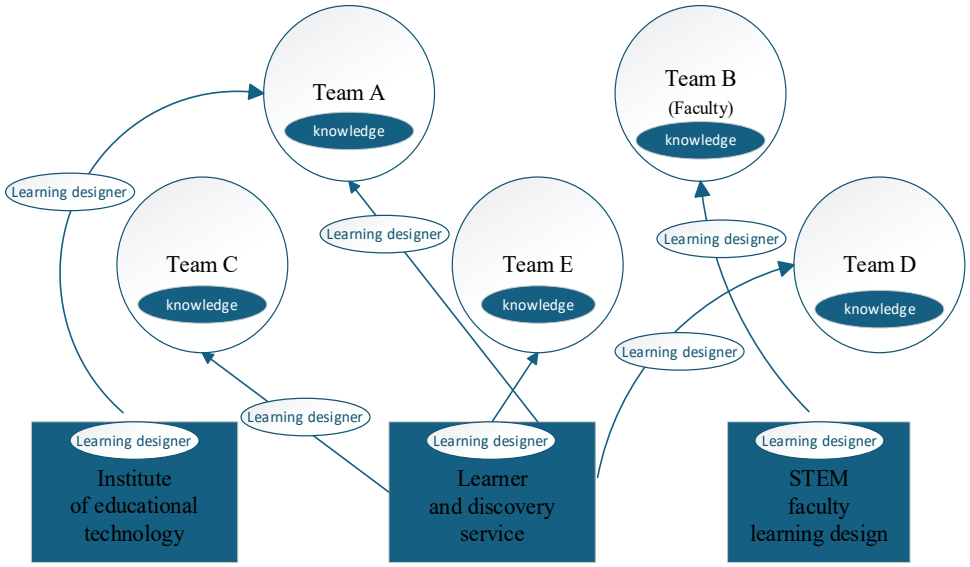


Figure 5- 4 Team-based organizational structure

Source: Researcher's own work, 2024

The figure 5-4 shows the form of the team-based organizational structure at University B. There are several module teams at University B and there are three main ways in which learning designers are involved in the module teams. The first type of learning designer is from the institute of educational technology unit, where they are primarily engaged in educational technology research and are also involved in the learning design of the module teams. The second type of learning designer comes from the learner and discovery service unit and is assigned to the module team as a specialized technician. The third is where learning designers come from faculty and work more closely with academics, undertaking training in learning design and basic pedagogy knowledge. Either way, the learning designer crosses horizontal boundaries within university and facilitates the sharing of pedagogy knowledge in module teams.

5.3.2.4. Federal organizational structure

University C has established an online and distance Learning Centre supported by a federation of universities, consisting of an executive team and a module design team, forming a federal organizational structure. Figure 5.5 shows the federal organizational structure form and knowledge sharing processes.

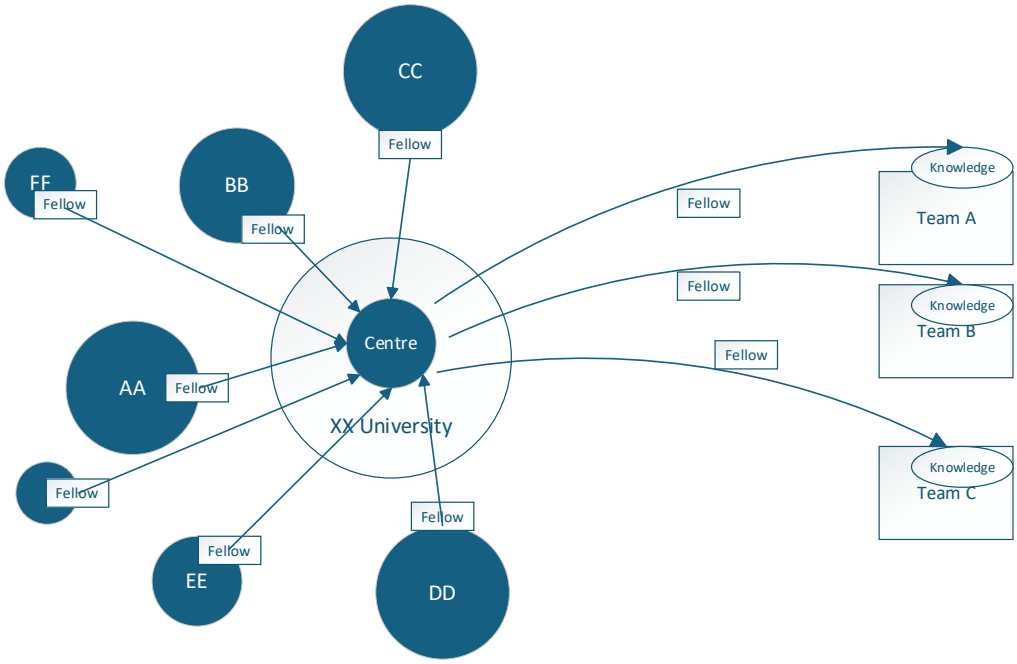


Figure 5- 5 Federal organizational structure

Source: Researcher's own work, 2024

As figure 5-5 shows that University C consists of a university federation, each with its own core discipline and with academics (fellows). Each university sends academics (fellows) to participate in the module design team at University C, sharing their pedagogy knowledge across the module team. The formation of the module design team crosses the external boundaries of the organization and enables knowledge sharing.

5.3.2.1. Community organizational structure

University B has become a Scholarship Centre (a community of practice for teaching and learning) to promote the sharing and creation of pedagogy knowledge. Figure 5.6

shows the community organizational structure and knowledge sharing process.

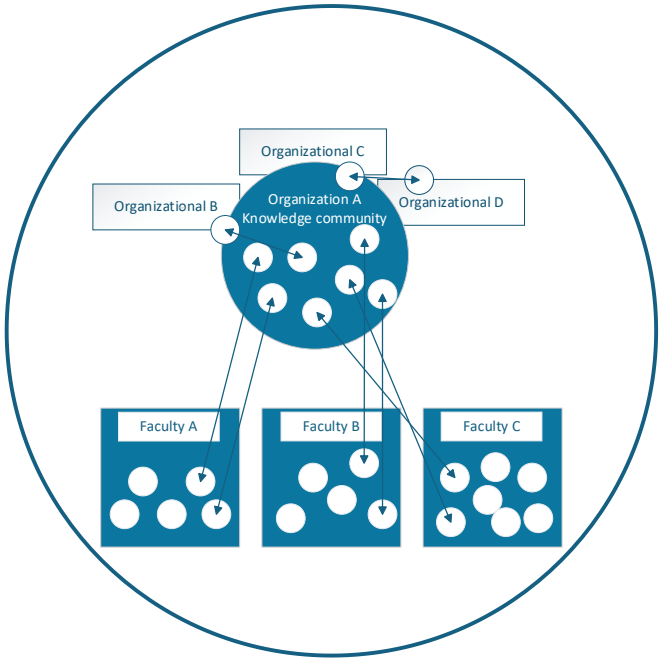


Figure 5- 6 Community organizational structure

Source: Researcher's own work, 2024

As shown in the figure 5-6, the pedagogy knowledge in the Scholarship Centre (Organization A knowledge community) is derived from the pedagogy knowledge of the different faculties of University B, as well as from the pedagogy knowledge of Organizations B/C/D, forming the community organizational structure. This organizational structure crosses the vertical, horizontal, external and geographical boundaries of the organization, transferring pedagogy knowledge from different organizations and module teams into organizations and facilitating the sharing of team knowledge to organizational knowledge.

5.3.3. Organizational structure dimension

This research proposes that formalization, integration, and incentives are the main organizational structure dimensions that drive knowledge sharing and that these dimensions are manifested through a range of organizational management approaches, such as different organizational management systems, operational mechanisms, and

organizational policies. Among these, apart from formalization, integration is not a commonly discussed dimension of organizational structure, and organizational incentives are more often considered as individual factors to be explored around knowledge sharing. Below we describe each of these dimensions of organizational structure.

5.3.3.1. Organizational formalization

Organizational formalization is mainly reflected in the following aspects:

Firstly, strategy and planning. The research discusses the tasks of cross-functional teams and communities of practice, which cascade through strategic planning, annual plans, and team duties. For example, the formation of a cross-organizational module team is a matter of joint discussion at the level of two universities, and the formation of a cross-functional module team within a university is a joint effort not only of one faculty but of a number of departments, which has to be coordinated at the university level, with some plans being made six months in advance. Strategy and planning are also at the forefront of the process of working in communities of practice, with an overall school-level strategy, annual and even monthly work plans for all levels of the Scholarship Center, and pre-planning and deployment of all knowledge-sharing activities.

Secondly, workload. The roles and responsibilities of each member of the cross-functional team, access to the work of the module team, and participation in the activities of the scholarship center are all part of the basic job duties of educators, calculated into the workload. As a profession said, “There is scope for making sure that they have time set out to do scholarships”.

Thirdly, establish a process. The entire curriculum construction process is based on clear standards, with defined phases and timelines. Quality assurance is conducted

throughout the construction phase and in the implementation phase. Cross-organizational teamwork is based on a formal agreement between the two organizational parties, and the cross-functional teams formed across vertical and external organizational boundaries are all part of the cooperation framework between the two parties in the curriculum construction process.

Finally, management policy. The Scholarship Center has a strict management system manual that sets out the rules for participating in community activities and the process for applying for research projects. The module teams also have a corresponding management system with clear regulations from formation, operation, assessment, and reward. Online teaching team members were observed to have dual responsibilities, and participation in team activities was largely voluntary.

5.3.3.2. Organizational integration

The research reveals that the integration of organizational structure is crucial for knowledge sharing. Integration. Achieving integration is largely dependent on fostering enhanced collaboration and cooperation, cultivating knowledge brokers, and establishing knowledge management systems.

Firstly, organizational coordination and collaboration ensure the flow of information and facilitate the flow of knowledge across boundaryless organizations. Members of the team and community come from different teams, departments, and organizations, which are naturally barriers in terms of knowledge background and work information and need to be integrated to make information transparent. Communication and coordination are usually done through meetings, respecting the views of both parties and negotiating communication. In the module design and production process, team members work together frequently; coordination and collaboration connect with each other together.

Secondly, knowledge brokers. Research data indicate that the most effective integration of knowledge occurs when several key individuals or roles are involved. In the process of individual knowledge to team knowledge sharing, the directors of the module team, experienced academics and learning designers, assumed the role of knowledge brokers, fostering team cohesion and facilitating the transfer of knowledge. In the process of transferring knowledge from the team to the organizational level, the chair of the scholarship center, along with knowledge contributors in the community, also assumed the role of knowledge brokers. Absent the participation of these pivotal individuals and roles, facilitating the sharing of knowledge across educators from disparate teams, departments, and organizations would be considerably more challenging. Thirdly, role flexibility and multi-skills. Dule teams had diverse and flexible roles. The roles undertaken by the module teams in the research were not only diverse in nature but also flexible in their application. The module teams were afforded the flexibility to adapt the roles and responsibilities in accordance with the specific knowledge backgrounds of their members and the particulars of the work content. Given that the module team cycle lasts for 1–2 years and that team members participate in multiple module teams simultaneously, it is not uncommon for tasks within a team to overlap. This perspective contrasts with the theoretical view of work specialization within the organizational structure dimension. However, the growth of multi-skilled team members enhances their sense of incentive and encourages knowledge sharing.

Finaly, knowledge management system. From the research data, it showed that online and distance higher education institutions established knowledge management systems, knowledge resource websites, knowledge management platforms, blogs, and other social media to share and store knowledge. Take advantage of the data integration function of information technology to capture, organize, store, share, and update knowledge so that it can be easily found and utilized by team and community members.

5.3.3.3. Organizational incentives

Organizational incentives can be further categorized into two sub-types: material motivation and non-material motivation. To illustrate, the primary reasons for academics engaging with teams and community are performance evaluation, rewards, academic recognition, and career development. The capacity for self-motivation is reflected in personal motivation, interests, and the sense of achievement and satisfaction that comes from sharing knowledge. The data analysis indicates that the organizational structure is relatively decentralized and that delegating decision-making to individual educators can facilitate knowledge sharing. Conversely, the low degree of centralization is more evident in the university's academic autonomy. Academic autonomy provides greater academic freedom for teamwork and time communities. The more opportunities there are to participate in decision-making, the more it motivates team leaders, scholars, and communities to participate in knowledge sharing. Furthermore, a fundamental concept of knowledge sharing is inclusive and respective. The implementation of collaborative and cooperative methods of working and communication within a team or community of practice facilitates the creation of an environment that is conducive to the sharing of knowledge and ideas, where all voices are heard and respected, and where the exchange of information is encouraged. As a team director stated, “If you make sure that every actor so that every individual person in our world thinks that their opinion is as valuable as anybody else’s opinion. Then it always is treated with the same lovely respect as everybody else’s opinion. The structure will then produce the results you desire.

5.4 Comparison with Previous Research

5.4.1. Organizational structure and knowledge sharing

These findings indicated that the forms and dimensions of organizational structure facilitate the pedagogy of knowledge sharing in online and distance higher education,

contradicting the conclusions of Fullwood et al. (2018), who stated the organizational structure does not significantly influence knowledge sharing in the education sector. This research also addresses the research gap about the antecedent determinants of knowledge sharing in higher education, specifically concerning the organizational structure aspect, as noted by Fan and Ben, (2024).

Although there is little research on this topic in higher education, this research is consistent with previous research on the relationship between organizational structure and knowledge sharing in other industries. These findings are consistent with Simona's (2020) previous research findings that organizational structure is related to knowledge sharing. They are also consistent with Asrar-UI-Hag et al.'s (2016) conclusion that organizational structure is an important factor that promotes or hinders knowledge sharing within an organization. The research findings confirm that organizational structure determines the location of knowledge (Argyres and Silverman, 2020) and facilitates the flow of knowledge (Powell et al., 2023).

5.4.2. Boundaryless structure forms and knowledge sharing

This research findings identified the boundaryless structure as the most fundamental organizational structural form for facilitating knowledge sharing. Although no previous literature was found on the relationship between boundaryless structural forms and knowledge sharing, the characteristics of the centralized boundaryless organizational forms involved in the research are consistent with the organizational structural characteristics of external organizational boundaries proposed by Zhang, Y (2021), namely, flattening, flexibility, agility, and decentralization. Figures 5-7 provide a comparative analysis of traditional and boundaryless organizational structures.

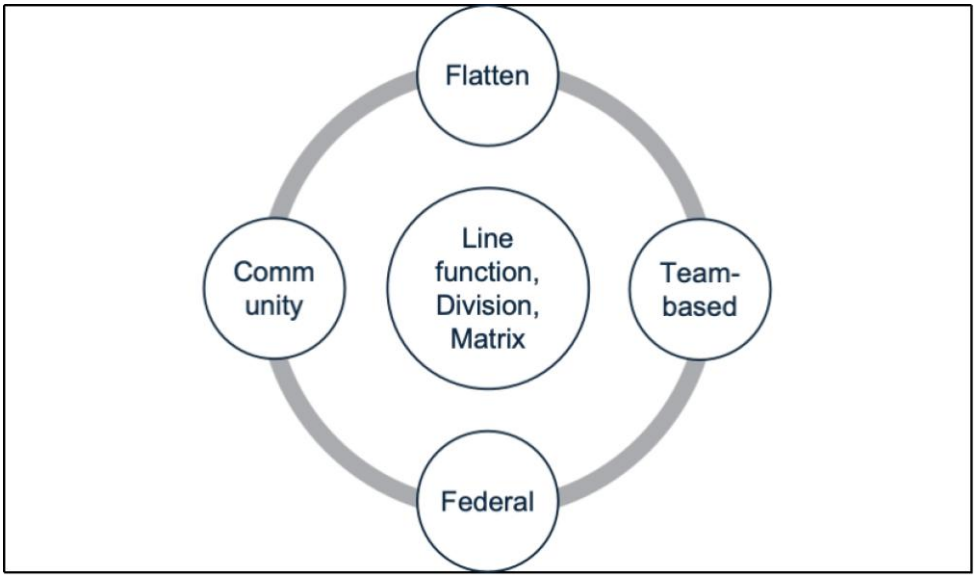


Figure 5- 7 Traditional and boundaryless organizational structure forms

Source: Researcher's own work, 2024

The circles from the middle of Figures 5-7 represent traditional organizational structures, including linear functional, divisional and matrix structures, which are internal to the organization. The four organizational structures outside the circle, i.e. flat organizational structure, team-based organizational structure, federated organizational structure and community-based organizational structure, span vertical, horizontal, internal, external and geographic boundaries, reflecting the characteristics of boundaryless organizational structures.

5.4.3. Organizational formalization and knowledge sharing

The previous literature on the impact of formalization on knowledge sharing has long failed to reach a consensus. However, this research proposes formalization as a fundamental organizational dimension of knowledge sharing. Therefore, it aligns with Ihl et al. (2012) perspective that formalization aids in organizations' knowledge acquisition and aids in the conversion of tacit knowledge into explicit knowledge. It is also consistent with the conclusion of Cordón-Pozo et al. (2006) that the process of communication and coordination between organizations can improve cooperation and collaboration among employees within the organization and create organizational

memory. As online and distance higher education has a predominantly team-based approach to teaching and learning, boundaryless organizational structures are needed to support cross-functional team building. Boundaryless organizations require even more formalization in their management and operation, which manifests in organizational management policies, work procedures, job descriptions, and rules. It is like having a river in which fish can swim autonomously, openly, and flexibly, but the river must have clean water as a basic condition.

5.4.4. Organizational integration and knowledge sharing

Integration is not an organizational structural dimension that has always been a concern. However, the results of this research suggest that integration is the most important organizational structure dimension for promoting knowledge sharing, which is consistent with the literature proposed by Tsai and Hsu (2014) that integration promotes the speed and quality of knowledge and resource flows between different departments and teams. The more boundaryless the organization, the greater the need for integration to foster organizational synergy and collaboration. The research findings are consistent with the views of Sherman et al. (2005) and He et al. (2016) on integration, which can complement the differences in knowledge and resources between different departments and teams, help organizations absorb and use external knowledge, and create synergies across multiple departments and teams.

5.4.5. Organizational incentives and knowledge sharing

These research findings confirm that organizational incentives are a key organizational structure dimension for promoting knowledge sharing; this is consistent with previous research on the idea that rewards can drive knowledge sharing. Formal incentive mechanisms are necessary to realize organizational incentives, and the organizational structure serves as the foundation for establishing these mechanisms.

This research included additional references to management practices that either validated or enhanced the findings of previous scholars. For example, Sandvik et al. (2020) suggest organizing regular meetings between employees and developing a performance reward scheme for knowledge contributors; Lee and Puranam (2017) suggest designing incentives for organizational learning and collaboration; Wu (2021) suggest setting up a team reward scheme and a series of other organizational measures to encourage knowledge sharing.

However, this research does not consider centralization, the traditional organizational structure dimension, as a key to facilitating knowledge sharing. This is because academic autonomy in higher education institutions is a kind of low centralization, and the formation of module teams and CoP is a kind of low centralization structure, which consists of the view put forward by Wiedner and Mantere (2019) that less centralized organizational structures allow decision-making to be more widely distributed across different parts of the organization, facilitating knowledge sharing.

At the same time, this research found that the proposal of self-determination rights facilitated knowledge sharing. The right to self-determination is a form of intangible reward for organizational motivation and another manifestation of low centralization. This is consistent with the views of Zhong et al. (2020), Luo and Lu (2020), who mentioned that giving employees autonomy at work and the right to participate in decision-making will promote knowledge sharing among employees.

5.5 Impact and Application of research

5.5.1. Enriching contents of SECI model

This research is based on Nonaka and Takeuchi's SECI model and focuses on the externalization process of knowledge sharing from individuals to teams and the

combination process of knowledge sharing from teams to organizations. The SECI model's content was enriched through the steps of open coding, axial coding, and selective coding. Figure 5.8 shows the knowledge sharing process of externalization and combination. The beginning of the research is “knowledge sharing incentives” and the end of the research is “knowledge sharing happens”.

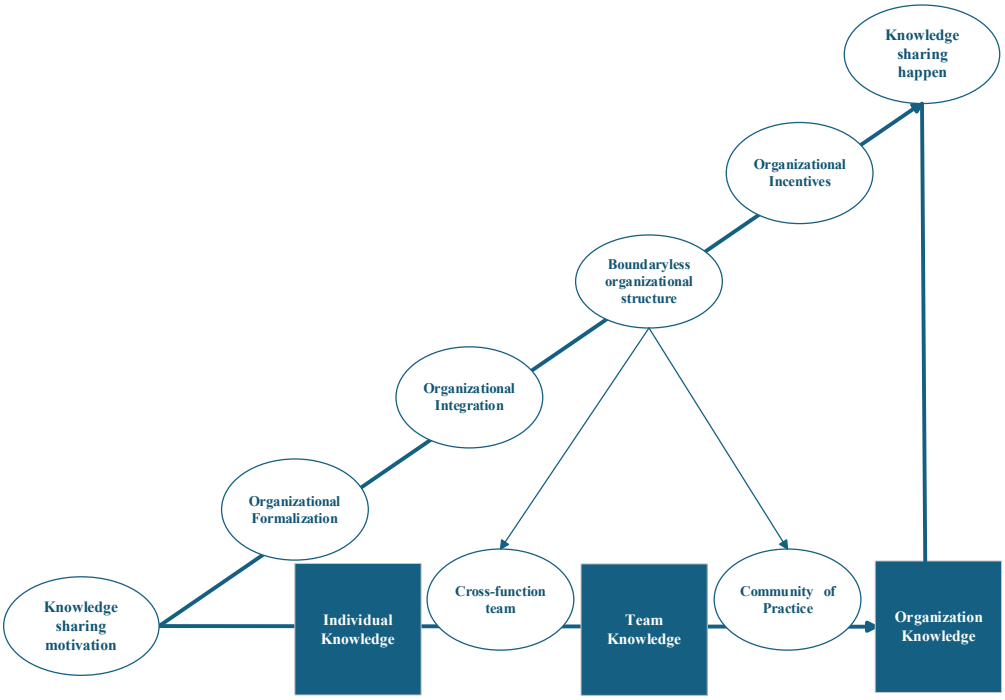


Figure 5- 8 Knowledge sharing process of externalization and combination

Source: Researcher’s own work, 2024

This research enriches the content of externalization and combination in the organizational structure context of the SECI model. In these two stages, the most basic boundaryless organizational structure is a basic concept, which is reflected in cross-functional teams in the externalization stage and in knowledge communities in the combination stage. Organizational formalization and integration are the guarantee of achieving a boundaryless organizational structure and realizing knowledge sharing. Organizational incentives are the engine that accelerates knowledge sharing. Their combined effect promotes knowledge sharing. Figure 5-9 shows the organizational structure and knowledge sharing based on the SECI model.

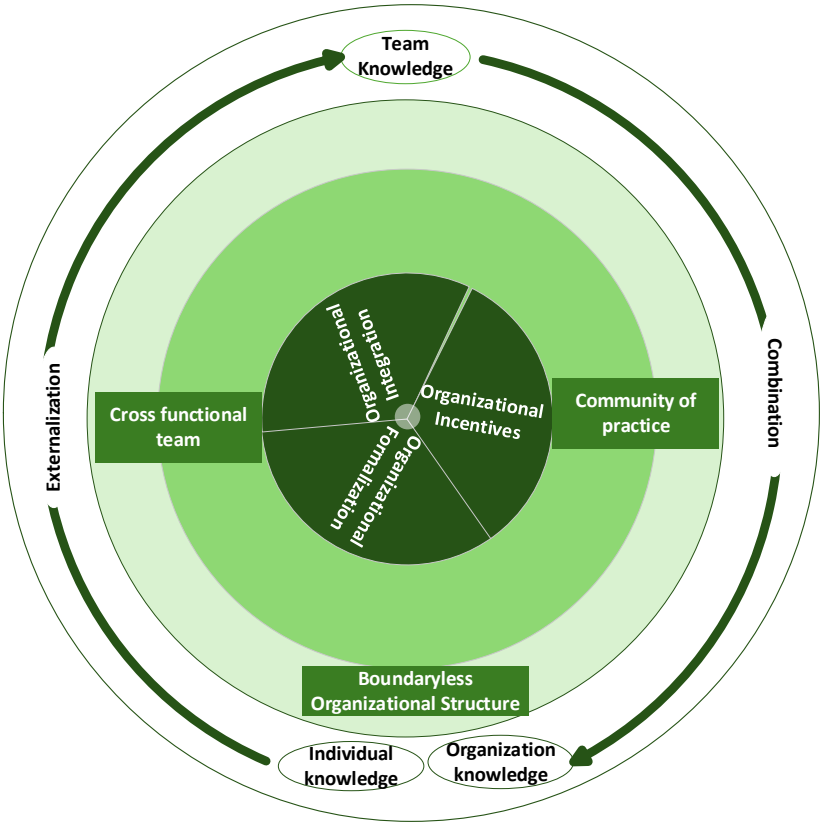


Figure 5- 9 Organizational structure and knowledge sharing practice

Source: Researcher's own work, 2024

The SECI model explores the spiral of knowledge between an individual, their team, their organization, and themselves. However, this research focuses on the externalization and socialization stages of the SECI model for two principal reasons. The first reason is that this research examines online and distance higher education, where module design and delivery are based on a team-based approach. Moreover, teams closely intertwine with most teaching and learning activities, as well as pedagogy knowledge sharing. This cyclical process of knowledge creation is defined as "team-organization-team-organization". Secondly, this research investigates the influence of organizational factors on knowledge sharing, not individual behavior.

5.5.2. Enriching contents of Ba theory.

This research finding enriched "Ba" theory. "Ba" corresponds to the four stages of

knowledge sharing in the SECI model, and each type of “Ba” supports a specific knowledge sharing process. Externalization corresponds to “Dialoguing Ba,” and the combination process corresponds to “Systemizing Ba” (Nonaka & Konno, 1998). This research showed that cross-functional teams are a practice of “Dialoguing Ba,” and community of practice is a practice of “Systemizing Ba”, and that knowledge sharing occurs in these “Ba”.

5.5.2.1. Dialoguing Ba and cross-functional teams

Cross-functional teams are generally defined as teams consisting of members from different functional departments, such as marketing, research and development, production, finance, etc., who work collaboratively to drive project success with a common goal in mind. Cross-functional teams serve as conduits for the transfer of knowledge from individual to team knowledge, acting as the organizational structure carriers that facilitate this process. Such teams may be constituted according to the specific requirements of the module or module in question. These may include, for example, a module design team, a module production team, or an online teaching team. While the nomenclature and connotations of different institutional teams may vary, they all perform fundamental functions related to module production and teaching. The team-based approach to teaching design and implementation represents the fundamental characteristic and concept of online and distance education institutions. Teams comprising members from diverse organizations and departments, with a range of professional skills and knowledge backgrounds, collaborate to provide students with high-quality modules and services.

While past research has suggested that cross-functional teams mainly contribute to horizontal knowledge sharing within organizations, this research finds that cross-functional teams not only promote horizontal, i.e., cross-functional, communication and knowledge sharing, but also vertical and cross-organizational knowledge sharing. The

most fundamental motivation for the formation of cross-functional teams is the team's goals, so team members can come from different departments within the organization, from the vertical organizational system, or from alliances outside the organization if the team members' knowledge backgrounds and expertise contribute to the achievement of the organization's goals.

5.5.2.2. Systemizing Ba and community of practice

The Scholarship Center is a Community of Practice that brings together educators from different organizations, sectors, and disciplinary backgrounds who share common concerns and topics of interest and who interact with each other to deepen and broaden their knowledge and expertise in areas of common interest. Despite not necessarily working together every day, they come together to share information and advice, assist in problem-solving, explore ideas, respond, and provide feedback, all because they recognize the value of communication. They express how they make sense of educational contexts and practices, explain their own behavior, and share their own stories with others.

The community of practice in this research supports knowledge sharing and validates Luo's (2024) and Tan's (2023) suggestion that the establishment of a digital learning community or online community of practice facilitates teachers' knowledge sharing, enhances teachers' digital literacy, enables the creation of organizational knowledge, and improves organizational competitiveness and innovation.

The findings of this research suggest that scholarship centers, which facilitate the sharing of team knowledge into organizational knowledge, share three characteristics of communities of practice, namely domain, community, and practice (Wenger et al., 2002). Firstly, scholarship centers focus on a common domain where educators pursue shared pedagogy knowledge. Simultaneously, online distance education scholars identify themselves by their ability to research and practice pedagogy knowledge.

Participation in the scholarship center means joining the same circle of scholars. Secondly, the Scholarship Center forms a community where educators, regardless of their professional and disciplinary backgrounds, engage in common activities and discussions, share knowledge, and enhance their competencies in the domain of pedagogy teaching and learning. Finally, the Scholarship Center is a community of practice, and pedagogy research is a form of reflective research. Scholars work as practitioners in online and distance learning module teams, sharing experiences and stories of implementing instructional design in the community of practice.

5.5.2.3. Practices and activities in Ba

This research explored the latest approaches to knowledge sharing. The research revealed a variety of ways in which individuals, teams, and organizations manifest the process of knowledge sharing. These modalities include conferences, academic forums, exchanges, publication of research results, sharing of success stories, websites and blogs.

In “Dialoguing Ba”, the most prevalent method of interaction is meeting. Formal meetings and engaging interactions, along with informal face-to-face communication and experience sharing among team members, facilitate the transfer of individual knowledge to team knowledge. In the process of transferring team knowledge to organizational knowledge, knowledge management systems and platforms have been demonstrated to be the most effective means of sharing knowledge, “Systemizing Ba”. Furthermore, workshops were found to be an effective way of sharing knowledge in practice. This is in line with Zhou (2022) and Wang (2018), who suggest that proposing the creation of a learning platform for teachers to share their knowledge can facilitate knowledge sharing.

5.5.3. Enriching contents of pedagogy knowledge sharing

This research findings showed that common pedagogy knowledge requirements, technology influence, and knowledge updating rate are prerequisites for pedagogy knowledge sharing in online and distance higher education. This is the logical starting point for research.

This research focuses on the pedagogy knowledge that online and distance higher education can acquire and share. If an online distance education provider is viewed as a business organization, then the module modules are the core product of that business organization, and the module team is the unit that develops and produces that product. This product, unlike other types of products, requires the integration of information technology and continuous digital innovation. Although each module team produces a product in a different discipline, the methods used and the students they deal with are likely to be similar.

Pedagogy knowledge has become a crucial area of focus in the realm of online and distance higher education. This is largely attributed to its intrinsic characteristics that promote student-teacher interaction, accommodate the evolving adult learning needs, and align with the growing inclination towards self-directed learning among students. In particular, the advent of the COVID-19 pandemic has led to an almost universal experience of online education for both educational institutions and students. More and more educational institutions are focusing on researching and implementing pedagogy knowledge in online education.

Considering the accelerated pace of digitalization, pedagogy knowledge in the context of online and distance education, which is inextricably linked with information technology, must be continuously innovated to remain relevant. Consequently, the dissemination and generation of pedagogy knowledge is becoming increasingly crucial, as they facilitate the acquisition of knowledge and the development of skills.

Moreover, this research proposed that the processes of knowledge sharing at the individual, team, and organizational levels are mutually reinforcing and interactive. Organizations must integrate knowledge sharing as a fundamental capability. At the individual level, the organization must motivate individuals to disseminate their knowledge and facilitate the flow of knowledge throughout the organization. At the team level, the organization must ensure effective communication, collaboration, and knowledge sharing among team members to achieve its goals. At the organizational level, the organization must promote the storage and dissemination of knowledge throughout the organization by establishing knowledge communities of practice and knowledge brokers, implementing knowledge management systems, and fostering a culture of knowledge sharing.

The research findings showed that knowledge sharing enhances the collective knowledge of teams and organizations while also developing the individual skills of those involved. It embodies the concept of learning by doing and encourages peer-to-peer learning. It is also worth noting that knowledge sharing fosters enthusiasm for pedagogy knowledge derived from research and practice and promotes innovation in pedagogy knowledge.

5.5.4. Enriching contents of boundaryless organizations

This research contends that knowledge generation and sharing across organizations originates in boundaryless structures. A module team is a type of cross-functional team where individuals from various backgrounds collaborate to create and teach team modules, thereby exchanging personal expertise among team members. Boundaryless organization structures like flatten structure, team-based structure, federal structure, and community structure are the basis for the creation of cross-functional teams. By allowing companies to cross organizational barriers, they become more flexible and adaptable, which helps them to survive and flourish in dynamic and complicated

surroundings. Knowledge is accessible, learned, modeled, and created via bridging organizational barriers.

Boundless organizational structure has progressively grown to be a defining quality of digital-era companies. From the hierarchical conventional organizational system to a more agile and flexible organizational structure, cross-vertical borders break down the management levels. Cross-horizontal boundaries help remove obstacles between departments and increase interaction among several parts of the company. Cross outside limits and realize cooperative symbiosis and inter-organizational resource sharing.

5.5.5. Enriching contents of knowledge brokers

This research found that knowledge brokers play a crucial role in knowledge sharing, particularly in boundaryless organizations where members frequently take on dual or multiple roles. They facilitate smooth organizational operations through coordination and collaboration. As one professor said “Knowledge brokers or other people who try to synthesize some of these things try to learn lessons and things across the university across a faculty to perhaps summarize them for other people”.

These findings showed that team directors, CoP leaders, and technologists, referred to as knowledge brokers, play a pivotal role in facilitating connections and knowledge sharing in online and distance higher education. Bryk et al. (2015) argue that learning designers play the role of brokers in facilitating knowledge sharing, and Karnopp (2023) suggests that cross-sectoral staff in organizations can be seen as key players in knowledge sharing.

Directors of teams manage the entire module team, coordinate among team members, guide the transfer of individual team members’ knowledge to the team, and promote knowledge sharing within the team. It is therefore evident that the effectiveness of a module team is contingent upon the appointment of an appropriate module team chair.

The role of learning analysts and learning designers is to facilitate the sharing and creation of pedagogy knowledge. Learning designers worked closely with the academics in their teams and played a crucial role. In certain module design teams, this role significantly influences the team's overall process. A productive relationship between learning technologists, learning designers, and instructors will improve pedagogy knowledge sharing.

5.6 Implication

5.6.1. Improving the top-level design of knowledge sharing.

In the digital era, the speed of knowledge renewal is accelerating. As important places for knowledge creation and dissemination, higher education institutions need to establish strategic thinking for knowledge sharing, formulate long-term and short-term knowledge sharing goals, and clarify the responsibilities and tasks of each department in knowledge sharing. Strengthening the value concept of knowledge sharing, create a positive cultural atmosphere of knowledge sharing, and encourages scholars to actively participate in knowledge sharing. Utilize new technologies such as big data and artificial intelligence to develop a knowledge management system suitable for colleges and universities. Establish an open and convenient knowledge sharing platform to provide scholars with a space for communication and sharing of knowledge. By using the data from the knowledge management system and the sharing platform, a knowledge map of the academic community is constructed to display the internal knowledge distribution and discover potential opportunities for knowledge sharing. Establish a Chief Information Officer and incorporate him/her as part of the senior management team to be responsible for coordinating the digital construction and knowledge management of the university.

5.6.2. Optimizing the design of organizational structure

The collaborative mechanism of knowledge sharing is established through organizational design, including the design of horizontal and vertical organizational structure. Horizontal collaboration mechanisms break down inter-departmental barriers and provide more opportunities for different departments to cooperate directly. For example, in cross-department projects, members of various departments can participate together and work together around specific goals, which changes the situation of each department fighting for itself in the past. The vertical collaboration mechanism relies on the authority of high-level departments or managers and requires different departments to cooperate by making relevant policies and issuing instructions, to avoid buck-passing caused by unclear responsibilities. For example, in the formulation of the annual strategic plan, the specific tasks and expected results of each department in knowledge sharing should be clearly stipulated to promote the collaboration between departments to achieve the goal.

5.6.3. Establishing an organizational incentives system

Organizational incentive is the key to ensuring knowledge sharing in higher education institutions. The most important thing is to establish the institutional rigidity of knowledge sharing, changing knowledge sharing from “optional” to “obligatory”. Make clear the academic labor value of knowledge sharing as part of the basic workload assessment. Moreover, the degree and effect of knowledge sharing are taken as a part of performance reward to strengthen the positive feedback mechanism of share more and gain more. At the same time, we should pay attention to the non-material incentive aspects of knowledge sharing, activate the academic dignity and career development needs of scholars, enable the sharers to obtain the priority of research resources and the right of academic dismoded, set up special academic honors, and form multi-channel achievement display and dissemination. It can also bind individual sharing behaviors with discipline development and cooperation, making knowledge sharing the core

driving force of academic innovation.

5.6.4. Building organized community of practice.

Communities of practice build a communication platform for its members that transcends time and space. Whether it is online forums, social media groups, or offline seminars, workshops, etc., they all enable members to share knowledge at different times and places. The community centralizes scattered knowledge resources, facilitating members' access to resources, avoiding the isolation and dispersion of knowledge, and enhancing the accessibility and utilization efficiency of knowledge. Members in the community deepen their understanding of knowledge through discussions and debates, reveal different levels and application scenarios of knowledge, and promote the innovative development of knowledge. Communities of practice usually attract experts and authorities with profound attainments in specific fields. Their participation and sharing can provide high-quality knowledge sources for the community, guide the direction of knowledge sharing, and help members better understand and master professional knowledge, thus forming a good knowledge ecosystem.

5.7 Chapter Summary

This chapter reviews the research questions, restates the research findings and compares these with previous literature, analyzes similarities and differences with former research, highlights the impact and applications of this research, and finally concludes with implication.

CHAPTER SIX: CONCLUSION, CONTRIBUTIONS, LIMITATIONS AND RECOMMENDATIONS

6.1 Chapter Introduction

This chapter presents discussions around the conclusion, contributions, and limitations of this research, as well as possible recommendations for future research.

6.2 Conclusion on the Findings

This research examines how organizational structure can enhance pedagogy knowledge sharing in online and distance higher education. It is organized around the research aim and objectives to address the research questions derived from participant interviews, observational memos, and documents from online and distance higher education institutions. Regarding the research question “How can organizational structure facilitate the knowledge sharing process from individual knowledge to team knowledge?" the research proposes that cross-functional teams are an important organizational structure to facilitate knowledge sharing from individual knowledge to team knowledge. Regarding the research question “How organizational structure can facilitate the knowledge sharing process from team knowledge to organizational knowledge”, the research proposes that communities of practice are an important organizational structure to facilitate the sharing of individual knowledge to team knowledge.

This research has two findings. First, boundaryless organizational structures play an important role in facilitating pedagogy knowledge sharing in online and distance higher education. Cross-functional teams and communities of practice are two organizational

structures that significantly contribute to knowledge sharing. The formation of cross-functional teams and communities of practice is based on a boundaryless organizational structure. Second, the organizational structural dimensions of formalization, integration, and incentives play a crucial role in facilitating pedagogy knowledge sharing in online and distance education. Their collaborative function ensures the implementation of the pedagogy knowledge sharing process. Thus, the combination of boundaryless organizational structure, cross-functional teams, communities of practice, organizational formalization, organizational integration, and organizational incentives facilitate knowledge sharing in the online and distance education domains.

Boundaryless organizational structure, cross-functional teams, and communities of practice are like the human body's skeleton; organizational formalization and integration are like the body's blood vessels and nerves; organizational incentive is like the human body's heart; and the collective action of multiple elements guarantees the body's circulation.

This research provides practical suggestions for knowledge sharing in higher education in terms of organizational strategy, organizational design, organizational incentives and organizational culture to systematically promote knowledge sharing in the field of higher education, see in table 6-1 recommendation list.

Item	Recommendation	
Organizational strategy	Incorporate knowledge sharing into the organization’s strategic planning and clarify its role in achieving organizational goals.	Break down sectoral barriers and promote knowledge flow and collaboration between different departments through strategic planning.
Organizational design	Cross-functional team structure, flatten structure, federal structure and community of practice structure can increase the speed	Provide employees with knowledge sharing related training to improve their sharing ability and skills.

	of knowledge flow.	
Organizational incentive	Set up a clear material reward system to reward employees who actively participate in knowledge sharing.	Focus on spiritual incentives, such as public praise, honorary titles, career development opportunities.
Organizational culture	Create a culture that encourages openness, transparency and collaboration.	Build a relationship of trust among employees so that they are willing to share knowledge.

Table 6-1 Recommendation list

Source: Researcher's own work, 2024

6.3 Research Contributions

6.3.1 Theoretical contributions

Based on Nonaka's theory of knowledge creation (SECI model), this research focused on the process of knowledge sharing in teams and organizations and enriched a theoretical model of organizational structure to facilitate knowledge sharing by exploring the practice and understanding of knowledge sharing through educators in three representative online and distance higher education institutions. This research extends the SECI model, which was originally used in business knowledge management, to the educational field, providing a new theoretical reference for knowledge management in the educational field. At the same time, this research extends the SECI model application from inside the organization to outside the organization, broadening the boundaries and scenarios of organizations to which the SECI model is applied. At the same time, it enriches the application of "Ba" theory in the field of higher education.

6.3.2 Literature contribution

Previous literature has done very little research on organizational structure factors that improve knowledge sharing. There is almost no literature in the field of higher education, and some studies even point out that there are no results showing the impact of organizational structure on knowledge sharing. Through these research findings, it was discovered the organizational structure forms and dimensions that promote knowledge sharing from the perspective of the knowledge sharing process. While previous research has focused on the centralization or decentralization structure dimension as it relates to knowledge sharing (Crespi et al., 2019), this research found formalization, integration, and incentives have a great impact on knowledge sharing. This research enriches the relevant literature in the field of knowledge sharing, especially the process of knowledge sharing. It verifies the cyclical relationship between knowledge sharing and knowledge creation. Finally, this research enriches the literature related to organizational structure in digital transformation. Along with the wave of digitalization, the organizational structure forms are also changing actively or passively, and various new organizational structure modes are emerging, while there is not much literature devoted to the organizational structure aspect in the field of education, especially in the field of online and distance higher education.

6.3.3 Practical contributions

Online and distance higher education institutions face an endogenous need for management change during the period of digital transformation. As a complex system that is both knowledge-intensive and labor-intensive, the research proposes that online and distance higher education institutions must have the courage to break down organizational boundaries, cross-boundary cooperation, resource integration, and collaborative win-win situations. Simultaneously, the research offers optimal solutions for facilitating knowledge sharing, promoting pedagogy knowledge sharing, and fostering continuous innovation in online and distance higher education.

6.4 Limitations of the Research and Recommendation for Future Research

Initially, in exploration research, we coded the data and drew findings using standardized grounded theory procedures. Grounded theory emphasizes the subjective constructive role of the researcher, which leads to some subjectivity in coding. The present research acknowledges this limitation. Therefore, a triangulation method of interviews, observations, and documents was used to compensate for the shortcomings and to improve reliability and validity of the research. This constraint may be supported by further research using quantitative research in this area.

Second, the sample population in this research is not large. 18 participants in three famous online and distance higher education institutions. However, it is important to note that many interviewees were senior academics and middle-to-senior managers with experience in the field of higher education. Each semi-depth interview lasted approximately one hour on average. The limited number of participants is understandable given the nature of the research. Therefore, expanding the research scope in the future could enhance the generalizability of the findings. It can be explored from the perspectives of students' learning experience and educators' satisfaction in the future.

Thirdly, based on the results of this research, it is possible to examine the interaction between organizational structure dimensions and knowledge sharing, as well as the relationship between organizational dimensions that influence each other. Future research can be conducted using mixed qualitative and quantitative methods.

Appendix A References

Adjei-Boateng, E. (2020). A Review of Quantitative and Qualitative Research Traditions for Teacher Education. International Journal of Educational Researchers, 11(2), pp.20-29.

Ahmad, F. (2017). Knowledge sharing in a non-native language context: Challenges and strategies. Journal of Information Science. 24(2), pp. 248-264.

Aishe. (2015). All India survey on higher education report for the year 2013-14. Ministry of Human Resource and Development, Government of India.

Aiken, M., and Hage, G. (1971). The organic organization and innovation, Sociology. 5(1), pp. 63-82.

Ajzen, I. (1991). Organizational Behavior and Human Decision Processes. 50(2), pp. 179-211.

Alyammahi, A., Hilmi, M. F., Abudaqa, A. and Almujaini, H. (2022). The Effect of Knowledge Management and Organizational Learning on Organizational Performance. International Journal of Accounting, Finance and Business.7(43), pp. 63-73.

Allen, I. E., and Seaman, J. (2017). Distance education enrollment report 2017. Digital learning compass. Babson Survey Research Group, e-Literate, and WCET.

Aldrich, H. and Herker, D. (1997) Boundary Spanning Roles and Organizational structure. Academy of Management Review. 2(2).

Al-Kurdi, O., El-Haddadeh, R., and Eldabi, T. (2018). Knowledge Sharing in Higher

Education Institutions: A Systematic Review. Journal of Enterprise Information Management. 31(2), pp. 235-246.

Albers, I. S., Zwerver, J., Diercks, R. L, Dekker, J. H. and Van den Akker-Scheek, I. (2016). Incidence and prevalence of lower extremity tendinopathy in a Dutch general practice population: a cross-sectional study. BMC Musculoskelet Disord, 17,16.

Anderson, T. (2008). The Theory and Practice of Online Learning. Athabasca: Athabasca University Press.

Anwar, Ch. Mahmood. (2017). Linkages between personality and knowledge sharing behavior in workplace: Mediating role of affective states. E & M Ekonomie a Management. 2, pp.102-115.

Argote, L., McEvily, B. and Reagans, Ray. (2003). Managing knowledge in organizations: An integrative framework and review of emerging themes. 49(4), pp, 571-582.

Argyres, N., Rios, L. A., and Silverman, B. S. (2020). On the heels of giants: Internal network structure and the race to build on prior innovation, Strategic Management Journal. 41, pp.2015-2049.

Argyres, N., and Silverman, B. S. (2004). R&D-organizational structure, and the development of corporate technological knowledge, Strategic Management Journal. 25, pp.929-958.

Ashkenas, R., Ulrich, D., Jick, T., & Kerr, S. (2015). The Boundaryless organization: Breaking the chains of organizational structure.2nd Edition. San Francisco: Jossey-Bass.

Asrar-ul-Haq, Muhammad, and Sadia Anwar. (2016). A Systematic Review of Knowledge Management and Knowledge Sharing: Trends, Issues, and Challenges. Cogent Business and Management.3, pp.1–17.

Asiedu, N. K., Abah, M. and Dei, D. J. (2022). Understanding knowledge management strategies in institutions of higher learning and the corporate world: A systematic review, Cogent Business & Management.

Asenahabi, B.M. (2019). Design: A Guide to selecting appropriate research design. International Journal of Contemporary Applied Researches. 6(5), pp.77-89.

Azungah, T. (2018). Qualitative research: deductive and inductive approaches to data analysis. Qualitative Research Journal. 18(4), pp.383-400.

Babchuk, W.A. (1997). Glaser or Strauss: Grounded theory and adult education. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education. Michigan State University.

Bai, Y. (2023). Qualitative Interviews. East China Normal University Press. PP.5-12.

Bartol, K. M. and Srivastava, A. (2002). Encouraging Knowledge Sharing: The Role of Organizational Reward Systems. Journal of Leadership & Organizational Studies. 9(1), pp.64-76.

Bartol, K. M., Liu, W., Zeng, X. Q. and Wu, K. (2009). Social Exchange and Knowledge Sharing among Knowledge Workers: The Moderating Role of Perceived Job Security. Management and Organization Review. 5(2).

Briscoe, F. (2007). From Iron Cage to Iron Shield? How Bureaucracy Enables Temporal

Flexibility for Professional Service Workers. Organization Science. 18(2), pp. 297-314.

Bengoechea, J. and Bell, A. (2022). The Impact of 21st Century Technology in Higher Education: The Role of Artificial Intelligence. World Academy of Science, Engineering and Technology, Open Science Index 189, International Journal of Educational and Pedagogical Sciences, 16(9), pp. 493 - 496.

Bejinaru, Ruxandra, Hapenciuc, C. V., Condratov, I. and Stanciu, P. (2018). The University Role in Developing the Human Capital for a Sustainable Bioeconomy. Amfiteatru Economic. 20, pp. 583-98.

Berg, B. L. (2007). Qualitative research methods for the social sciences. London: Pearson.

Bereznoy, A., Meissner, D. and Scuotto, V. (2021). The intertwining of knowledge sharing and creation in the digital platform-based ecosystem-A conceptual study on the lens of the open innovation approach. Journal of Knowledge Management. 25(8), pp. 2022-2042.

Bircham-Connolly, H., Corner, J. and Bowden, S. (2005). An Empirical Study of the Impact of Question Structure on Recipient Attitude during Knowledge Sharing. Electronic Journal of Knowledge Management. 3(1).

Blaikie, N. (2000), Designing Social Research, Cambridge: Polity, pp. 8.

Bluhm, D.J., Harman, W., Lee, T.W. and Mitchell, T.R. (2011). Qualitative research in management: A decade of progress. Journal of Management Studies. 48(8), pp.1866-1891.

Borgatti, S. P., Everett, M. G. and Johnson, J. C. (2013). Analyzing Social Networks. The Journal of Mathematical Sociology. 39(3), pp. 221-222.

Bogdan, R.C., and Biklin S.K. (1998). Qualitative research for education: An introduction to theory and methods. (3rd ed.) Boston: Allyn and Bacon.

Bogdan, R. and Biklen, S.K. (2006). Qualitative research for education: An introductory to theory and methods. (5th ed.). Needham Heights, Allyn and Bacon.

Bohman, J. (2013). Critical Theory, The Stanford Encyclopedia of Philosophy (Spring 2013 Edition), Edward N. Zalta.

Bouée, C. E. (2013). Light Footprint Management: Leadership in Times of Change. A&C Black Publishers Ltd.

Bryk, A. S., Gomez, L. M., Grunow, A. and LeMahieu, P. G. (2015). Learning to Improve: How America's Schools Can Get Better at Getting Better. Harvard Education Press.

Bryman, A. (1998). Quantity and Quality in Social Research. London. Routledge.

Bryman, A. and Bell, E. (2011). Business research methods. Oxford University Press, USA.

Bryman, A. (2012). Social research methods. 4th edition. Oxford: Oxford University Press.

Burrell, G. and Morgan, G. (1979). Sociological Paradigms and Organizational Analysis. Aldershot, UK: Gower.

Burrell, G. and Morgan, G. (2019) Sociological Paradigms and Organizational Analysis: Elements of the Sociology of Corporate Life. London, Routledge. 2rd edition. PP. 20-28.

Brown, M., Reinitz, B. and Wetzel, K. (2020). Digital Transformation Signals: Is Your Institution on the Journey- Enterprise Connections. Education Review. https://er.educause.edu/blogs/2019/10/.

Brown, S.C., Stevens, R.A., Troiano, P.F. and Schneider, M.K. (2002). Exploring complex phenomena: Grounded theory in student affairs research. Journal of college student development, 43(2), pp.173-183.

Bryson, J. M., Crosby, B. C. and Stone, M. M. (2006). The Design and Implementation of Cross-Sector Collaborations: Propositions from the literature. Leadership & Management. 66(1), pp. 44-55.

Brettel, M., Heinemann, F., Engelen, A. and Neubauer, S. (2011). Cross-functional Integration of R&D, Marketing, and Manufacturing in Radical and Incremental Product Innovations and Its Effects on Project Effectiveness and Efficiency. Journal of Product Innovation Management. 28, pp.251-269.

Burt, R. S. (2005). Brokerage and closure: An introduction to social capital. Oxford, New York, Oxford University Press.

Cabrera, Á., and Cabrera, E. F. (2002). Knowledge-sharing dilemmas. Organization Studies, 23(5), pp.687-710.

Camps et al. (2016). Individual performance in turbulent environments: the role of

organizational learning capability and employee flexibility, Human Resource Management. 55(3), pp. 363-383.

Cassell, C. and Johnson, P. (2006). Action research: explaining the diversity. Human Relations, 59(6), pp.783-814.

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J. Alan J Neville, A. J. (2014). The use of triangulation in qualitative research. Oncology Nursing Forum. 41(5), pp.545-547.

Cai, C. W. (2019). Nudging the financial market-A review of the nudge theory. Accounting and Finance. PP. 1-25

Cai, N. W. (2021). Social forms determine organizational forms-reflections on the changes, characteristics and values of organizational forms. Tsinghua Business Review.

Cavana, R.Y., Delahaye, B.L. and Sekaran, U. (2001). Applied business research: Qualitative and quantitative methods. Milton: John Wiley & Sons.

Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. Handbook of qualitative research. pp.509-535.

Chalmers, D.J., Manley, D. and Wasserman, R. (2005). Meta metaphysics: New Essays on the Foundations of Ontology. Oxford University Press.

Chang, L. (2018). Research on the Synergistic Mechanisms of Government Inter-departmental Knowledge Sharing. Journal of intelligence. 11(37), pp.164-172.

Chen, Z., Zhang, X. I. and Vogel, D. (2011). Exploring the underlying processes

between conflict and knowledge sharing: a work-engagement perspective. Journal of Applied Social Psychology. 41(5), pp.1005-1033.

Chen, C., Zhu Li, Liu, C. and Xu, S. (2022). The synergetic & symbiosis theory: a new management paradigm in the digital age. Foreign Economics & Management. 44(1), pp. 68-83.

Chen, J. and Nonaka, I. (2022). The Routledge Companion to Knowledge Management. London. Routledge.

Chen, X.M. (2020). Qualitative research in social sciences. Beijing. Education Science Publishing House.

Chilisa, B. and Kawulich, B. B. (2012). Selecting a research approach: paradigm, methodology and methods. Doing Social Research, A Global Context. London: McGraw Hill.

Christine et al. (2015). Putting transformative learning into practice, Australian Journal of Adult Learning. 55(1), pp.9-30.

Chow, W. S. and Lai, S. C. (2008). Social network, social trust, and shared goals in organizational knowledge sharing. Information & Management. 45(7), pp. 458-465.

Child, J. (2015). Organization: Contemporary Principles and Practice. John Wiley & Sons. PP. 27-52

Clement, J. and Puranam, P. (2017). Searching for Structure: Formal Organization Design as a Guide to Network Evolution. Management Science. 64(8).

Cook, T. and Campbell, D. (1979). Quasi-experimentation: design and analysis issues for field settings. Boston, Houghton Mifflin.

Cormican et al. (2021). Towards Sustainable Knowledge Sharing Practices: An Analysis of Organizational Level Enablers, Sustainability.

Cohen, L. and Manion, L. (1994). Research methods in education. 4th edition. London, Routledge.

Cohen, L., Manion, L., and Morrison, K. (2007). Research methods in education (6th ed.). Routledge/Taylor & Francis Group.

Cohen, W. M. and Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. Administrative

Coakes, E., Amar, A. D. and Luisa, G. M. (2010) Knowledge management, strategy, and technology: a global snapshot. Journal of Enterprise Information Management. 23(3), pp282-303.

Courtney, H. and Navarro, E. (2007). The Dynamic Organic Transformational team model for high-performance knowledge-worker teams. An International Journal. 13(1/2), pp. 34-46.

Courtney, M. and Wilhoite-Mathews, S. (2015). From distance education to online learning: Practical approaches to information literacy instruction and collaborative learning in online environments, Journal of Library Administration.

Crotty, M. (1998). The Foundations of Social Research: Meaning and Perspective in the Research Process. London: Sage Publications Ltd.

Cooke, R. and French, D. P. (2008). How well do the theory of reasoned action and theory of planned behavior predict intentions and attendance at screening programs: clusters, learning and cooperative advantage. London & New York. Routledge.

Creswell, J. W. (2007). Qualitative inquiry and research design: Choosing among five approaches (2nd ed.). London: Sage Publications Ltd.

Creswell, J. W. (2012) Educational Research: Planning, conducting, and evaluating qualitative and qualitative research. Upper Saddle River. Pearson Education, Inc.

Crespi, T. B., Costa, P. R., Preusler, T. and Porto, G. (2019). The alignment of organizational structure and R&D management in internationalized public company. Agricultural and Food Sciences.

Corbin, J. and Strauss. (2015). A Basics of Qualitative Research-Techniques and Procedures for Developing Grounded Theory. 4th edition. SAGE.

Cummings, S. (1995). Centralization and decentralization: The never-ending story of separation and betrayal. Scandinavian Journal of Management.11(2), pp.103-117.

Daniel, S., J., Berkowitz, D. and Souder, W.E. (2005). New Product Development Performance and the Interaction of Cross-Functional Integration and Knowledge Management. Journal of Product Innovation Management. 22, pp.399-411.

Dalkir, (2005). Knowledge management in theory and practice. Cambridge, Massachusetts. MIT Press.

Daft, (2022). Organization theory and design. Beijing. Tsinghua University Press. 20th

edition.

Davenport, T. H. and Prusak, L. (1999). Working Knowledge: How Organizations Manage What They Know. Harvard Business Press.

Denzin, K. N. and Lincoln, Y. S. (1994). Handbook of Qualitative Research Thousand Oaks, CA: Sage Publications, Inc

Denzin, N. and Lincoln, Y. (2003) Handbook of Qualitative Research. Sage, Toronto.

DeCenzo, D. A., Robbins, S. P. and Verhulst, S. L. (2009). Fundamentals of Human Resource Management. John Wiley & Sons. 12th edition.

DeCenzo, D. A., Robbins, S. P. and Verhulst, S. L. (2016). Fundamentals of Human Resource Management. Hoboken, NJ: John Wiley & Sons.

Demir, A., Budur, T., Omer, H. and Heshmati, A. (2021), Links between knowledge management and organizational sustainability: does the ISO 9001 certification have an effect, Knowledge Management Research & Practice.19(2), pp.1-14.

Delaney, K. J. (2007). Methodological Dilemmas and Opportunities in Interviewing Organizational Elites. Sociology Compass.1(1), pp.208-221.

Deng, P. and Lu, H. (2022). Transnational knowledge transfer or indigenous knowledge transfer: Which channel has more benefits for China's high-tech enterprises. European Journal of Innovation Management. 25(2), pp.433-453.

Deloitte. (2020). Global Human Capital Trends Report. https://www.oracle.com/a/ocom/docs/deloitte-global-human-capital-trends.pdf.

Deloitte. (2022). Leadership development. https://www2.deloitte.com/us/en/pages/about-deloitte/articles/inclusion-leadership-development.html

Dess, G. G., Rasheed, A. M. A., McLaughlin, K. J. and Priem, R. L. (1995). The new corporate architecture. Academy of Management Executive, 9(3), pp.7-18.

DiCicco, B. and Crabtree, B. F. (2006). The qualitative research interview. Medical Education, 40(4), pp.314–321.

Dong, J.; Liu, R.; Yan, J. and Yang, J. (2021) Interactive Effects of Knowledge Sharing Intention and Tacit Knowledge on Organizational Learning Performance, Management review. 33(2), pp.153-164.

Dwivedi, Y.K., Hughes, D.L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J.S. and Raman, R. (2020). Impact of COVID-19 pandemic on information management research and practice: transforming education, work and life. International Journal of Information Management. 57.

Eleanor, K., Hamid, R. A., Kate, S. and Chana, T. (2022). Interviews in the social sciences. Nature Reviews Methods Primers. 2(1), pp.1-15.

Eklund and Kapoor. (2022). Mind the gaps: How organization design shapes the sourcing of inventions, Organization Science. 33, pp.1319-1339.

Edwards, R. (2015), Knowledge infrastructures and the inscrutability of openness in education. Learning, Media and Technology. 40(3), pp.251-264.

Fan, Z. Y. and Beh, L. B. (2024). Knowledge sharing among academics in higher education: A systematic literature review and future agenda. Educational Research Review.

Feng, Y.; Wu, J. and Cao, F. (2023). A study on the impact of technological pressure on teachers' digital teaching innovation: The moderating effect of growth mindset and TPACK, Journal of Distance Education.

Finnis, J. (1980). Natural Law and Natural Rights. Oxford: Clarendon Press.

Filstead, W.S. (1979). Qualitative Methods: A Needed Perspective in Evaluation. Qualitative and Quantitative Methods in Evaluation Research. 5(2), pp.68-86.

Foss, N. J., Lyngsie, J., and Zahra, S. A. (2015). Organizational design correlates of entrepreneurship: The roles of decentralization and formalization for opportunity discovery and realization. Strategic Organization.13(1), pp. 32-60.

Friedrich, J., Becker, M., Kramer, F., Wirth, M. and Schneider, M. (2019). Incentive design and gamification for knowledge management. Journal of Business Research.

Fullwood, R., Rowley, J. and Mclean, J. (2018). Exploring the factors that influence knowledge sharing between academics. Journal of further and higher education. 43(8), pp.1051-1063.

Gan, S, Zhai, R. and Han, S. (2024) SECI Knowledge Model Construction of University Teacher Community Under Background of Digital Transformation. Heilongjiang Researches on Higher Education. 3, pp.120-128.

Galbraith, J.R. (2002), Organizing to deliver solutions, Organizational Dynamics, 31(2).

Galbraith, J. R. (2014). Designing Organizations: Strategy, Structure, and Process at the Business Unit and Enterprise Levels. John Wiley & SonsJay. 3rd edition.

Gao Z. Zhao, C. and Wu, C. (2019). Impacts mechanism of knowledge sharing rewards based on the interactive process, Science research Management. 40(9), pp.159-169.

Gao, Z. H. and Zhao, C. (2015). The study of knowledge sharing behavior from the interactive process perspective. Economics Management. 37(12), pp.68-78.

Garicano, L. and Rossi-Hansberg, E. (2006). Organization and Inequality in a Knowledge Economy. The Quarterly Journal of Economics. 121(4), pp. 1383-1435.

Girard, J. P. and Girard, J. L. (2015). Defining knowledge management: Toward an applied compendium online Journal of Applied Knowledge Management. 3 (1), pp.14.

Giau, A. D., Foss, N. J., Furlan, A. and Vinelli, A. (2020). Sustainable development and dynamic capabilities in the fashion industry: A multi-case study. Corporate Social Responsibility and Environmental Management. 27(3), pp.1509-1520.

Gliner, J. A. and Morgan, G. A. (2000). Research methods in applied settings: An integrated approach to design and analysis. New York. Psychology press.

Glaser, B and Strauss, A. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. Mill Valley. CA: Sociology Press.

Glesne, B and Peshkin (1992). Becoming qualitative researchers: An introduction. White Plains, NY: Longman.

Goulding, C. (1999). Grounded Theory: Some Reflections on Paradigm, Procedures and Misconceptions. University of Wolverhampton

Goodman, L.A. (1961). Snowball sampling". Annals of Mathematical Statistics. 32 (1): 148-170.

Grant, R.M. (1996). Toward a Knowledge-Based Theory of the Firm. Strategic Management Journal. 17, pp. 109-122.

Grant, S. B. (2016). Classifying emerging knowledge sharing practices and some insights into antecedents to social networking: A case in insurance. Journal of Knowledge Management. 20(5), pp. 898-917.

Grix, J. (2002). Introducing Students to the Generic Terminology of Social Research. Politics.22(3), pp.175-186.

Greenwood, R. and Miller, D. (2010). Tackling Design Anew: Getting Back to the Heart of Organizational Theory. Academy of management perspective. 24(4), pp. 78-88.

Guba, E. G. and Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In Denzin N. K. and Lincoln Y. S. (Eds.), Handbook of qualitative research Sage Publications, Inc. PP.105-117.

Guba, E. G. and Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In Denzin N. K. and Lincoln Y. S. (Eds.), The Sage handbook of qualitative research. 3rd edition. Sage Publications. PP. 191-215.

Gupta, A. and Peschken, T. (2022). A system dynamics approach to SME resilience under the economic stress of the COVID-19 pandemic: a conceptual model and

empirical analysis. International Journal of Applied Management Theory and Research. 4(1), pp. 42.

Hao, Q. (2023). Knowledge sharing and knowledge hiding in virtual teams. Intellectual Property Publishing House.

Hage, J. and Aiken, M. (1967). Program change and organizational properties: A comparative analysis. American Journal of Sociology. 72(5), pp. 503–519.

Haesebrouck, K., Van den Abbeele, A. G. H. L. and Williamson, M. G. (2021). Building Trust through Knowledge Sharing: Implications for Incentive System Design. Accounting, Organizations and Society. 93.

Harrington, R. R., and F. J. Lucia. (2012). Integration of Rock Fabrics and Stratigraphy for Petrophysical Quantification of Reservoir Framework.

He, Y. and Johnson, C. (2017). Challenges of information security incident learning: an industrial case study in a Chinese healthcare organization. Informatics for Health and Social Care. 42(4), pp. 393-408.

He, G, Li, S. and Liang, Z. (2018). Behavioral decision-making is nudging China toward the overall revitalization. Acta Psychologica Sinica. 50(8), pp. 803-813.

He, H. (2021). Study on the Spiral of Knowledge Creation in Readers' Activities of Public Libraries based on SECI Model.

He, Y, Sun, H. and Chen, Y. (2016). How Cross-functional Management Influences New Product Development: A Socio technical Perspective. Technology Analysis and Strategic Management. 28, pp. 1095–1107.

History, 2020, The Open University.

Higher Education Digital Transformation Framework. (2023). UK. The Joint Information Systems Committee.

Hislop, D. (2013). Knowledge Management in Organizations: a critical introduction. Oxford University Press. 3rd Edition. PP. 17-31.

Hirunyawipada, T., M. Beyerlein, and C. Blankson. 2010. Cross-functional Integration as a Knowledge Transformation Mechanism: Implications for New Product Development. Industrial Marketing Management. 39, pp. 650–660.

Howell, K. E., and Annansingh, F. (2013). Knowledge generation and sharing in UK universities: A tale of two cultures? International Journal of Information Management, 33(1), pp.32-39.

van den Hooff, B. and de Ridder, J.A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. Journal of Knowledge Management. 8(6), pp. 117-130.

Huang, Q. and Liang, G. (2022). organizational characteristics and internal mechanism: the reform of government organizational structure in the information society, Journal of Xi Hua Normal University. 1, pp. 7-15.

Hussain, M. A., Elyas, T. and Naseef, O. A. (2013). Research Paradigms: A slippery Slope for Fresh Researchers. Life Science Journal.

Hussinki, H., Ritala, P., Vanhala, M., Kianto, A. (2017). Intellectual capital, knowledge

management practices and firm performance. Journal of Intellectual Capital. 18(4), pp. 904-922.

Iftikhar, R., Ahola, T., and Butt, A. (2021) Learning from interorganizational projects, International Journal of Managing.

Inkinen, J.G., Crupi, A. and Minin, A.D. (2020). Knowledge sharing and technological innovation capabilities of Chinese software SMEs. Journal of Knowledge Management. 24(3), pp.607-634.

Ipe, M. (2003). Knowledge sharing on organizations: a conceptual framework. Human Resource Development Review. 2(4), pp.341

Iqbal, A. (2021). Innovation speed and quality in higher education institutions: the role of knowledge management enablers and knowledge sharing process, Journal of knowledge management. 25(9,) pp. 2334-2360.

Ismail, M., Ashmiza, N., Welch, C. and Xu, M. (2015). Towards a Sustainable Quality of University Research: Knowledge Sharing. Knowledge Management Research & Practice.13, pp.168–177.

Islam, M. Z., Hasan, I. and Zain, A. Y. M. (2012). The impact of organizational culture and structure on knowledge sharing. Social Science Electronic 23(9), pp. 285-298.

Intezari, A., Taskin, N. and Pauleen, D. J. (2017). Looking beyond knowledge sharing: an integrative approach to knowledge management culture. Journal of Knowledge Management. 21(2), pp492-515.

Jagasia, J., Baul, U. and Mallik, D. (2015). A Framework for Communities of Practice in Learning Organizations. Business Perspectives and Research. 3(1), pp.1-20.

JISC. (2023). Framework for digital transformation in higher education. https://www.jisc.ac.uk/guides/framework-for-digital-transformation-in-higher-education.

Juillerat, T. L. (2010). Friends, not foes? Work design and formalization in the modern work context. Journal of Organizational Behavior. 31(2-3), pp.216–239.

Karnopp, J. R. (2023). Hidden Structures: How Knowledge of New Practices Moves Among Educators in One Rural School District. Teachers College Record. 125 (2), pp. 99-130.

Kamal, S. (2019). Research paradigm and the philosophical foundations of a qualitative study. People: International Journal of Social Science. 4(3), pp. 1386-1394.

Kashari, Z. A. and Taheri, F. A. (2019). The Role of Knowledge Sharing in Organizational Performance. Journal for Engineering, Technology, and Sciences. 62 (1), pp 30-38.

Kang, L., Zhu, K., Su, L. and Ye, H. (2023). Research on the Spiral Model of Knowledge Creation of Online Collaborative Learning from An Interdisciplinary Perspective. E-education Research. PP. 60-66.

Key Facts, University of London International Programmes Website, White, Michael (2009).

Khandkar, S.H. (2009). Open coding. University of Calgary. 23, pp.2009.

Khalil, O. E. M. and Shea, T. (2012). Knowledge Sharing Barriers and Effectiveness at a Higher Education Institution. International Journal of Knowledge Management. 8(2), pp. 43 – 64.

Kim, L. (1980). Stages of development of industrial technology in a developing country: a model. Research Policy. 9(3), pp.254-277.

Kivunja, C and Kuyini, A. B. (2017). Understanding and Applying Research Paradigms in Educational Contexts Associate. International Journal of Higher Education. 6(5), pp. 26-41.

Koh, J., and Kim, Y. G. (2004). Knowledge sharing in virtual communities: an e-business perspective. Expert Syst. Appl. 26, pp.155–166.

Kozhakhmet, S. and Nazri, M. (2017). Governing knowledge sharing behavior in post-Soviet Kazakhstan. Journal of Workplace Learning. 29(3), pp.150–164.

Kvale, S. and Brinkmann, S. (2009). Inter Views: Learning the craft of qualitative research interviewing (2nd ed.). Sage Publications, Inc.

Kwahk, K. Y., and Park, D. H. (2016). The effects of network sharing on knowledge-sharing activities and job performance in enterprise social media environments. Computers in Human Behavior, 55, pp.826–839.

Khilji. N., Duan. Y. and Tehrani. J. (2021). Knowledge sharing for enhanced performance in the HEIs using a conceptual framework. Journal of Higher Education Theory and Practice. 21 (4).

Lawrence, P. R. and Lorsch, J. W. (1967). Differentiation and integration in complex organizations. Administrative Science. Vol. 12, pp.1-47.

Lawrence, R. J. and Allan, P. J. (1976). Organizational structure: a review of structural dimensions and their conceptual relationships with individual attitudes and behavior. Organizational Behavior and Human Performance. 16(1), pp74-113.

Lawrence, P. R. (1967) New Management Job: The Integrator. Harvard Business Review.

Lave, J. and Wenger, E. (1991). Situated Learning: Legitimate Peripheral Participation. Cambridge University Press, Cambridge.

Laihonen, H. and Mäntylä, S. (2018). Strategic knowledge management and evolving local government. Journal of Knowledge Management. 22(1), pp. 219-234.

Lee, J; Shiue, Y. C. and Chen, C. Y. (2016). Examining the Impacts of Organizational Culture and Top Management Support of Knowledge Sharing on the Success of Software Process Improvement. Computers in Human Behavior. 54 (1), pp. 462–474.

Lee, H. and Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination. Journal of management information systems. 20 (1), pp. 179-228.

Lee, Y.; Tao, W.; Li, J.; Y, Q. and Sun, R. (2021). Enhancing employees' knowledge sharing through diversity oriented leadership and strategic internal communication during the COVID-19 outbreak. Journal of Knowledge Management. 25(6), pp.1526–1549.

Lee, S. (2022). The myth of the flat start-up: Reconsidering the organizational structure of start-ups. Strategic Management Journal. 43, pp. 58–92.

Lewis, D. (2003). Theorizing the organization and management of non-governmental development organizations. Public Management Review. 5(3), pp. 325–344.

Lee, S. and Puranam, P. (2017). Incentive redesign and collaboration in organizations: Evidence from a natural experiment. Strategic Management Journal. 38(12), pp. 2333–2352.

Li, W. (2021). Research on the motivation of teachers' knowledge Sharing Behavior in Social Media Environment: Analysis based on the Theory of Knowledge Ecology. Journal of distance education.

Li, W. (2021). Teacher Knowledge Sharing: Bottlenecks, Processes and Systematic Promotion Strategies.

Liu, X et al. (2024). Exploring the New Model of Traditional Chinese Medicine Inheritance from the Perspective of Knowledge Management, Modernization of Traditional Chinese Medicine and Materia Medica-World Science and Technology

Liu, Y. (2021). Research on the Realization Strategies of Teachers Knowledge Sharing-Based on the Perspective of Social Exchange Theory. Contemporary Educational Science. 8, pp.28-34.

Liu, H. (2021). Informatization and standardization integration to drive digital transformation, Construction enterprise management. pp.78-80.

Li, H. J., Wu, Q. S. and Zhou, B. Y. (2021). Research on the Motivation of Teachers'

Knowledge Sharing Behavior in Social Media Environment: Analysis based on the Theory of Knowledge Ecology. Journal of distance education. 1, pp.74-83.

Li. (2018). A preliminary exploration of organizational theory jungle, Modern management science.

Li, Y. (2018). A preliminary exploration of organizational theory jungle. Modern Management Science. 8, pp. 115-117.

Liu, D. (2019). A brief analysis of borderless organizations and their practices, Chinese and foreign entrepreneurs.

Liu, C. and Song, G. M. (2021). Research on the development path of high-level teachers' subject teaching knowledge under the SECI model. 1, pp. 97-112.

Lloria, M. B. and Moreno-Luzon M. (2014). Organizational learning: Proposal of an integrative scale and research instrument. Journal of Business Research, Elsevier. 67(5), pp. 692-697.

Locke, K.D. (2000). Grounded theory in management research. Sage.

Lo, M.F. and Tian, F. (2020). How academic leaders facilitate knowledge sharing: a case of universities in Hong Kong. Leadership & Organization Development Journal. 41(6), pp. 777-798.

Lu, Y. (2024). Impact analysis and coping strategies of digital transformation on organization and management. Research Journal in Business and Economics.

Luo and Zhou. (2011). On organizational complexity. Foreign economics and

management. 33(1), pp. 26-33.

Luo, R. (2024). Identifying and managing knowledge risks faced by teachers in digital teaching. Modern University Education.

Luo, B. and Lu, Z. (2020). The Influence of Employee Engagement on Knowledge Sharing Willingness of Knowledge Employees-Based on Perspective of Human-Environment Interaction. Secretary.

Malik, M. S. and Kanwal, M. (2018). Impacts of organizational knowledge sharing practices on employees' job satisfaction. Journal of Workplace Learning, 30(1), pp. 2-17.

Malik, P. and Garg, P. (2020). Learning organization and work engagement: The mediating role of employee resilience. The International Journal of Human Resource Management, 31(8), pp.1071-1094.

Mitchell, William, S., Harvey. and Wood, G. (2021). Where Does All the Know How Go-The Role of Tacit Knowledge in Research Impact. Higher Education Research & Development. 41, pp.1-15.

Mahbubur R. M. (2023) Navigating the landscape of research paradigms: An overview and critique. International Journal of Educational Studies. 6(1), pp.1-18.

Mc Evoy, P., Ragab, M. and Arisha, A. (2019), The effectiveness of knowledge management in the public sector. Knowledge Management Research and Practice.17(1), pp. 39-51.

Muhammed, S. and Zaim, H. (2020). Peer knowledge sharing and organizational

performance: the role of leadership support and knowledge management success. Journal of Knowledge Management. 24(10), pp.2455-2489.

Mertens, D. M. (2005). Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches. 2nd edition. Thousand Oaks: Sage, pp. 17-25.

Maxwell, J. A. (1992). Understanding and validity in qualitative research. Harvard Educational Review, 62(3), pp.279-300.

Maxwell, J. A. (2005). Qualitative Research Design: An Interactive Approach. 2nd edition. London. Sage.

Mao, J. (2022). Digital transformation: 30% technology, 70% organization, Enterprise management.

Mentorloop. (2017). Examples of the Best Company Mentoring Programs, https://mentorloop.com/blog/examples-best company-mentoring-programs.

MW Staff. (2023). Definition of Knowledge. Merriam-Webster.

Mey, G. and Mruck, K. (2011). Grounded Theory Methodology and Self-Reflexivity in the Qualitative Research Process. The SAGE Handbook of Current Developments in Grounded Theory. pp.470-496.

Mintzberg, H. (1989). The Structuring of Organizations: A synthesis of the research. Macmillan Publishers Limited. pp 322-352.

Mintzberg, H. (2003). The Strategy Process: Concepts, Contexts, Cases. Pearson

Education. pp 207-241.

Moreno, J. (1947). Contribution of sociometry to research methodology in sociology. American Sociological Review. 12(6), pp. 287-292.

Nahapiet, J. and Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. Academy of Management Review. 23(2), pp.242-266.

Neto, R. and Choo, C. (2010). The post Nonaka concept of Ba: Eclectic roots, evolutionary paths and future advancements. Proceedings of the American Society for Information Science and Technology. 47(1), pp.1-10.

Nham, T. P., Tran, N. H. and Nguyen, H. A. (2020). Knowledge Sharing and Innovation.

Nie, S. D. (2023). Exploration of teachers' practical knowledge management based on the SECI model. Journal of Heilongjiang Institute for Teacher Development. 42(7), pp.42-44.

Nihar, K. P. (2017). Digital Disruption and Electronic Resource Management in Libraries. Chandos Publishing. 7. pp.83-133,

Nicolini, D., Pyrko, I., Omidvar, O. and Spanellis, A. (2022). Understanding Communities of Practice: Taking Stock and Moving Forward. Academy of Management Annals. 16(2).

Noorderhaven, N. G. (1995). Strategic Decision Making. Addison Wesley.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. Organization Science. 5(1), 14-037.

Nonaka, I. and Konno, N. (1998). The Concept of “Ba”: Building a Foundation for Knowledge Creation. California Management Review. 40 (3), pp.40-54.

Nonaka, I. and Takeuchi, H. (1995). The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. Oxford University Press.

Nonaka, I., Toyama, R. and Konno, N. (2000) SECI, ba and leadership: a unified model of dynamic knowledge creation. Long Range Planning. 33, pp. 5-34.

Nonaka, I. and Toyama, R. (2003) The knowledge-creating theory revisited: knowledge creation as a synthesizing process. Knowledge Management Research & Practice. 1, pp.2-10.

Nonaka, I. and Toyama, R. (2005). The theory of the knowledge-creating firm: Subjectivity, objectivity and synthesis. Industrial and Corporate Change. 14 (3).

Nonaka, I., von Krogh, G. and Voelpel, S. (2006) Organizational knowledge creation theory: Evolutionary paths and future advances. Organization Studies, 27, pp.1179-1208.

Nguyen, T. M. (2021). Four-dimensional model: a literature review in online organisational knowledge sharing. VINE Journal of Information and Knowledge Management Systems. 51 (1), pp. 109-138.

Olson, H. (2013). Quantitative “Versus” Qualitative Research: The Wrong Question. Proceedings of the Annual Conference of CAIS.

O’Leary, Z. (2004). The essential guide to doing research. London: Sage.

Omilion-Hodges and Baker. (2013). Contextualizing LMX within the Workgroup: The Effects of LMX and Justice on relationship quality and resource sharing among Peers. The Leadership Quarterly. 24(6), pp. 935-951.

Oxford Dictionary. (2011). Oxoford University Press. UK.

Patton, M. Q. (1990). Qualitative evaluation and research methods. Newbury Park, CA: SAGE Publications, Inc

Patton, M.Q. (1999). Enhancing the quality and credibility of qualitative analysis. Health Sciences Research, 34, pp.1189-1208.

Patton, M.Q. (2002). Qualitative research and evaluation methods. 3rd ed. Thousand Oaks: Sage.

Pertusa-Ortega, E. M., Zaragoza-Sáez, P. and Claver-Cortés, E. (2010). Can formalization, complexity, and centralization influence knowledge performance. Journal of Business Research. 63, pp. 310-320.

Pidgeon, M. (2019). Moving between theory and practice within an indigenous research paradigm. Qualitative Research. 19 (4), pp. 418-436.

Piller, F., Vossen A. and Ihl. C. (2012). From Social Media to Social Product Development: The Impact of Social Media on Co-Creation of Innovation. Die Unternehmung. 65 (1).

Polanyi, M. (1966). The Logic of Tacit Inference. Philosophy. 41(155), pp.1-18.

Polanyi, M. (2015). Personal Knowledge: Towards a Post-Critical Philosophy. University of Chicago Press. With a New Foreword by Mary Jo Nye.

Puranam, P. (2018). The Microstructure of Organizations. Oxford University Press. PP.67-69.

Puranam, P., Raveendran, M. and Knudsen, T. (2012). Organization design: The epistemic interdependence perspective. The Academy of Management Review. 37(3), pp. 419-440.

Pugh, D. S. (1990). Organization Theory: Selected Readings. Viking Press. 3rd editions.

Pugh, D. S., Hickson, D., Hinings, C. R. and Turner, C. (1968). Dimensions of Organizational structure. Administrative Science Quarterly. 8, pp. 289-315.

Pyrko, I., Dörfler, V. and Eden, C. (2017). Thinking together: What makes Communities of Practice work? Human Relations, 70(4), 389-409.

Qi, Y., Xiao, X. and Cai, C. (2020). The digital reconstruction of industrial organization, Journal of Beijing Normal University (Social Sciences). 2, pp.130-147.

Qin, J. L. (2021). A Review of Regulatory Focus in Organizational Management Research. West Forum on Economy and Management. 32(3), pp. 80-99.

Rao, M. (2020). Discovery, delivery, delight-how EY harnessed knowledge management and became one of two Most Outstanding Winners of the MIKE award.

Ramjeawon, P. V. (2020). Enablers and barriers to knowledge management in universities: perspectives from South Africa and Mauritius. Aslib Journal of

Information Management. 72(5), pp. 745-764

Rahi, S., Alnaser, F. M. and Abd Ghani, M. (2019). Designing survey research: Recommendation for questionnaire development, calculating sample size and selecting research paradigms. Paper presented at the Economic and Social Development Book of Proceedings. 37th International Scientific Conference on Economic and Social Development.

Raveendran, M., Silvestri, L. and Gulati, R. (2020). The Role of Interdependence in the Micro-Foundations of Organization Design: Task, Goal, and Knowledge Interdependence. The Academy of Management Annals. 14, pp.828-868.

Regycleia, B. C. and Pinheiro, P. (2022). Factors Influencing Tacit Knowledge Sharing in Research Groups in Higher Education Institutions. Administrative Sciences.

Reagans, R. and McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. Administrative Science Quarterly. 48(2), pp, 240-267.

Ren, G. F. and Chen, Y. Y. (2023). The Key Influencing Factors of Organizational Knowledge Sharing and Its Effect: Evidence from Meta-analysis. Journal of statistics and information. 38(3), pp. 117-128.

Robbins, S. P. (2012). Organizing for innovation. A case study of innovation teams and team leadership in a large R&D intensive firm. PhD thesis, Dublin City University.

Robbins, S. P. (1990). Organization theory: structures, designs, and applications. Prentice Hall. 3rd edition.

Roberts, N. and Bradley, R. (1991). Stakeholder Collaboration and Innovation: A Study

of Public Policy Initiation at the State Level. The Journal of Applied Behavioral Science. 27, pp. 209-227.

Stern, R. N., & Barley, S. R. (1996). Organizations and Social Systems: Organization Theory's Neglected Mandate. Administrative Science Quarterly, 41(1), 146-162.

Rosalind, E. and Janet, H. (2013). What is qualitative interviewing. Bloomsbury Academic.

Saunders, M., Lewis, P., and Thornhill, A. (2007). Research Methods for Business Students. 6th edition. London: Pearson.

Saunders, C.S. and Ahuja, M.K. (2006). Are all distributed teams the same? Differentiating between temporary and ongoing distributed teams. Small Group Research, 37(6), pp.662-700.

Saunders, M., Lewis, P. and Thornhill, A. (2009). Understanding research philosophies and approaches. Research methods for business students. 4, pp. 106-135.

Saunders, M.N., Lewis, P., Thornhill, A. and Bristow, A. (2015). Understanding research philosophy and approaches to theory development.

Sandvik, J., Saouma, R., Seegert, N., Stanton, C. (2020). Workplace Knowledge Flows. CEPR Discussion Papers.

Santos, V., Goldman, A., and Souza, C. R. (2015). Fostering effective inter-team knowledge sharing in agile software development. Empirical Software Engineering, 20(4), pp.1006-1051.

Schotter, A. P. J. and Mudambi, R. Ajai Gaur, Y. D. (2017). Boundary Spanning in Global Organizations. Journal of management studies.

Senge, P. (1997). Sharing Knowledge: The Leader's Role Is Key to a learning Culture. Executive Excellence. pp.17-18.

Sedighi, M., van Splunter, S., Brazier, F., van Beers, C. and Lukosch, S. (2016). Exploration of multi-layered knowledge sharing participation: The roles of perceived benefits and costs. Journal of Knowledge Management. 20(6), pp.1247-1267.

Shamim, S., Cang, S., Yu, H. and Li, Y. (2016). Management approaches for Industry 4.0: a human resource management perspective. IEEE Congress on Evolutionary Computation. pp. 5309-5316.

Shim, H. and Kim, K. J. (2018). An exploration of the motivations for binge-watching and the role of individual differences. Computers in Human Behavior, 82, pp.94-100.

Shaker, A., Tamara A. and AL-Yakoub. (2022). Challenges of knowledge management in the public sector: evidence from the King Abdullah Award for Excellence in Jordan. The TQM Journal. 34(6), pp. 1896-1913.

Simona, G. and Oliveira, R. T. (2020). Does organizational structure facilitate inbound and outbound open innovation in SMEs. Small Bus Econ. 55, pp.1091-1112.

Silverman, D. (2013). Doing Qualitative Research: A practical handbook. London: Sage.

Snieder, R. and Larner, K. (2009). The Art of Being a Scientist: A Guide for Graduate Students and their Mentors, Cambridge: Cambridge University Press.

Snape, D. and Spencer, L. (2003). Chapter 1 The Foundations of Qualitative Research, in Richie, J. and Lewis, J. (2003) Qualitative Research Practice. London: Sage.

Song, H. and Sun, M. (2023). The connotation, value and construction path of the community of professional learning for teachers. Jiangsu Education Research

Spender, J. W. and Grant, R. M. (1996). Knowledge and the firm: Overview. Strategic Management Journal. 17(S2), pp.5-9.

Spraggon, M. and Bodolica, V. (2017). Collective tacit knowledge generation through play: Integrating socially distributed cognition and transactive memory systems. Management Decision. 55(1), pp.119-135.

Spraggon, M. and Bodolica, V. (2018). A practice-based framework for understanding (informal) plays as practice phenomena in organizations. Journal of Management & Organization. 24(6), pp.846-869.

Spyridonidis, D., Currie, G., Heusinkveld, S., Strauss, K. and Sturdy, A. (2016), The translation of management knowledge: challenges, contributions and new directions. International Journal of Management Reviews. 18(3), pp.231-235.

Spotify. (2020). Culture as a strategy to navigate our new reality.

Sun, T. and Shen, W. (2022). Knowledge Sharing and Innovation in Higher Education Teaching and Learning in Virtual Communities of Practice. Higher Education Development and Evaluation. 38 (2), pp.105-116.

Su, Z., Chen, J. and Wang, D. (2019). Organizational structure and management innovation: the mediating effect of cross-functional integration，Technical Analysis

and Strategic Management，31(2), pp. 253-265.

Strauss, A. and Corbin, J (1990). Basics of qualitative research: Grounded theory procedures and techniques. Sage Publications, Inc.

Strauss, A. and Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin and Y. S. Lincoln (Eds.), Handbook of qualitative research. Sage Publications, Inc. pp. 273-285.

Sterna, R. and Zibrek, K. (2021). Influencing factors on knowledge sharing in virtual teams. Psychology in VR: Social Presence. 72(4).

Swanson, E., Kim, S., Lee, S. M. Yang, J. J. and Lee, Y. K. (2020). The effect of leader competencies on knowledge sharing and job performance: Social capital theory. Journal of Hospitality and Tourism Management. 42, pp. 88-96.

Szulanski, G. (2000). The process of knowledge transfer: A diachronic analysis of stickiness. Organizational Behavior and Human Decision Processes. 82(1), pp 9-27.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. Strategic Management Journal. 17(2), pp.27-43.

Sosa Díaz, M. J. and Valverde-Berrocoso. J. (2022). Moving Toward Digital Education. Models for Integrating ICTs at Schools. Revista Mexicana de Investigacion Educativa 27(94), pp. 939-970.

Tajpour, M., Hosseini, E., Mohammadi, M., & Bahman-Zangi, B. (2022). The Effect of Knowledge Management on the Sustainability of Technology-Driven Businesses in Emerging Markets: The Mediating Role of Social Media. Sustainability. 14(14),

pp.8602.

Tan, C., Wang, N. and Zhang, Y. Q. (2023). Research on the Nudging Mechanism of Employee Knowledge Sharing. Journal of Intelligence. 42(7), pp.160-169.

Ter Wal, A. L., P. Criscuolo, B. McEvily, and A. Salter 2020 Dual networking: How collaborators network in their quest for innovation.' Administrative Science Quarterly. 65, pp.887-930.

Thomas, J. C., Kellogg, W. A. and Erickson, T. (2001). The knowledge management puzzle: Human and social factors in knowledge management. IBM Systems Journal, 40 (4), pp. 863-884.

Thomas, Asha, and Vikas Gupta. 2022. Tacit Knowledge in Organizations: Bibliometrics and a Framework-Based Systematic Review of Antecedents, Outcomes, Theories, Methods and Future Directions. Journal of Knowledge Management. 26, pp.1014-1141.

Tidd, J., and J. R. Bessant. (2020). Managing Innovation: Integrating Technological, Market and Organizational Change. Wiley press.

Tohidinia, Z. and Mosakhani, M. (2010). Knowledge sharing behaviour and its predictors. Industrial Management and Data Systems, 110(4), pp.611-631

Ton, H. N. N., Shumshunnahar, M., Tu, T. N. and Nguyen, P. T. (2023). Revisiting Social Capital and Knowledge Sharing Processes in Tertiary Education: Vietnamese and Bangladeshi Students as Target Populations, Cogent Social Sciences.

Trochim, W.M. (2006). Qualitative measures. Research measures knowledge base.

pp.2-16.

Tsai, K. H. and Hsu, T. T. (2014). Cross-functional Collaboration, Competitive Intensity, Knowledge Integration Mechanisms, and New Product Performance: A Mediated Moderation Model. Industrial Marketing Management. 43, pp. 293-303.

Utz, S. and Levordashka, A. (2017). Knowledge networks in social media in the psychology of digital learning. Cham: Springer. pp. 171-186.

Van Den Bosch, F.A.J. and van Wijk, R.A.J.L. (2000). Creation of Managerial Capabilities Through Managerial Knowledge Integration. SSRN.

Vollstedt, M. and Rezat, S. (2019). An Introduction to Grounded Theory with a Special Focus on Axial Coding and the Coding Paradigm. Monographs. Springer, Cham.

Wasserman, S. and Faust, K. (1994). Social network analysis. Cambridge University Press.

Wang, X., Chen, Y. and Yang, B. (2020). Choice of Organizational structure in the Internet Era: Flattening and Decentralization-Based on Perspective of Dynamic. Chinese soft science. PP. 41-49.

Wang at. el. (2018). The effect of structural organicity on reverse internationalization performance: A Perspective of Dynamic Capabilities, Chinese Journal of Management. 15(2), pp.174.

Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. Human Resource Management Review. 20(2), 115-131.

Wang, Z., Wang, N. and Liang, H. (2014). Knowledge sharing, intellectual capital and firm performance. Management Decision. 52(2), pp. 230-258.

Wang, Z. (2018). A Probe into the Influencing Factors and Strategies of Teachers' Knowledge Sharing-Thinking from the Perspective of the Teacher Community. Journal of Guangdong Open University. 18(3), pp.15-18.

Waititu, P. and Barker, R. (2023). Employees' Perceptions on the use of Online Internal Communication for Knowledge Sharing. The Electronic Journal of Knowledge Management. 21(2), pp. 103-113.

Wang, Z. (2022). From "Section Structure" to "Platform Organization": Organizational Change of Innovation and Entrepreneurship Education in Universities. China Higher Education Research. 4, pp. 44-50.

Wei, J. and Wang, Y. (2004). Research on knowledge sharing within enterprises, Journal of technology and economics management. 1, pp. 68-69.

Wenger, E., McDermott, R.A. and Snyder, W. M. (2002). Cultivating Communities of Practice: A Guide to Managing Knowledge, Harvard Business School Press.

Wenger, E. (1998). Communities of practice: learning, meaning, and identity. Cambridge University Press.

Wellington, J. (2015). Educational Research: Contemporary Issues and Practical Approaches. Bloomsbury Publishing.

Willis, J.W. (2007). Foundations of Qualitative Research: Interpretive and Critical Approaches. SAGE Publications, Inc.

Wijnhoven, F. (1999). Knowledge logistics in business contexts: analyzing and diagnosing knowledge sharing by logistics concepts. The journal of corporate transformation. 5(3).

Willem, A. and Buelens, M. (2007). Knowledge Sharing in Public Sector Organizations: The Effect of Organizational Characteristics on Interdepartmental Knowledge Sharing. Journal of Public Administration Research and Theory. 17 (4), pp. 581-606.

Wiedner, R. and Mantere, S. (2019). Cutting the Cord: Mutual Respect, Organizational Autonomy, and Independence in Organizational Separation Processes. Administrative Science Quarterly. 64 (3), pp. 659-693.

Wu, S. (2021). Management control systems and knowledge sharing among employees: a literature review and practical implications. China Management Accounting Review. 4, pp.119-126.

Wu, S., Lin, C. S. and Lin, T. C. (2006). Exploring Knowledge Sharing in Virtual Teams: A Social Exchange Theory Perspective. In Hawaii International Conference on Systems Science.

Xu, P. and Zhang, D. (2018). research on the motivation of Knowledge sharing in online Q&A community: From the perspective of social exchange theory. Intelligence, Information & Sharing. PP.105-112.

Yao, Q., L, H., Zhang, X. and Li, Y. (2021). Research on the Influence of Community Rewards on Teachers' Knowledge Sharing Behavior in Online Learning Space-Under the Guidance of Social Exchange Theory. Software Guide. 20 (7), pp. 192-197.

Yeboah, A. (2023). Knowledge sharing in organization: A systematic review. Cogent Business & Management. 10: 2195027. https://doi.org/10.1080/23311975.2023.

Yilmaz, K. (2013) Comparison of Quantitative and Qualitative Research Traditions: Epistemological, theoretical, and methodological differences. European Journal of Education, 48(2), pp.312-325

Yook, S., Thompson, D. W. J., & Solomon, S. (2022). Climate impacts and potential drivers of the unprecedented Antarctic ozone holes of 2020 and 2021. Geophysical Research Letters, pp. 49.

Yu and Zhou. (2015). Tacit knowledge sharing models of university teachers from the perspectives of psychological risk and value. International journal of higher education.

Yu, M. and Smith, S. M. (2021). Grounded theory: A guide for a new generation of researchers. International Journal of Doctoral Studies. 16, pp.553-568

Zahedi, M. R. and Khanachah, S. N. (2021). The Effect of Knowledge Management Processes on Organizational Innovation Through Intellectual Capital Development in Iranian Industrial Organizations. Journal of Science and Technology Policy Management. 12(1), pp. 86-105.

Zhao, Y. and Srite, M. (2020). How does IT Occupational Culture Affect Knowledge Sharing in Organizations-Communications of the Association for Information Systems.

Zhen and Xu. (2019). Research on the organizational structure and operation mode for the internet era. Chinese journal of management.

Zhou, Y. L. (2022). How Does School-based Teaching and Research Promote Teachers'

Knowledge Development-Analysis Based on the Perspective of Organizational Learning. Forum on contemporary education. 3, pp.88-97.

Zhong, X., Wang, T. and Fu, Y. (2020). Research on the relationship between perceived insider status and knowledge sharing. Science Research Management. 41(7), pp.181-188.

Zhang, X., Y. L., Cheng, Y. and Zhu, H. (2021). Framework, Theory, and Practice of Digitalized Knowledge Management: A Survey. Frontiers of Data and Computing, 3 (2), pp.23-38.

Zhen, Z., Xu, X., Zhao, W., Ma, H. and Chen, D. (2019) Research on Organizational structure, Operation Mechanism and Operation Mode for the Internet Era. Chinese Journal of Management. 16 (1), pp. 45-52.

Zhang, X. and Venkatesh, V. (2017). A Nomological Network of Knowledge Management System Use: Antecedents and Consequences. IS Quarterly. 41(4), pp. 1275-1306.

Zhang, X., Li, Y. L., Cheng, Y. H. and Zhu, H. S. (2021). Framework, Theory, and Practice of Digitalized Knowledge Management: A Survey. Frontiers of Data and Computing.3(2), pp.23-28.

Zhang, Y. (2021). Moving from “hierarchical” to “platform-based” organization. Journal of world education. 11.

Zhang, P., Zhao, K. and Kumar, R. (2014). The Impact of IT Governance on IT Capability and Firm Performance. International Conference on Interaction Sciences.

Appendix C Participation Information Sheet

Study Title: Investigate the organizational structure that facilitate knowledge sharing in online and distance higher education

Researchers: Xueying Liu

Approval number: EC1218

Please read this information carefully before deciding to take part in this research. It is up to you to decide whether to take part. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

The research is to explore if and how organizational structure factors promote the knowledge sharing in the context of online and distance education.

Why have I been asked to participate?

You have been chosen to participate because you are an educator with extensive experience in Online and Distance Education, you are familiar with the way Online and Distance Education institutions are managed, and you understand the characteristics of online learning and have extensive knowledge of "teaching pedagogy".

What will happen to me if I take part?

You will be asked to take part in one interview with the researcher regarding how organizational structure factors boost knowledge sharing in Online and Distance Education. The interview is likely to take an hour and certainly no longer than 90 minutes including time to go through this information sheet and a consent form. The research will involve audio-recording the interview and transcribing the audio-recording. The researcher will share the transcript with you and you will have the chance to correct anything or add comments should you wish to.

Are there any benefits in my taking part?

This research aims to provide best practice references for organizational structure models and knowledge sharing approaches for Online and Distance Education in future. I hope that the research findings will benefit institutions, educators and students of Online and Distance Education. You might appreciate the reflective space that the interview provides for you.

Are there any risks involved?

The research does not envisage any risks to any of the participants from taking part in this study. However, it is likely that I will ask you to reflect and comment on your experiences of Online and Distance Education.

Will my participation be confidential?

Yes. In compliance with the new General Personal Data Regulations (GPDR) and University policy, everything you say in the interviews will be anonymised and kept confidential to the research team unless you tell us something that indicates that you or someone else is at risk of harm. I would discuss this with you before telling anyone else. The researcher will not tell anyone you have taken part in this study.

The researcher may repeat what you have said in a publication, but you will not be named. Our work will also be reviewed to ensure that I do not inadvertently suggest who the people or service quoted might be a staff member.

The data will be collected by an audio-recorder. Your confidentiality will be safeguarded during the study by ensuring that all the written and audio files will only be seen by the research team and will not be linked to you personally.

Any personal data (i.e. with names of participants) will be stored securely on a University password-protected server and hard-copies in a locked filing cabinet at the researcher's office. All data will be coded and anonymised to ensure it cannot be linked to you. The researcher will be the custodians of the data and will have sole access to view identifiable data.

What should I do if I want to take part?

You can inform the researcher that you want to take part by sending a return email or phone call. The researcher will then talk through the research with you before the interview and answer any further questions you may have. If you choose to participate, the research will then ask you to provide a written informed consent on a University consent form.

What happens if I change my mind?

You can withdraw from the study at any time during the interview, and up to four weeks following the interview, without your legal rights being affected. Simply inform the researcher in person or by email/phone that you want to withdraw from the study. Once you withdraw from the study the interview data collected will be destroyed

What will happen to the results of the research?

The findings from the research will be used to produce a number of guidance-based and academic outputs, including a policy briefing report, resource packs and an online web application showcasing anonymised key findings from the study. I can send you details of these if you wish.

The anonymised data will be retained for the duration of 5 years (from the time the data is gathered) as per the University Policy re: data retention, including the researcher's personal ID to validate the data in case of actuation of fraud or fabrication.

Where can I get more information?

Contact details for the Postgraduate Research Office:

w.shaven@uwtsd.ac.uk	m.cheung@uwtsd.ac.uk

What happens if something goes wrong?

In the unlikely case of concern or complaint, you should contact the Research Integrity and Governance Officer on a.bell@uwtsd.ac.uk.

The University has insurance in place to cover its legal liabilities in respect of this study.

Thank you for taking the time to read the information sheet and considering taking part in the research.

Appendix D Interview Consent Form

Study title: Investigate the organizational structure that facilitate knowledge sharing in online and distance higher education

Researcher name: Xueying Liu

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (*28 March 2022/ version 1.1 of participant information sheet*) and have had the opportunity to ask questions about the study.	
I agree to take part in this research project and agree for my data to be used for the purpose of this study.	
I understand my participation is voluntary and I may withdraw during the interview and up to two weeks following the interview for any reason without my rights being affected (in which case the data will be destroyed).	
I understand that my interview will be audio recorded and transcribed verbatim.	
I understand my responses will be anonymised in reports of the research.	

Name of participant (print name) ……

Signature of participant……

Date……

Name of researcher (print name) ……Xueying Liu……

Signature of researcher ……

Date……Jul,2024……

Appendix E Contact Letter with Participants

Dear ***,

Hope this email finds you well. I am honored to have the opportunity to contact you and express my gratitude for your willingness to participate in this interview.

I am writing to you regarding the scheduled interview. My thesis is to “investigate the role of organizational structural in facilitating knowledge sharing in online and distance higher education”. The interview could be either online (Teams) or offline at your convenience. I would be grateful if you would be willing to participate in these interviews, given your extensive experience in the field of online and distance higher education. The Ethics Form has been approved by the University Ethics Committee (University of Wales Trinity Saint David), and the ‘Participant Information Sheet’ and ‘Consent Form’ are attached. For the interviewees' reference, an ‘Interview Outline’ the is also provided.

I am aware of your current time constraints and have thus scheduled an appointment with you in advance.

Contact email: 2106660@student.uwtsd.ac.uk.

Best wishes,

Xueying Liu

Appendix F Interview Outline

Research Title: Investigate the Organizational structure facilitates knowledge sharing in Online and distance higher education

The digital economy necessitates that organizations demonstrate greater flexibility and adaptability; consequently, changes in organizational structure have become a significant concern for online and distance higher education institutions. A comprehensive understanding of "pedagogy" represents a fundamental competency for those engaged in online and distance higher education. Based on the way Organizational structure dimensions facilitate the dissemination of "pedagogy" knowledge, we will proceed with the following discussion.

1.Please describe your professional background and the responsibilities you have in the field of online and distance higher education.

2.Please explain your understanding of the concept of pedagogy knowledge.

3.Please describe the ways in which your work contributes to the dissemination of pedagogy knowledge. For example: sharing knowledge with organizations/ teams/ individuals.

4.Please describe the actions in which the organizational structure facilitates knowledge sharing.

5. Please elucidate how the organizational structures that you have identified facilitate knowledge sharing in your professional experience.

6. Please provide any additional information that you believe may be relevant but was not covered in the interview.

Appendix G Sample Transcript

9am, 8th July 2024

Interviewer
Could you tell me your professional background please?

Interviewee 0:18
I'm an emeritus professor, but I'm still doing various things both with the University and with other institutions, particularly the European association of distance teaching universities.

In my time within the University, I had many different roles in terms of just being A lecturer, creating the courses and modules for students to study, but I also had management and administrative roles. I was an associate dean of a faculty, and I was the founding director of the university's free learning platform called **, that's dealing with open educational resources.

Throughout all those different activities, the use of open and distance education, the pedagogies and the technologies that are needed to be able to provide a learning experience at a distance have been a key part of what I've been involved in either in managing or researching or thinking about, so there's a lot in there in terms of what I've been doing.

The other thing I think it's worth mentioning is I was also one of the first people in the University to gain status as what's called a principal fellow of the higher education Academy, it's now actually forms part of something called advance HE here in the UK, but it is a UK wide organization run by the sort of for universities and it provides A recognition of the both the scholarship and the practice of people working in universities.

They have these different grades of fellowship, associate fellowship, senior fellowship and principal fellowship, and they are all reflective of what those people have done not just in * universities, but in all universities in terms of their pedagogical expertise, their innovations, their knowledge, their support of others in terms of trying to improve the educational experience that they provide for students.

There's a lot of things sort of going on there, both within the university and outside the university across UK and sort of further afield. I've worked on many international projects both in Europe and further afield, which have open education as a key part of these.

One of the things that been involved in there is trying to support other people in thinking about their approach to teaching (pedagogy) again. Of course, most specifically in this space of studying at teaching at a distance the fact that do not have the student in the same room as you are, and so how do you manage. How do you structure. How do you think about that the interactions that you need to make through the media that you're able to use.

批注 [XL1]: Position, an emeritus professor
European association of distance teaching universities

批注 [XL2]: Lecturer, creating the courses and modules
Management and administrative roles
Associate dean of a faculty
Founding director of open learn

批注 [XL3]: A principal fellow of higher education academy
Provide AA recognition of the both the scholarship and the practice

批注 [XL4]: Fellowship
Pedagogical expertise innovations, knowledge

批注 [XL5]: Involve in
Support other people in thinking about their approach to teaching
Interaction through media

Interviewer **4:32**

In the recent five years, especially after pandemic period, pedagogy knowledge is becoming more popular in higher education.

Interviewee 5:11

Well, it certainly in the UK, but also knowing in Europe and North America. There's always been a lot of discussion about the modes of pedagogy, how they should be thought about and how they should be structured, how do you make those educational experiences.

批注 [XL6]: Pedagogy should be stuctured

For most universities, they are thinking about that within a classroom or a place-based field study or whatever where you're with students and for what has changed. Is it that more and more educators have had to start thinking about how I create a good educational experience when the students are not in the same room as I am not in the same place as I am either in real time. I only see them through a screen like I'm talking to you now or I'm not talking to them in real time.

批注 [XL7]: Create a good educational experience

I'm doing asynchronously that I have to create an educational experience which the student has to study at their own time and own pace, and they are not able to directly ask questions of Maine as they can either in a synchronous place based or online setting. So it makes everyone have to think much harder about how people do and it's almost to think about how to payments, how to think about the different types of people.

批注 [XL8]: Asynchronously
Synchronous

But in certain cases of the University in the UK we don't have any criteria or things for students. We have open entry to our undergraduate programs so we can have an enormous diversity of students in from their backgrounds, from their previous knowledge, from their previous educational achievements, and so again that sort of forces you to think very much harder about the whole education experience and a lot of that is not just about the pedagogy per se in terms of how do you structure the educational materials, the educational experiences, but it's also about how you might provide the ongoing student support around that the other factors which may be helpful and supportive of the students.

批注 [XL9]: Pedagogy meaning

To give a good example of that is disabilities, so those who maybe have visual impairment, those who may have mobility issues particularly and perhaps using a laptop or things like that how can you provide additional support and other activities around them. In conjunction with how you've structured the materials to make it much easier for those people to be able to study.

批注 [XL10]: conjunction

An example, sort of go back to that side, which was creating sort of digital talking books. So, this is sort of changed a bit, but going back ten or fifteen years, we're producing our course materials in digital form, but then we're also working to create versions of those in which there were actual words were spoken but not by person. It's by a computer, but creating a version of the course which was talking about books and things like that those students who had visual impairment could listen to what had been written and was in text on the screen or a text on a print.

批注 [XL11]: Creating sort of digital talking books

Interviewer **25:56**
How about your dissemination pedagogy?

Interviewee 26:21
That's something that happens in many ways. There's no single way to do it. I think it's worth saying, but one of the things about open and distance education that has been the case up until recently compared to the sort of place-based institutions campus-based institutions is the fact that the educational and the teaching you do is more is a team effort.

批注 [XL21]: Team effort

In many universities as a teacher, you may be assigned to do these courses, do these things and you do it as an individual, there may be two or three of you doing it, but you divide up the responsibilities and you may not talk to each other about some of the things you're doing.

批注 [XL22]: individual

But in much of open distance education, it's a team effort whereby you have the academic experts and you may have put two or three or more working on creating the teaching materials, but you also have these other professionals who are editors, media developers and others who help advise and talk about how to use the different technologies and different modes, emerging technologies to support that the pedagogical structure of the course.

批注 [XL23]: A team effort

One of the things that's important in open distance education is that the team-based effort immediately means that it is sharing some knowledge between those different people in that team. So, there's the first part about it.

The second part about it is certainly if university in the UK, but I think it would be elsewhere is because students are studying many different courses or modules as part of their degree. You also want to make sure that the experiences or the certain aspects of the pedagogy and the student support are similar or recognizable across those different modules or courses. So, there's also that desire to be to share the knowledge and practices across those teams.

批注 [XL24]: Share
Similar
Across teams or modules o courses

There's a need to sort of share more about how the different things fit together in terms of how the sort of modules working about, what are the common aspects of pedagogy and the use of technology in particular and things work so that there's an in an inherent inbuilt sharing that sort of goes on even within the sort of production of courses and things, and in terms of the ongoing monitoring. The evaluation, of course, is in presentation. And again, there's a whole set of processes of evaluating, reporting, and reviewing things.

批注 [XL25]: Sharing in the process

In more recent years, certainly in in the University but also in the UK as a whole. There is this greater drive to enhance the scholarship of teaching and learning, so to make sure that all the people, not just the academics, some of the other professional services staff understand or maybe involved in doing scholarship, a form of ongoing research on how they're teaching and learning practices are going.

批注 [XL26]: Greater drive to enhance the scholarship of teaching and learning.
All the people, academics and professional services staff involve in doing scholarship

So, it's part of that evaluation and monitoring needs to be support. People understanding

Interviewer 51:00
So, the new lecture should be given with some research support by Scholarship Centre.

Interviewee 51:38
Yes. Any new appointments if they may already have recognition by the higher education Academy, in which case that's proved they must do a course effectively on pedagogy, on open distance, learning and educational technology, it usually called academic practice. Academic practice is usually the academic practice around teaching and learning and engagement rather than research that tends to get handled separately.

So that there are both institutional structures and sort of sector wide structures which help organizations think about how they're doing because the success of that depends upon how much people are open to attending events, tending conferences, listening to the work of others or reading the work of others. In terms of trying and learning from it, and I think that sort of comes back to knowledge brokers, it's challenging to expect everybody to be able to read and think about all these different things, as well as doing their teaching, their research.

So that's why it's important to have structures and processes like a scholarship Centre of people in it, but it's also even within a department or an area or school. It's useful to have people who do look at all these things understand all these things that has been involved in different projects. And things like somebody who can act as a knowledge broker and who can come to or pass on that information so that people don't have to go keep looking for themselves.

You need to have those divisions and responsibilities, so it's a bit like going back to I said in the early days of the University who had this institute of educational technology. It still has a role, but where people were put on course teams to be the experts to be able to break the knowledge that they had and bring it in.

Nowadays you need people who can informally hold that role within course teams within things that are specifically appointed to it but people who are knowledgeable. So again, it's not expecting everybody to do it, but it's taking enabling those people who wish to do it to be those individual sorts of Centre of excellence in that to be able to explain things to other people.

But it may be and again that that it may be that different people do different things around that pedagogy and things, so it's not they'd anyone individual is the expert on everything, but they may be experts in certain areas that people always go to whether it's people initialize in assessment or it may specialize in aspects of accessibility, because there's quite a lot around the sort of pedagogy of accessibility.

In terms of creating materials which are accessible to as many people as possible depending on their own circumstances and their own abilities, particularly if they have impairments,

批注 [XL51]: Academic practice
Rather than research

批注 [XL52]: Institutional structures
Sector wide structures
The success depends upon how much people are open to ------
--
Knowledge brokers

批注 [XL53]: Have structures and processes
Like a scholarship Centre
A department or an area or school
Involve in different projects
Act as a knowledge broker
Come to or pass on that information
Keep looking for thermsleves

批注 [XL54]: Need people
Informally hold that role within course teams
Not expecting everybody
Take enable people who wish to do
Be able to explain things to other people

Appendix H Sample Documents of university A

Assessment indicators of online teaching team

Main Indicator	Sub indicator	Score
Team building and management	1. Form a teaching implementation team combining full-time and part-time teachers, with a reasonable personnel structure and organisational structure.	20
	2. Regularly communicate with the core team about work and teaching implementation.	
	3. Summarise the experiences and problems of team operation, ideological and political teaching in the curriculum, process.	
Team operation	4. Develop an implementation plan for the curriculum, with appropriate designs for teaching activities that reflect the requirements of the curriculum and are operational.	60
	5. Promote curriculum teaching information and learning resources from the headquarters in a timely manner.	
	6. Supplement and update the branch (college) learning resources appropriately each semester.	
	7. Fully carry out the basic task of cultivating students' moral character in the daily teaching process, and effectively carry out ideological and political education in the curriculum.	
	8. Participate in the teaching and research activities organised by the core team.	
	9. To organise teaching and learning guidance (face-to-face teaching, video streaming, online teaching activity days or weeks, etc.) and effectively organise students' participation.	
	10. Review formative assessment work in a timely manner and provide targeted teaching guidance to students.	
	11. Summarise and analyse teaching problems and work with the core team to find solutions.	
Team performance	12. Teaching delivery and effectiveness (e.g. online teaching behaviour statistics, student satisfaction surveys, offline teaching, etc.).	20
	13. Course-related teaching achievements and other awards received by the team.	
	14. Other effective special and innovative activities undertaken by the teaching team.	
Total score		100

Source: From university’s management policy

Appendix I Sample Documents of university B

Community of Practice Activities

Activities

The majority of our work is organised on a project basis. Projects may be proposed by individuals or groups of academics and academic-related staff whose work is related to the curriculum. We also welcome cross-school project teams. All projects are expected to have clear outputs and strategically relevant effects. Where approved, projects are managed from within eSTEeM with individual academics taking responsibility for project delivery. Please see the Projects section for further details on current and completed eSTEeM projects.

Word cloud of eSTEeM project titles

From proposals to projects

eSTEeM consults with its Coordination Group, which features colleagues from each of the STEM Schools and Institute, to establish scholarship priority areas. Project calls are circulated twice a year (usually January and July) inviting expressions of interest or fully worked up proposals. Proposals are carefully scrutinised by the Coordination Group to ensure the project meets strategic requirements, will have tangible deliverables and are achievable in the timescale and with reasonable resources.

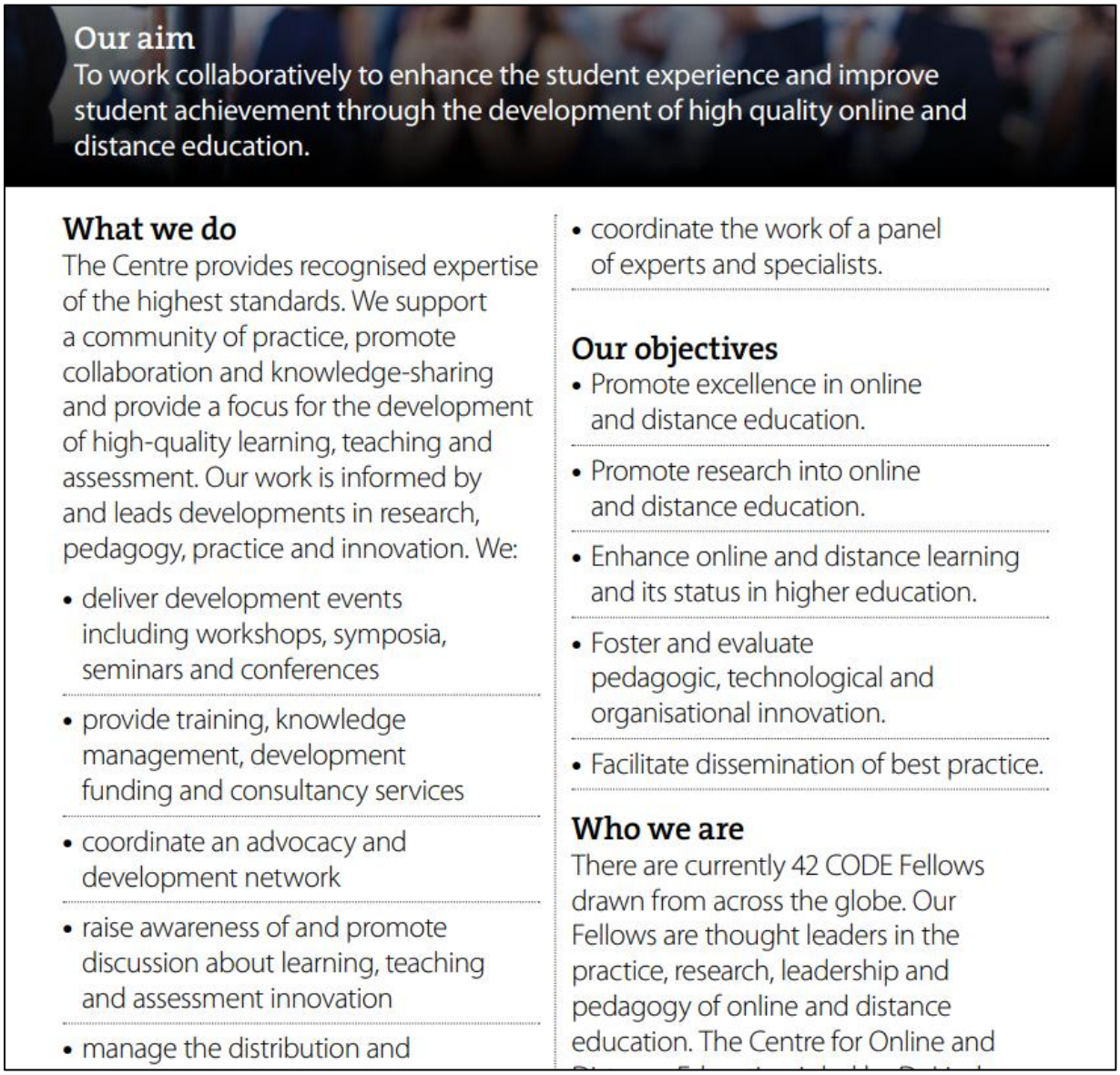
Once projects are formally approved, eSTEeM provides an induction, access to a mentoring scheme and on-going support to project leaders in the planning, identifying of research methodology, and evaluation of their projects. In addition, eSTEeM will help project leaders to think about how to implement their outcomes more widely in modules and policy across the OU, and disseminate to colleagues both internally and externally.

On completion, the project team will be expected to provide a final report and to widely disseminate the findings of their projects. Often the outputs from the project will feedback into module design and teaching practice further illustrating the impact of evidence-based research. Project leaders are also be encouraged to consider publication opportunities and may seek to gain recognition as a Fellow of the Higher Education Academy. A completed eSTEeM project can be helpful to support a claim for professional recognition via Applaud, which aligns to the Professional Standards Framework (PSF, 2023)

Source: From university's website

Appendix J Sample Documents of university C

Cross-organizational collaboration and coordination



Our aim

To work collaboratively to enhance the student experience and improve student achievement through the development of high quality online and distance education.

What we do

The Centre provides recognised expertise of the highest standards. We support a community of practice, promote collaboration and knowledge-sharing and provide a focus for the development of high-quality learning, teaching and assessment. Our work is informed by and leads developments in research, pedagogy, practice and innovation. We:

- deliver development events including workshops, symposia, seminars and conferences
- provide training, knowledge management, development funding and consultancy services
- coordinate an advocacy and development network
- raise awareness of and promote discussion about learning, teaching and assessment innovation
- manage the distribution and
- coordinate the work of a panel of experts and specialists.

Our objectives

- Promote excellence in online and distance education.
- Promote research into online and distance education.
- Enhance online and distance learning and its status in higher education.
- Foster and evaluate pedagogic, technological and organisational innovation.
- Facilitate dissemination of best practice.

Who we are

There are currently 42 CODE Fellows drawn from across the globe. Our Fellows are thought leaders in the practice, research, leadership and pedagogy of online and distance education. The Centre for Online and

Source: From university's website

Appendix K Sample Observation Memo

Observation Memo

Date: June 2024

Summary of data: Observation of module production/design teams in UK online and distance higher education institutions.

Reflections and interpretations: Diverse teams at online and distance education organizations are made up of members from different backgrounds and experiences, which allows the team to look at problems from different perspectives and provide innovative solutions. At the same time, a diverse team brings more roles and divisions of labor. Compared with China, the roles and responsibilities in the module teams of online and distance education institutions in the UK are more refined, allowing academics to focus on module content, learning designers on the application of pedagogy, and information technology staff on technological enhancement, which enhances and facilitates the sharing of knowledge while learning from each other.

Connections to other data: Relevant content in the interview transcripts about the roles and responsibilities of the team.

Next steps: How knowledge is shared between the different roles in the team.